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KNOWLEDGE AND UTILIZATION OF NURSING INFORMATICS AMONG NURSES IN BABCOCK UNIVERSITY TEACHING HOSPITAL ILISHAN REMO OGUN STATE

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ABSTRACT

Background: Nursing informatics is the speciality that incorporates nursing science with multiple information and analytical sciences to identify, define, manage and communicate data, information, knowledge and wisdom in nursing practice. This study aims to assess nurses' knowledge and utilisation of nursing informatics in Babcock University Teaching Hospital, Ilishan Remo. **Materials and Methods:** This study adopted a quantitative method, cross-sectional design, to elicit information from 127 nurses. The data were retrieved, coded, tabulated and analyzed by descriptive and inferential statistics with the use of SPSS version 23. **Result:** This study showed that the respondents' knowledge of nursing informatics was above average, with a mean score of 7.41 (61.7%) measured on a scale of 12 point reference scale. The respondents displayed an above-average level of utilisation of nursing informatics with a mean score of 18.16 (75.6%) measured on a 24 reference point scale. There was no significant relationship between the respondents' knowledge and utilisation of nursing informatics, with a p-value of 0.163; however, there was a relationship between the utilisation of nursing informatics and years of practice of the nurses, with a p-value of 0.017. **Conclusion:** The study concluded that the respondents had an above-average level of nursing informatics knowledge and utilisation, respectively. Therefore, knowledge of nursing informatics needs to be improved upon among the respondents via continuous education programmes, seminars, and conferences to maintain and develop medical data and systems to support nursing practice and improve patient care outcomes.

Keywords: Information Technology, Knowledge, Nursing informatics, Nursing Practice, Utilization

I. I. Introduction

Nursing informatics is the speciality that incorporates nursing science with multiple information and analytical sciences to identify, define, manage and communicate data, information, knowledge and wisdom in nursing practice (ANA, 2001). It is also the integration of nursing, information, and management with processing and communication technology to support people worldwide (Alotaibi & Federico, 2017). Health information technology encompasses the use of various technologies that range from simple charting systems to more advanced decision support and integration with medical technology. Health information technology has shown to have great potential of improving and transforming healthcare delivery in the following ways: reducing human errors, improving patient outcomes, improving care coordination, improving practice efficiencies, and tracking data over time. Sequel to the original IOM report published, there has been increased development and adoption of health information technology with a resultant positive impact on patient safety (Elsayed, El-Nagger & Mohamed, 2016).

Despite the positive impact of technology in the health care sector of many developed nations, the majority of the developing countries like Nigeria are still far behind. Most healthcare professionals in developing countries had inadequate access to information and that the little information available to them was often unreliable and irrelevant. More worrisome is that the rural healthcare providers will be constrained by stemming barriers even though they needed basic information like their colleagues in the urban centres (Adeleke, Salami, Achinbee, Anamah, Zakari & Wasagi, 2015).

With the advent of information technology and the various benefits to nursing care, it is expected that professional nurses

should possess the necessary adequate knowledge and skills to enhance efficient nursing practice technologically. On a global level, a study by Hwang and Park (2011) examined the factors associated with nurses informatics competency and discovered that a high percentage of nurses were not effective because of demand and shortage of staff, which limits utilization of nursing informatics. It was also revealed in a study by Achampong (2017) that the lack of knowledge of nurses on nursing informatics can be as a result of when they were in school their tutors did not have an upgrade of knowledge when teaching the course.

A survey conducted in the college of medicine Calabar reveals that the level of knowledge of graduate nurses in nursing informatics is limited chiefly to simply using a computer and do not know the components of nursing informatics (Akpabio & Ella, 2015). The study clarifies that many practising nurses in Nigeria are not aware of the role of information technology, hence do not understand the scope of nursing informatics and seem to show no interest in its implementation in clinical practice. Therefore, the researcher aims at assessing the level of knowledge of nursing informatics and its utilization amongst nurses in Babcock University Teaching Hospital.

II. Material And Methods

Research Design

This study adopted a quantitative method, cross-sectional design to elicit information from 127 nurses in Babcock University Teaching Hospital (BUTH), Ilishan- Remo, Ogun State. Nigeria.

Population

The target population of this study include all the nurses working in various departments comprising of (a) Accident and emergency, (b) Children emergency (CHER), (c) female medical ward, (d) male medical ward, (e) paed ward, (f) obstetrics and gynaecology, (g) female surgical ward, (h) male surgical ward, (i) Renal unit, and (j) General out-patient Department of Babcock University Teaching Hospital, Ilishan Remo which are two hundred and four (204) with different specialities and ranks.

Sample Size and Sampling Technique

A systematic simple random sampling technique was used to collect data for this study, using nurses from each of the ten units of the hospital. The sample size for the study was determined using the Taro Yamaro formula. It is given as

n-N/1 N(e)^2

Where; n= sample size

N=population size

e = the acceptable sampling error (margin error)

This formula was used with the assumption that p=0.5at 95% confidence interval

e = margin error5%=0.05

n = 204/1+204*(0.05) ^2

= 204/1 +204*(0.0025)

= 204/1+0.51

= 204/1.51

= 135

The sample size is 135

Instrumentation for Data Collection

A 25-item pretested questionnaire was used as an instrument for data collection from the respondents. The instrument comprises of three (3) sections:

Section A: This section contains seven (7) items on the respondents' socio-demographic characteristics like gender, tribe, age, religion, years of practice, qualification, and class.

Section B: This aspect encompasses 12 questions on the respondents' nursing informatics knowledge in Babcock University Teaching Hospital Ilishan Remo Ogun state. A dichotomous response scale of "YES" and "NO" was utilized. Furthermore, each correct response was scored as 1 and the wrong response as 0. Thus, the maximum attainable score is 12, and the minimum is 0. Furthermore, a score range of 0 to 2 was considered a low level of knowledge, 3 to 5 as below average, 6 regarded as average, 7 to 9 as above average, and 10 to 12 as high.

Section C: This section contains six (6) questions on the utilization of nursing informatics in Babcock University Teaching Hospital Ilishan Remo Ogun state. A 5-point Likert scale was used: Strongly Disagree, Disagree, Neutral, Agree, and strongly agree. Furthermore, each correct response was scored as 4 and the wrong response as 0. Thus, the maximum attainable score is 24, and the minimum is 0. Furthermore, a score range of 0 to 5 was considered a low level of utilization, 6 to 11 as below average, 12 regarded as average, 13 to 18 as above average, and 19 to 24 as high utilization.

Validity and Reliability of Instruments

The face and content validity of the instrument was established through the judgment of research experts in the field/methodologist and modified based on the inputs. The reliability of the instruments was ascertained by administering the questionnaire once to about 15 nurses working in similar acute healthcare settings, and Cronbach's Alpha Coefficient was used to establish reliability with a value of 0.60 (section B) and 0.70 (section C).

Ethical Consideration

In line with adhering to the ethical guidelines that guide the conduct of research, ethical approval was obtained from Babcock University Health Research Ethics Committee (BUHREC), the administration of Babcock University Teaching Hospital, and the nursing heads of units. A comprehensive explanation of the purpose of the study was given to all the eligible respondents. Verbal informed consent was sought and obtained from each of the participants. They were informed that they have the right to withdraw from the study at any time without penalty. Respondents' identities were protected, and all information retrieved was held with strict confidentiality.

Method of Data Collection

After prior notification and introduction through a letter to the Director of Nursing Science (DNS) as well as the Head of Unit (HOU) in the various units of Babcock University Teaching Hospital, the researcher collected data using a questionnaire constructed by the researcher. The questionnaire was distributed to the participants who gave their responses. The responses were retrieved the same day from the subject.

Method of Data Analysis

The data generated from the questionnaire were coded, organized and analyzed using the statistical package of social sciences (SPSS) version 22. Data analysis include both descriptive and inferential statistics. The descriptive statistics will include tables of frequencies, percentages, mean, and standard deviation to present demographic data, respondents' knowledge and utilization of nursing informatics. Pearson product-moment correlation coefficient was used to test the hypotheses.

III. Result

A total of 135 questionnaires were distributed to assess the utilization of nursing informatics among nurses in Babcock University Teaching Hospital Ilishan. One hundred twenty-seven (127) of the questionnaires were returned and adequately filled, giving a response rate of 94.8%.

Table 1: Socio-demographic data of respondents (N=127)

Variables		**Frequency**	**Percentage (%)**
Gender	Female	101	78.9
	Male	27	21.1
Tribe	Yoruba	86	68.8
	Igbo	31	24.8
	Hausa	4	3.2
	Delta	4	3.2
Age[mean±SD=33±2.3]	20-25	29	22.8
	26-30	24	18.9
	30-35	31	24.4
	36-40	23	18.1
	>40 years	20	15.7
Religion	Christian	102	81.6
	Muslim	12	9.6
	Traditionalist	7	5.6
	Others	4	3.2
Year of Practice	0-5	48	38.1
	6-10	42	33.3
	11-15	19	15.1
	More than 15years	17	13.5
Qualification	RN	36	29.0
	B.Sc	69	55.6
	M.Sc	8	6.5
	Others	10	8.1
	5.00	1	0.8
Cadre	NO II	59	46.1
	NO I	43	32.6
	SNO	8	6.3
	PNO	9	7.0
	ACNO	7	5.5

	CNO	2	1.6

Table 1 shows that (78.9%) are females, 86(68.8%) are Yoruba, 29(22.8%) are within ages 20-25, 102(81.6%) are Christian, 48(38.1%) have practised within 1-5years, 69(55.6%) have BSc, and 59(46.1%) are with the cadre of NO II.

Table 2: Respondents Knowledge of Nursing Informatics (N=127)

Variables	Response	Frequency	Percentage
Nursing Informatics is the integration of nursing science ,computer science and information science	YES	115	89.8%
	NO	9	7%
Nursing informatics plays a vital role in the implementation of clinical application including documentation	YES	107	83.6%
	NO	12	9.4%
Nursing informatics involves use of technology only	YES	62	48.4%
	NO	53	41.4%
The knowledge of computer is enough for the implementation of nursing informatics	YES	63	49.2%
	NO	54	42.2%
Nursing informatics is a very technical specialty that requires a lot of knowledge	YES	107	83.6%
	NO	15	11.7%
The knowledge of nursing informatics among staff nurses should be made a requirement for promotion	YES	78	60.9%
	NO	32	25.0%

Table 3: Summary of Nurses' Knowledge of Nursing Informatics

	N	Minimum	Maximum	Mean	Std. Deviation
knowledge of nursing informatics measured on a 12-point reference scale	127	0	12	7.41[61.7%]	1.287
Valid N [list wise]	127				

Table 2 shows the frequency and the percentages of the respondents' responses on knowledge of nursing informatics. The respondents' knowledge of nursing informatics was found to have a mean score of 7.41(61.7%) measure on a 12-point reference scale is on a scale of 12 (table 3). These findings imply that the respondents' knowledge of nursing informatics was above average (7.41).

Table 4: Utilization of Nursing Informatics (N=127)

Variables	Response	Frequency	Percentage
I use Computer information systems to prevent nurses from making medication errors	agree	61	47.7%
	strongly agree	24	18.8%
	disagree	24	18.8%
	strongly disagree	15	11.7%
	undecided	4	3.1%
I use Computer order entry systems to easily	agree	54	42.25

interpret orders from physician in the management of a patient	strongly agree	35	27.3%
	disagree	20	15.6%
	strongly disagree	8	6.2%
	undecided	11	8.6%
I use the knowledge of Nursing Informatics to enable better collaboration and sharing of patient information with other health care providers	agree	80	62.5%
	strongly agree	38	29.7%
	disagree	8	6.2%
	strongly disagree	0	0.0%
	undecided	2	1.6%
I use the knowledge from Nursing Informatics to perform better assessments and monitoring of patients' diseases and ailments	agree	83	65.4%
	strongly agree	28	22.0%
	disagree	14	11%
	strongly disagree	2	1.6%
	undecided	0	0.00%
The Knowledge of Nursing Informatics helps me utilize research to provide evidence	agree	75	59.1%
	strongly agree	38	29.9%
	disagree	8	6.3%
	strongly disagree	4	3.1%
	undecided	2	1.6%
Nursing informatics helps me reduce time spent on documentation activities	agree	69	54.3%
	strongly agree	45	35.4%
	disagree	7	5.5%
	strongly disagree	4	3.1%
	undecided	2	1.6%

Table 5: Summary of Nurses' Utilization of Nursing Informatics

	N	Minimum	Maximum	Mean	Std. Deviation
respondents' utilization of nursing informatics measured on 24-reference point scale	127	0	24	18.16[75.6%]	4.314
Valid N [listwise]	127				

Table 4 shows the frequency and the percentages of the respondents' responses to the utilization of nursing informatics. The respondents' utilization of nursing informatics was found to be above average, with a mean score of 18.16 (75.6%) measured on a 24-point reference scale (table 5).

Test of Hypotheses

$H0_1$: There is no significant relationship between knowledge of nurses and utilization of nursing informatics

Table 6: Correlation between knowledge and Utilization of Nursing Informatics

Variable			Respondents' utilization of nursing informatics measured on 24-reference point scale
knowledge of nursing informatics	Pearson Correlation	1	-.125
	Sig. [2-tailed]		.163
	N	127	127

The result for table 6 shows that there is no relationship between knowledge and utilization of nursing informatics with a p-value of 0.163.

H02: There is no significant relationship between years of practice and utilization

Table 7: Correlations between years of experience and utilization of nursing informatics

Variable			Years of practice
Respondents' utilization of nursing informatics	Pearson Correlation	1	-.212*
	Sig. [2-tailed]		.017
	N	127	127

Table 7 shows that there is a significant relationship between the utilization of nursing informatics and years of practice of the respondents with p-value of 0.017.

IV. Discussion

The result of the study shows that the majority of the respondents, 101(78.9%) are females, 86(68.8%) are Yoruba, 29(22.8%) are within ages 20-25, 102(81.6%) are Christian, 48(38.1%) have practised within 1-5years, 69(55.6%) have BSc, and 59(46.1%) are with the cadre of NO II. These findings correlate with a study by Ademuyiwa, Faleke and Otetubi (2020), where 82.1% of the respondents were females and the majority between ages 20-25.

The respondents' level of nursing informatics knowledge was found to be above average (61.7%). This result is similar to a previous study by Ademuyiwa, Faleke and Otetubi (2020) that used Cross-sectional descriptive research to assess the level of knowledge and use of nursing informatics amongst nurses in Lagos University Teaching Hospital (LUTH), Idi-Araba, Lagos. Their study result revealed that the overall nursing informatics knowledge among respondents was high 121.5(75%). Similarly, this finding conforms to the study conducted by Akpabio and Ella (2015) on Nurses in Calabar, Nigeria, where a majority of the respondents had a good knowledge of health informatics.

Furthermore, this present study revealed that the respondents' utilization of nursing informatics was above average (18.16(75.6%)). This finding is similar to a study by Ademuyiwa, Faleke and Otetubi[8], which shows that the respondents' overall use of nursing informatics was good 157 (99.4%). However, the study result is not in conformity with a cross-sectional survey conducted by Olajubu, Irinoye, Ogunfowokan and Olowokere (2015) in Osun State, Nigeria, to examine nurses' knowledge and attitude to the use of nursing informatics and determine the extent to which nursing informatics is being utilized in practice. The study result revealed a low utilization of nursing informatics due to limited access to computer facilities in Osun State.

H01: There is no significant relationship between the knowledge of nurses and utilization of nursing informatics in Babcock University Teaching Hospital

This study shows that there is no significant relationship between the respondents' knowledge and utilization of nursing informatics, with a p-value of 0.163. Therefore, the researcher fails to reject the null hypothesis. What this implies is that the respondents' present level of knowledge is not sufficient enough to cause them to utilize nursing informatics. This result is in line with a previous study by Ademuyiwa, Faleke and Otetubi (2020), who found out that there was no statistically significant relationship between the respondents' knowledge and the use of nursing informatics, which indicates that their knowledge does affect the respondents' use of nursing informatics.

H02: There is no significant relationship between years of practice and level of utilizing nursing informatics among nurses in Babcock University Teaching Hospital

In addition, the result of this study shows that there is a significant relationship between the nurses' years of practice and utilization of nursing informatics with a p-value of 0.017. Therefore, the null hypothesis was rejected. The findings suggested that nurses with more years of work experience were less likely to use nursing informatics than nurses with fewer years of work experience. This finding is anticipated due to the recent introduction of the 'use of computer' as a course into the nursing education curriculum. The older nurses may not have had requisite exposure to ICT knowledge and application.

The findings of this study confirm the result of a previous study by Sukums, Mensah, Mpembeni, Kaltschmidt, Haefeli, and Blank (2014). They found that respondents with five or fewer years of experience reported higher computer knowledge than respondents with 11 or more years of professional experience (67.4%), followed by those with 6 to 10 years of work experience (46.2%). In addition, the present study finding is in line with a previous study by Adedeji, Irinoye, Ikono, and Komolafe (2018), who revealed a statistically significant relationship between the use of the EHR (MINPHIS) and years of working experience (p = 0.007). Adatara, Baku, Atakro, Adedia, and Jonathan (2019) also identified years of practice as one of the factors that significantly influenced the use of information and communication technology among nurses in Ghana.

V. Conclusion

The study concluded that the respondents had an above-average level of nursing informatics knowledge and utilization, respectively. Therefore, knowledge of nursing informatics needs to be improved upon among the respondents via continuous education programmes, seminars, and conferences to maintain and develop medical data and systems to support nursing practice and improve patient care outcomes.

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