

Use of Mobile Phone for Knowledge Update among Nurses in Primary and Secondary Healthcare Settings in Sokoto State

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Abstract: Prior to their professional carrier, nurses pass through a rigorous training in either schools of nursing or departments of nursing science in Nigerian universities. The basic professional education they obtained in these institutions is not sufficient for a life time practice. For nursing to be of high quality, the nurse will need to continuously update him/herself not only in the knowledge specific to nursing but to have vast knowledge in other related disciplines. Nigerian nurses face numerous challenges in updating their knowledge. These challenges notwithstanding, the nurses still have a professional obligation for safe practice supported by up-to-date knowledge which mobile phone has great potentials to provide. This study examined the use of mobile phone among nurses in primary and secondary healthcare settings in Sokoto State. It is a descriptive design in which 15 primary and 5 secondary healthcare facilities in Sokoto State were involved. Proportionate stratified random sampling technique was used to select 251 nurses in Sokoto State. A self-administered pre-tested questionnaire with 47 close-ended questions and 2 open-ended questions was used to collect the data. The Cronbach alpha reliability co-efficient of $\alpha=0.73$ was achieved for the instrument. There was 84% response rate. The results showed that the level of nurses' knowledge in the States was Good (33%). There was high adoption of mobile phone among the nurses in Sokoto State (100%). The nurses' main driving force for the use of mobile technology was general knowledge update (51%) and the main factors restricting respondents from the use of mobile phone were unreliable connection to the network (74%) and too many work demands (70%).

Keywords: Mobile phone, Knowledge update, Nurses, Use, Primary and Secondary Healthcare Settings.

I. Background

Mobile phones improve significantly the access to knowledge any time from any place through diverse and capable handheld devices. The continued education of nurses in the context of a rapidly changing healthcare system is a prime example of how the mobility of learners within a variety of real life learning environments has posed increasing challenges and where mobile phones have the potential to supports and enhance teaching and learning (Richard, Caroline, Joselyne, Pamela, Jan ,2008).

The objectives of this study are to:

- i. examine the extent to which nurses are knowledgeable about the use of mobile phone for knowledge update;
- ii. determine the extent to which nurses use mobile phone; and
- iii. identify factors influencing the use of mobile phone among nurses.

The study is intended to help raise the awareness among nurses about the potential importance of the use of low cost mobile phones in updating their knowledge. Mobile phones have the potential to address some of the challenges faced by nurses by bringing the most relevant information directly to the point of care. Providing information through convenient electronic sources may address some of the barrier that inhibit access and clinical use of new and relevant research by nurses.

Various studies have been conducted on the use of mobile phones among nurses.

Richard et al (2009) opined that the education of health care professionals in the context of a rapidly changing health care system is a prime example of how the mobility of learners within a variety of real life learning environments has posed increasing challenges and where mobile phones have the potential to support and enhance teaching and learning. The high acuity and pace of practice in institutional environments, combined with an explosion of knowledge and technology, increasingly requires practitioners to access and process data efficiently by drawing on current resources to support safe care and evidence informed practice at the point of care. Moreover, the shift of client care to the community requires that the education of health care professionals take place increasingly in this more autonomous and diverse practice environment where resources are not readily accessible, where client acuity is increasing, and where more traditional methods of directly observing and working with students are not as feasible. These shifts in practice, along with more limited education and

practice resources to support students' practice, raise concern for the quality of their education and the safety of their practice. This is particularly significant for rural practice education where resources are limited and geography poses additional challenges (Richard et al 2009).

The utilization of mobile phone in nursing practice has not been confined to acute care settings. George and Davidson (2005) noted that nurses are utilizing the new technology to enhance their practices in both long term care and community-based sites. Community based nurses are using mobile devices to provide patient teaching information and to track patient progress.

The literature reviewed showed that many studies were conducted on the use of mobile phones particularly among nurses in western part of the world but in Nigeria little is documented about the extent to which nurses are knowledgeable and the extent to which they utilize mobile phone for knowledge update, hence the need for this study.

II. Methodology

Study design: A descriptive research design is adopted for the study. The descriptive design was chosen to gather and document information on the use of mobile phone for knowledge update among the nurses in primary and secondary healthcare settings in Sokoto State.

Population: The target population constitutes all the registered nurses working in primary and secondary healthcare settings in Sokoto state. This constitutes 676 nurses.

Sample and Sampling technique: A proportionate stratified random sampling technique was used for this study. Sample size was determined using the Yamane's formula, $n = \frac{N}{1+N(e)^2}$ where n=sample size, N=the target population, and e= sampling error at 95% confidence interval=0.05. Using the formula, 251 nurses were selected randomly from five secondary healthcare facilities and fifteen primary healthcare facilities in Sokoto state.

Method of data collection: A data collection instrument in form of a questionnaire adapted from the Australian Nursing Federation study on nurses and information technology was used to collect the data related to the nurses' use of mobile phone for knowledge update. The questionnaire comprised of forty seven closed ended questions and two open-ended questions. A Cronbach alpha reliability co-efficient of $\alpha=0.73$ was established by the researcher. The questionnaire was divided into two sections. Section A collected data on the socio-demographic variables of the nurse-respondents, Section B collected data related to the three objectives of the study. Participants were selected on the criteria of being a nurse or midwife that had worked for at least one year at the study site. A list of all the nurses in the health facilities was obtained and the required number of nurses were selected randomly. The two hundred and fifty one questionnaires were given to the randomly selected respondents by face to face contact. Two hundred and ten (210) nurses in Sokoto State participated in the study.

Research Ethics: Approval was obtained from the Ethical Review Committee of the Institute of Public Health, Obafemi Awolowo University, Ile-Ife. Permission of the Director of Nursing services of the State was sought. Permission from the Department of Nursing Sciences of the Obafemi Awolowo University, Ile-Ife was also obtained. The participants were allowed to participate on their own volition- their consent was obtained. Confidentiality and anonymity of the information collected was assured.

Limitation of the study: The small sample size will no doubt affect the generalization of the study. Reluctance of some nurses to answer the questionnaire items has led to 84% response rate.

Data analysis: The data was analyzed using both descriptive and inferential statistics. The data was presented in frequency distribution such as percentages to summarize and provide clear description of the data from sample. Statistical package for social sciences (SPSS) version 19.0 was used to analyze the precoded data on an item by item basis. The hypotheses were tested by cross-tabulations using the Pearson's chi-square. Consistent with other analyses, a relationship was considered meaningful if $p < 0.05$.

III. Results

Table 1: Socio-Demographic Characteristics of Nurse-Respondents

Socio-demographic Characteristics	Frequency	%
SEX		
Female	128	61.0
Male	82	39.0
AGE(years)		
21-25	26	12.4
26-30	65	31.0
31-35	43	20.5

36-40	32	15.2
41-45	16	7.6
46-50	20	9.5
51-55	6	2.8
56-60	0	0.0
PROFESSIONAL QUALIFICATION		
RN	95	45.2
RM	23	11.0
Post basic	84	40.0
BNSc/BSc	8	3.8
TYPE OF HEALTH FACILITY		
Primary Healthcare Facility	59	28.1
Secondary Healthcare facility	151	71.9
RANK/POSITION		
Nursing Officer II	41	19.5
Nursing Officer I	70	33.3
Senior Nursing Officer	39	18.7
Principal Nursing Officer	14	9.5
Assistant Chief Nursing Officer	8	3.8
Chief Nursing Officer	38	18.2
Deputy Director Nursing Service	2	1.0
YEARS OF WORKING EXPERIENCE		
1-5 years	70	33.3
6-10 years	70	33.3
11-15 years	22	10.5
16-20 years	12	5.7
21-25 years	27	12.9
26-30 years	9	4.3

The table above shows that majority of the nurse-respondents were females(61.0%). High proportion of the respondents were within the 26-30 years(31%) and 31-35 years(20.5%) age range. Majority of the respondents (45.2%) possessed RN qualification. Significant proportion (40.0%) possessed post-basic qualification in psychiatry, ophthalmic, perioperative, orthopaedic, paediatric, and public health nursing. Most of the respondents (71.9%) work in Secondary healthcare settings. Significant proportion of the respondents were at the rank of Nursing Officer I (33.3%) and that the highest proportion of the respondents have worked for only 1-5 years or 6-10 years(33.3% each). This indicates that most of the respondents are beginners in the profession.

Table 2: Summary of the respondents' level of knowledge about the use of mobile phone for knowledge update:

Level of knowledge	Frequency	%
Excellent (80-100%)	27	12.9
Good (60-79%)	68	32.5
Average (50-59%)	64	30.2
Poor (40-49%)	33	15.8
Very poor (0-39%)	18	8.6
Total	210	100.0

Table 2 above shows that over 70% of the respondents have their level of knowledge on the use of mobile phone for knowledge update as average or better. This indicates that nurses in Sokoto State are knowledgeable about use of mobile phone for knowledge update.

Table 3: Utilization of Mobile phone among nurse-respondents

Variables	Frequency	%
A. TYPE OF MOBILR PHONE USED		
Internet enable	112	53.3
Not internet enable	98	46.7
B. WHAT THE RESPONDENTS USED THE MOBILE PHONE FOR		
General Communication	210	100.0
Professional knowledge update	18	8.6
General knowledge update	14	6.7
Game/Leisure	62	29.5
Income generation	4	1.9

Client/patient care	2	0.9
Improvement on job	6	2.9
Storage of information	12	5.8
Nursing skills improvement	4	1.9

Table 3 shows that majority of the respondents (53.3%) indicated that they use mobile phone that is internet enabled. All the respondents used the mobile phone for general communication and significant proportion (29.5%) of the respondents used the device for game/leisure. Very few of the respondents used the technology for professional and general knowledge update (8.6% and 6.7% respectively).

Table 4: Professional knowledge sought by the nurse-respondents with the use of mobile phone

KNOWLEDGE	Frequency	%
Care of pressure areas	7	38.8
Routine immunization	5	27.8
Nursing Research methodologies	3	16.7
Nurses' responsibilities in drug administration	3	16.7
Total	18	100.0

Table 4 above shows that of the 18 respondents that indicated they used mobile phone for professional knowledge update significant proportion of the nurse-respondents(38.8%) stated that they sought knowledge on the care of pressure areas with the use of mobile phone, followed by knowledge on routine immunization (27.8%).

Table 5: Factors motivating nurse-respondents' use of Mobile phone

Variables	Frequency	%
Driving Force For The Use Of Mobile Technology		
Professional knowledge update	58	27.6
General knowledge update	101	48.1
Communication	45	21.4
Others	6	2.9
Total	210	100.0

Table 5 above shows that high proportion of nurses (48.1%) stated that general knowledge update was their main driving force for the use of mobile phone, followed by 27.6% of the respondents who indicated that professional knowledge update was their main driving force for the use of mobile phone. Significant proportion of the respondents (21.4%) indicated that communication is their main driving force for the use of mobile phone.

Table 6: Factors Restricting Respondents from use of Mobile phone for professional knowledge update

Factors restricting respondents	Never		Rarely		Sometimes		Very often		Always	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Lack of appropriate Mobile phone	53	25.2	55	26.2	48	22.9	32	15.2	22	10.5
Time to log on is too long	38	18.1	35	16.7	101	48.1	22	10.5	14	6.7
Unreliable connection to Network	26	12.4	28	13.3	124	59.0	20	9.5	12	5.7
Discouragement by others	107	51.0	44	21.0	43	20.5	10	4.8	6	2.9
Too many other work demands	21	10.0	42	20.0	82	39.0	45	21.4	20	9.5
My age	142	67.6	28	13.3	22	10.5	16	7.6	2	1.0
Lack of money	67	31.9	42	20.0	81	38.6	14	6.7	6	2.9
Lack of interest	113	53.8	53	25.2	34	16.2	4	1.9	6	2.9
Concern about my health	61	31.1	47	24.0	66	33.7	10	5.1	12	6.1
Erratic power supply	67	31.9	42	20.0	81	38.6	14	6.7	6	2.9

Table 6 presents the data results of the factors restricting the effective use of mobile phone by the nurses. Significant proportion of respondents (22.9%) stated that lack of appropriate mobile phone sometimes restrict their use of mobile phone. Considerable proportion of the respondents (48.1%) opined that too long logging time sometimes restrict their use of mobile phone. More than half of the respondents (59.0%) stated that unreliable connection to the network sometimes restrict their use of mobile phone. Significant proportion of the respondents (more than 30% each) mentioned that too many work demands, lack of money, concern about their health, and erratic power supply sometimes restrict them from using mobile phone effectively

IV. Discussion

The findings of this study revealed that female nurse – respondents were the majority. This is not a coincidence because nursing as a profession is often regarded by many people as a feminine discipline. And this result is in agreement with most of the studies conducted on nurse-respondents (Hill & Roldan, 2005; Hegney, et al 2007; Olatokun & Adeboyejo 2009;). Most of the nurse-respondents were in the 26-30 years and 31-35 years

age groups, indicating that the profession is dominated by the young nurses in the state. This is contrary to a study conducted by Abubakar et al (2014) where majority of the nurses in Osun state were within the 46-50 years age group, indicating that most of the nurses in the state are approaching their retirement age. Also, majority of the nurses worked in secondary healthcare settings. Nurses most of the time tend to avoid rural settings where most of the primary healthcare facilities are located. To ensure adequate number of nurses in our primary healthcare facilities, government should provide the needed social amenities like clean water, electricity and good roads in our rural areas.

The results of this study revealed high adoption of mobile phone. These findings were in agreement with the findings of similar studies among health personnel in Nigeria. Idowu, et al 2003 reported that while ICT capabilities(personal computers, mobile phones and internet) were available in Nigerian hospitals, mobile phone were spreading fastest. As in this study also, various studies in developed countries demonstrated high adoption of mobile phones among nurses (Newbolt,2003; Mucano,2007; Jefe, 2011). However, earlier studies by Adeyemi and Ayegboyin(2004) have presented a contrasting results. In their surveys involving four general hospitals, 10 primary healthcare centres and 6 private hospitals in Nigeria, only 65% had access to mobile phones but not necessarily their own. The sex differentials among respondents on the use of mobile phones, showed that both male and female nurses equally use mobile phones. However, there was significant difference between male and female nurse- respondents in the use of these mobile phones for professional knowledge update. The findings of this study gave some credence to the results of previous studies that technology is a male sphere. Various researches have also shown that boys have greater interest in technology than females (Enochsson,2005).The use of mobile phone across the different qualifications showed that nurse- respondents across the different qualifications level use mobile phone equally.

Majority of the nurse-respondents used mobile phone for general communication and for leisure/game. Findings from this study are in contrast with findings from Rosenthal's work (2003). Rosenthal's findings showed that nurses used mobile technology for healthcare services as diagnostic tools, clinical guidelines, lab values etc. Similarly, cahoon, 2002 reported that nurses used mobile technologies mostly for clinical services. Lack of practical application of mobile phone in this study might be related to poor knowledge of the nurses on the clinical applications of this device. However, findings from this study are in agreement with results of Davenport's study. Davenport (2004) reported that nurses identified 68 uses of mobile technology which include access to current information and improved team communication.

Furthermore, this study indicates high level of knowledge among the nurse-respondents in Sokoto State on the use of mobile phone. Findings on the level of nurse –respondents' knowledge in this study are in disagreement with Adeyemi and Ayegboyin(2004) opinion. Their findings revealed that only 7% of the surveyed health workers in Lagos, Nigeria have good knowledge on the use of ICT. The improved knowledge level as demonstrated in this study might be as a result of the growing awareness of the importance of mobile phone in healthcare delivery.

With respect to the factors influencing the use of mobile phone among the nurse- respondents, various factors were identified as influencing their use of mobile phone. General knowledge update was the main driving force for the use of mobile phone. This study has demonstrated that the most important factor encouraging the use of mobile phone by the nurse respondents is knowledge update. Nursing is a knowledge intensive profession, therefore nurses considered it important to make use of mobile phone to update their knowledge continuously.

On the factors restricting respondents from the use of mobile phone, significant proportion of nurse-respondents were restricted by lack of appropriate mobile phone, too long logging time, unreliable connection to the network, erratic power supply and too many work demands.. Some of the identified restricting factors in this study has shown credence to the study conducted by Olatokun & Adeboyejo (2009).

V. Conclusion

To continue to be relevant and accessible, nursing education must be creative and receptive to alternative approaches to education. Distance learning, as a technology-mediated strategy, can play a vital role of bridging the educational gap that exists between the disadvantaged nurses working in hard to reach settings and their counterparts in urban settings. With high adoption of mobile phone as demonstrated in this study, distance learning programme in nursing can be promoted through the adoption of this technology in nursing education.

VI. Recommendations

Based on the findings of the research study, the federal government of Nigeria should provide wireless internet facilities to all healthcare facilities in the country. This will allow optimal utilization of mobile phone in health and nursing profession in particular. The nursing and midwifery council of Nigeria should adopt the use of mobile phone in its MCPDP for nurses i.e. the programme should be taken online in order to encourage nurses to make use of mobile phone for their professional knowledge update. In liaison with the mobile

networks in the country, the Nursing and Midwifery Council of Nigeria should be updating nurses with current findings of research studies conducted in nursing. This can be achieved through text messages or e-mail messages to all the nurses in the country. Therefore, the council should collect the mobile phone numbers and e-mail addresses of all the nurses in the country. The Sokoto State government should organize workshops and seminars to enlighten our nurses on the use of mobile phone for professional knowledge update. The National Association of Nigerian Nurses and Midwives (NANNM) should produce and disseminate range of resource demonstrating ways that mobile phone can be used for the purpose of nursing care. This will facilitate the adoption of mobile phone by nurses for clients/patients care. The NANNM should also source for research grants for nurse researchers to investigate the impact of mobile phone on nursing care. This will give guide to areas that need adjustment with regard to use of mobile phone in nursing care.

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