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Computer Literacy and its Perceived Usefulness among Nurses Working in Murtala Muhammad Specialist Hospital, Kano

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Abstract

Worldwide, information technology (IT), specifically computers and health information systems, are being integrated into many clinical arenas. There is evidence that, when successfully implemented, this technology can significantly improve clinical practice and care delivery, also, the survival of nursing depends on its embracing of technology. This study aims to determine the **computer literacy and it perceived usefulness among nurses**. Cross sectional descriptive research design was used; the total number of population for the study was 258. 173 respondents were chosen as the sample size using slovin's formula with 10% attrition. A convenient sampling technique was employed for the study. A structured questionnaire adapted by the researcher and developed from the literature review was used as instrument for data collection. Data were analyzed using Statistical Package for Social Sciences (SPSS version 23.0) Data were presented using frequency distribution tables and

simple percentages. Major findings revealed that close to half of the nurses (45.0%) have good knowledge of computer, more than half of the nurses (53.1%) perceived computer literacy to nursing profession to be good and 93.1% see lack of personal computer as a barrier to computer literacy. The study concluded that the majority of the nurses have good perception regarding computer literacy to nursing profession, it also found that less than half of the nurses have good knowledge of computer. The study recommends that for best practices, there is need for improvement in computer literacy among nurses which can be exploited in practice when new IT applications are implemented on daily practice in the hospitals.

Keywords: perception, nurses, computer literacy, nursing informatics, nursing profession.

Introduction

Worldwide, information technology (IT), specifically computers and health information systems, are being integrated into many clinical arenas. There is evidence that, when successfully implemented, this technology can significantly improve clinical practice and care delivery, also, the survival of nursing depends on its embracing of technology, arguing that "as the volume of information increases, the half-life of knowledge is decreasing"(Cross and MacDonald, 2013).

According to Kuek & Hakkennes (2020), computers in health (e-health) specifically in nursing have been identified as very beneficial. Nursing activities incorporated into informatics are functional from patients' admission, care planning, discharge and follow ups. Activities like cost analysis, procedure manual, drug dosage calculation, finding trends for budget purposes and nursing electronic/online learning programmes have been made possible through the advancement of ehealth (Kahouei, et al, 2014).

In today's technological and information era, there is a need to have a vast knowledge on the operation of computer systems for managing and controlling of information flow. Information system (IS) is rapidly applied in health care systems for managing and rendering services in patient care. The extent to which nurses move to a paperless system is dependent on their beliefs about IS (Abdrbo, et al., 2015).

Nowadays, the nursing system is developing various new methods for applying computers and information technology as a useful tool. Nursing computer-based programs such as the Nursing Information System (NIS) enable nurses to collect, store, and recover data. They also have the ability to integrate clinical data with nursing administration resources and services for the management

of nursing activities, improvement of patient care and the advancement of nursing knowledge (Salameh et al. 2019).

Computer is a type of information technology that has become part of everyday life for many people. Its use in health care delivery is no longer a thing of debate as computers are used for educating students and clients; assessing, documenting and testing client's health conditions; managing medical records; communication among health care providers and clients; and conducting nursing research. It is necessary that nurses must have a basic level of computer literacy in order to perform jobs (Kritsotakis et al. 2021)

National League for Nursing, states that computer literacy content focuses on computer basics and the use of generic software applications such as word processing, databases, presentation software, and the use of electronic communication such as email (Longhini et al. (2022).

Computer literacy is the foundation of information literacy – a broader concept for abilities for information search, retrieval, evaluation, usage, processing, and presentation (Longhini et al. (2022).

According to Ajuwon and Odusanya (2004) quoted by Kritsotakis et al. (2021), knowledge and utilization of information technology among health care professionals was poor. With increasing demands for efficient health care delivery system, it can be said that computers are now a necessity in order to improve nursing practice which encompasses nursing education, nursing research, nursing administration and the nursing process as a whole. Nurses have been slow to adopt computer technology despite their recognition that technology is an essential tool for both practitioners and administrators. When computer technology and information systems are not integrated into nursing practice, patients can be placed at risk, as nurses might not have the access to timely information to guide their decision-making. Appropriate use of technology also enables nurses and other care providers to achieve the high output demanded by the public and governments (Cross and MacDonald, 2013).

Kuek & Hakkennes (2020) reported that gradually, nursing informatics has emerged as a global specialty in professional nursing practice although some developing countries are still lagging behind in this scope. Notwithstanding this gradual rate in the general acceptance and development of e-health and nursing informatics studies have shown that some African and Asian countries have made some headway.

According to Kahouei, et al (2014) stated that traditionally, nurses have found information technology as a disturbance to their established practice patterns and a distraction from bedside patient care. Nurses' acceptance or satisfaction of the application of clinical computer-based program has been considered a critical factor for the successful implementation of information system to adopt a new technology, the criteria such as the advantages of using the system, compatibility with values, user-friendliness, flexibility and obvious usage outcomes are evaluated by users. With the increasing versatility and

power of personal computers, the use of information technology has a central role in all areas of health care delivery.

However, many staff dislike using computers and often it is left to one or two people to use the machine. Therefore, every nurse needs appropriate knowledge and skills about computers. Nurses' noncompliance is usually considered to be a natural reaction. The identification of these challenges and related factors can be used for developing strategies to assist nurses in designing a more developed computer program (Kahouei, et al, 2014).

According to Cross & MacDonald (2013) none of the published studies on nurses' use of computers and IT has qualitatively explored nurses' understandings of and experiences with computer technology; thus there was little about the perceived value of computerization in nursing practice.

One of the greatest challenges of e-health and nursing informatics of developing countries has been the fewer numbers of computers. Developed countries approximately stand at a ratio of 1:1 in the person to computer utilization while most developing countries in Africa stand at 1: 100 ratios. This ratio is even worse in the rural areas or occurring at a very slow pace, predominantly in government health-care institutions (Kuek & Hakkennes (2020).

However, observations have shown that many practicing nurses in Nigeria seem to show no interest in the use of computer. Kritsotakis et al. (2021) confirmed that utilization of information technology by health care professionals in Nigeria is low as it was evidently shown by lack of installed computers in every ward in Murtala Muhammad Specialist Hospital, Kano and the available ones are lying without being utilized by nurses.

Therefore, there is a need to determine the knowledge of nurses and understand their perception on the usefulness of computer to nursing profession, hence the basis of this study.

Methods

Study design

A cross sectional descriptive research design was utilized for this study

Study Area

Murtala Muhammad Specialist Hospital is located in Kano Municipal local government of Kano state north-western Nigeria, the local government area covers an area of 17 square kilometers and has a population of 365,525 people based on 2006 census. MMSH is located within the Latitude of $11^{o}57'07''^{N}$ and longitude of $8^{o}32'25''^{E}$.

The hospital was established in 1926, formerly known as Kano city hospital but following the death of General Murtala Muhammad in 1976, it was renamed after him as a city hospital with a capacity of 16 beds.

The hospital became a specialist hospital in 1997. The hospital is enclosed within the walls of old Kano state. It is about 200 meters from Kofar Mata (gate). It serves the majority of

people from Kano city and also from all the 44 LGs of Kano state, it also serves people from neighboring states and sometimes neighboring Countries like Niger and Mali republic. It currently has about 20 departments, 250- beds (Statistics Offices HMB, Kano State Ministry of Health)

Study population

The study population included all the registered nurses, that is, 258 who are working in Murtala Muhammad Specialist Kano State.

Sample size

A total sample size of 173 nurses working in Murtala Muhammad Specialist Hospital Kano was used for the study.

The sample size was calculated using the Slovin's formula (Nicholson & Damons 2022).

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

Where;

n = number of samples,

N = total population

e = Error tolerance.

Therefore;

N = 258

e = 0.05

$$n = \frac{258}{1 + (258 \times (0.05^2)}$$

= 156.8 =157.

Using attrition of 10%, (16) the sample size was 173.

Data Collection

Data was collected using a self-administered structured questionnaire which consists of three sections; the first section (section A) focuses on the socio-demographic characteristics of the respondents while the second and third (sections B & C) focuses on the specific objectives respectively. The questionnaire was adapted from two structured questionnaires from Barrera & Lamprecht (2012) and Kipturgo, et al (2014).

Data Analysis

Data analysis was computer aided using SPSS Software (version 23.0). Descriptive statistics such as frequency distribution and tabulation, simple percentages, measures of central tendency (mean), measures of dispersion (standard deviation) were used.

Ethical consideration

Ethical approval was issued by the Kano State Ministry of Health dated 6th August, 2018 with reference number: **MOH/Off/797/T.I/904.**The ethical approval was submitted to the Management of Murtala Muhammad Specialist Hospital Kano (Office of the Chief Medical Director) for approval to commence the study.

Result

Table 1 Sociodemographic characteristics of Respondents (n = 160)

Socio-demographic characteristics	n	%
Age		
30-41	80	50.0
18-29	41	25.6
42-53	30	18.8
54 and above	9	5.6
Mean=34.2, SD±5.49		
Gender		
Female	98	61.3
Male	62	38.8
Religion		
Islam	147	91.9
Christianity	13	8.1
Marital status		
Married	113	70.6
Single	45	28.1
Widow	2	1.3
Occupational rank		
Nursing officer (NO)	63	39.4
Chief nursing officer (CNO)	39	24.4
Senior nursing officer (SNO)	37	23.1
Principal nursing officer (PNO)	15	9.4
Assistant chief nursing officer (ACNO)	6	3.8
Highest educational qualification		
Basic nursing certificate	69	43.1
Post-basic nursing certificate	48	30.0
Bachelor degree in nursing science	43	26.9
Duration of nursing experience		
Less than one year	22	13.8
1-5 years	54	33.8
16 years and above	36	22.5
6-10 years	33	20.6
11-15 years	15	9.4
Computer literate		
Yes	120	75.0
No	40	25.0

Table 1 shows that half of the respondents (80) representing 50.0% of the studied population are between the age ranges of 30-41 with mean age of 34.2±5.49, almost two third of the respondents (98) representing 61.3% are females. Nursing officer (NO) constitute large percentage of the respondent 63 (39.4%) with basic nursing certificate as their highest qualification (43.1%), one third of the respondent had 1 -5 years working experience. The table also shows that three fourth of the respondents (120) representing 75.0% are computer literate.

Table 2 Distribution of respondents by their level of computer literacy (n=160)

S/N	Computer literacy	True		False	
		n	%	n	%
1.	Booting is the process of putting on the computer	140	87.5	20	12.5
2.	The term hardware refers to the computer's physical components, such as the monitor, keyboard, memory chips, and hard drive.	136	85.0	24	15.0
3.	Network is a group of independent computers attached to one another through communication media	134	83.8	26	16.2
4.	A mouse is a pointing device used to move a pointer on the screen and to make selections	132	82.5	28	17.5
5.	Internet Browser is software that is used to view web pages	124	77.5	36	22.5
6.	The CPU writes data and instructions in a storage devices and performs calculations and other data processing	120	75.0	40	25.0
7.	The task bar at the bottom of the screen displays icons and titles of all programs or folders currently active on the screen	118	73.8	42	26.2
8.	Microsoft Access is a program used to create documents such as letters, essays, and resumes	115	71.9	45	28.1
9.	It is preferable to shut down the computer than pressing the power button to turn off	101	63.1	59	36.9
10.	Uploading is the process in which a user sends computer information from his computer to another computer through modem	101	63.1	59	36.9
11.	WWW stands for World Word Web	100	62.5	60	37.5
12.	The term output refers to the set of instructions that directs the hardware in a computer to accomplish a task	92	57.5	68	42.5
13.	Keyboard is an output device	89	55.7	71	44.3
14.	ISP stands for Internet Service Presenter	89	55.6	71	44.4
15.	MAN is used to communicate from one city to another	86	53.7	74	46.3
16.	Collection of 1024 Bytes is 1GB	82	51.2	78	48.8
17.	The monitor is an output device which produces output on paper	75	46.9	85	53.1
18.	Ms-Power Point is not a presentation program	57	35.6	103	64.4
19.	Floppy Disk is not a storage device	54	33.8	106	66.3
20.	Computers can only be used for work	35	21.9	125	78.1

Knowledge scale	**<50 (poor)**		**50-69 (moderate)**		**70-89 (good)**		**>90 (excellent)**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**
	30	18.8	54	33.8	72	45	4	2.5

Table 2 shows that about half of the respondents (72) representing 45.0% had good knowledge on computer while only 4 (2.5%) had excellent knowledge, while less than one fourth of the respondents 30 (18.8%) have poor knowledge.

Table 3 Respondents perceived usefulness of computer literacy to nursing profession among nurses (n=160)

S/N		Variable	Agreed		Disagreed	
			n	%	N	%
1.	1.	Paperwork for nurses can be reduced greatly by the use of computers	135	84.4	25	15.6
2.	2.	Computers save steps and allow the nursing staff to become more efficient	132	82.5	28	17.5
3.	3.	Computerization of nursing data offers nurses a remarkable opportunity to improve patient care	130	81.3	30	18.7
4.	4.	Computers make nurses job easier	126	78.7	34	21.3
5.	5.	The more computers in an institution, the less number of jobs for employees	107	66.9	53	33.1
6.	6.	Confidentiality will be sacrificed by patient records being computerized	105	65.6	55	34.4
7.	8.	Increased computer use will allow nurses more time to give patient care	94	58.8	66	41.2
8.	12.	Computers can cause an increase in communication between hospital departments	58	36.3	102	63.7
9.	13.	Nursing data cannot be manipulated using computers	56	35.1	104	64.9

The table 3 shows that four items of the nine items questionnaire had more than 70% with more than three fourth of the respondents (135) representing 84.4% of the study respondents agreed that paperwork for nurses can be reduced greatly by the use of computers, computers save steps and allow the nursing staff to become more efficient (82.5%) and computerization of nursing data offers nurses a remarkable opportunity to improve patient care (81.3%).

Table 4 Perceived Barriers to computer literacy among nurses

S/N	Barriers to computer literacy among nurses	Yes		No	
		N	%	N	%
1.	Lack of personal computers	149	93.1	11	6.9
2.	Unavailability of computers in the work place	141	88.1	19	11.9
3.	Unstable electricity	135	84.4	25	15.6
4.	Low IT knowledge and skills	125	78.1	35	21.9
5.	Work load	121	75.6	39	24.4
6.	Shortage of staff	114	71.3	46	28.8
7.	Unreliable network	111	69.4	49	30.6
8.	No interest in computer	100	62.5	60	37.5
9.	Lack of confidence	91	56.9	69	43.1
10.	Discouragement/lack of motivation	85	53.1	75	46.9
11.	Aged	63	39.4	97	60.6
12.	**Others**	**Responded**		**No response**	
a.	High cost of computers, unable to get one	8	5.0	143	89.4
b.	Lack of time to go for the training	6	3.8		
c.	Inability to provide computers by the government and lack of government interest due to self interest	3	1.9		

The table 4 shows that more than three fourth of the respondents (149) representing 93.1% said that lack of personal computers is a barrier to computer literacy among nurses. More than three fourth of the respondents (141) representing 88.1% attributed the unavailability of computer in the work place to be a barrier to computer literacy among. Also from the above table, more than three fourth of the respondents (135) representing 84.4% attributed the barrier to unstable electricity.

Discussion

The sociodemographic characteristics of the respondents showed that half of the respondents (50%) were between the ages of 30-41 and a mean age of 34.2±5.49, this is in accordance with a study by Kahouei et al (2014) which shows that more 60% of his study population are below the age of 40 years and this could be due to the increase in the number of retirees and increase in the number of institutions offering the course. This is also in contrast with findings by Bimerew and Chipps, (2022) were the average age of the respondent in the study was 40.9+_10.2. This findings also corroborate with the findings of Aanuoluwapo et al, (2014) that the respondents were young, still within active age of government service and have more years to spend in professional practice. More anticipatory years of career growth in professional practice by young nurses makes demand for appropriate competence in informatics for efficiency and effectiveness in contemporary health care system moderated by technology. The study also revealed that more than half of the respondents (61.3%) were females, which could be due to the fact that majority of people have the perception that nursing profession is female-dominated, hence prefer to take their female child rather than the male. Still affirming the Royal College of Nursing (2022) submission that conventionally, nursing is a female-dominated profession but there is need for the best of people from both genders to come into the profession.

The study also revealed that more than one third 69 (43.1%) possess certificate of basic nursing which is in line with Bimerew and Chipps, (2022) who stated that 46.2% had diploma in nursing with nursing officer forming the workforce which implies that they have less years of experience or are not continuing with education. This finding on computer literacy was anticipated due to the recent introduction of the 'use of computer' as a course into the nursing education curriculum, of which the older nurses may not have had requisite exposures to ICT knowledge and application which corroborate the findings of (Aanuoluwapo et al., 2014).

The findings of the study revealed that less than half of the respondents (45.0%) had good computer literacy, this is in contrast with the result of a study by Raja (2004) in India revealed that majority of the nurses had good computer knowledge. It is also not in line with the finding of Aanuoluwapo et al. (2014) which states that majority of the respondents had good knowledge of nursing informatics across the levels of health

facilities which could be said to be due to the effect of the inclusion of basic computer knowledge into the nursing education curriculum by the developed countries and recently included in Nigeria.

The study reveals that more than three fourth of the respondents (84.4%), 82.5% and 81.3% had the perception that paperwork for nurses can be reduced greatly by the use of computers, computers save steps and allow the nursing staff to become more efficient and computerization of nursing data offers nurses a remarkable opportunity to improve patient care respectively. This is in line with Salameh et al. (2019) and Kahouei et al, (2014) who stated that nurses agree that computer helps in programming nursing care and minimizes error. Only 36.2% agreed that communication between departments can improve by use of computers probably because of their perception that only the staff nurses will have access to the information. They also agreed that computers were useful in healthcare facilities and contributed to effective service delivery. The positive perceptions and attitudes were also noted in such statements as, using computers makes my job easy to perform, using computers gives me more control over my work, using computers improves my job performance, using computers to do my work saves me time, computers enable me to accomplish tasks quickly (schleder, et al, 2015).

Barriers to computer literacy among nurses according to the study are lack of personal computers followed by unavailability of computer in the work place and low Information Technology (IT) knowledge, this is in conformity with the result of Aanuoluwapo etal. (2014) which states that the most perceived barrier to computer literacy among nurses was inadequate computers. Though lack of computer is a major barrier but the study also revealed that the respondents' knowledge was good. The first challenge to resolve is the issue of inadequate knowledge which will empower the nurses to advocate for computers and other equipment needed for utilization of nursing informatics. There were other barriers highly perceived by the respondents which are; too many work demand and shortage of staff which limits the time available for utilization of nursing informatics. This is not unanticipated in a developing country like Nigeria as most health facilities are short staffed. However, this is not the case in the Australia study by Hegney et al. (2007) which reported that 'work demands' was less of a barrier in community health and in other public sector areas where it is speculated that information technology is seen by nurses and their employers to be an integral part of the role. Lack of encouragement by hospital management is another barrier identified by nurses to utilization of nursing informatics, this is in support of the findings of Estabrooks, et al, (2012) which stated that barriers to internet use in the clinical setting include lack of administrative support, negative attitudes toward computer technology, lack of expertise and time constraints in the workplace. There were thirteen barriers perceived by the respondents that have contributed to their poor competency in utilization of nursing informatics in practice. Limited access to computer was the most perceived barrier to the utilization of nursing informatics by 55%

of respondents while the thought of being too old to start learning computer was the least perceived barrier by 14.6% of respondents.

Conclusion

The study concluded that that nurses' perception regarding computer literacy to nursing profession was found to be fair. Also, nurses' knowledge of computer was fair and actual health information technology use was predicted by perceptions of computer usefulness. This study adds to the body of knowledge of technology acceptance in nursing and specifically begins to provide a picture for health service planners of the readiness for health information technology use and acceptance among nurses. It also highlighted the perceived barriers to computer literacy.

Recommendations

The hospital management should organize regular in-service training sessions focused on basic and advanced computer skills relevant to nursing tasks, such as electronic documentation, data entry, and use of health information systems. The management should also seek partnerships to address infrastructure challenges such as poor internet connectivity, erratic power supply, and insufficient IT equipment.

References

Aanuoluwapo, O., Olajubu, Omolola, O., Irinoye, Adekemi, E., & Olowokere. (2014). Competencies and Barriers to the Use of Nursing Informatics among Nurses in Primary,Secondary and Tertiary Healthcare Facilities in Nigeria. DOI: 10.12856/JHIA-2014-v2-i1-85

Abdrbo, A. A. (2015). Nursing informatics competencies among nursing students and their relationship to patient safety competencies: knowledge, attitude, and skills. *CIN: Computers, Informatics, Nursing*, *33*(11), 509-514.

Ajuwon, G. A. (2004). Use of Computers and the Internet in a Nigerian Teaching Hospital. *Journal of Hospital Librarianship*, *4*(4), 73-88.

Barrera, J. C., &Lamprecht, A. (2012). Examination of Computer Literacy Competence in the Workplace: The Case for the American and German Manufacturing Industry. *American International Journal of Contemporary Research 2(6)*

Bimerew, M., & Chipps, J. (2022). Perceived technology use, attitudes, and barriers among primary care nurses. *Health SA Gesondheid (Online)*, *27*, 1-7.

Cross, B. L., & MacDonald, M. (*2013).* Developing a relationship with the computer in nursing practice: A Grounded Theory. *45 (1), 114 –137*

Ebrahim, R. M. R., & Elsayed, K. A. (2018). Effectiveness of educational program about telenursing for nursing intern on their knowledge and attitude. *Int J Novel Res Healthcare Nurs*, *5*, 501-11.

Estabrooks, P. A., Boyle, M., Emmons, K. M., Glasgow, R. E., Hesse, B. W., Kaplan, R. M., ... & Taylor, M. V. (2012). Harmonized patient-reported data elements in the electronic health record: supporting meaningful use by primary care action on health behaviors and key psychosocial factors. *Journal of the American Medical Informatics Association*, *19*(4), 575-582.

Hegney, D., Buikstra, E., Eley, R., Fallon, A. B., Gilmore, V., & Soar, J. (2007). Nurses and information technology.

Kahouei, M., Mohammadi, H. B., Majdabadi, H. A., Solhi, M., Parsania, Z., Roghani, P. S., & Firozeh, M. (2014). Nurses Perceptions of Usefulness of Nursing Information System: Module of Electronic Medical Record for Patient Care in Two University Hospitals of Iran.

Kipturgo, M. K., Kivuti-Bitok, L. W., Karani, A. K., & Muiva, M. M. (2014). Attitudes of nursing staff towards computerisation: A case of two hospitals in Nairobi, Kenya. *Article in BMC Medical Informatics and Decision Making*. DOI: 10.1186/1472-6947-14-35

Kritsotakis, G., Andreadaki, E., Linardakis, M., Manomenidis, G., Bellali, T., & Kostagiolas, P. (2021). Nurses' eHealth literacy and associations with the nursing practice environment. International Nursing Review, 68(3), 365–371. https://doi.org/10.1111/inr.12650

Kuek, A., & Hakkennes, S. (2020). Healthcare staff digital literacy levels and their attitudes towards information systems. Health Informatics Journal, 26(1), 592–612. https://doi.org/10.1177/1460458219839613

Longhini, J., Rossettini, G., & Palese, A. (2022). Digital Health Competencies Among Health Care Professionals: Systematic Review. Journal of Medical Internet Research, 24(8), e36414. https://doi.org/10.2196/36414

Mutula, S. M. (2016). Factors Influencing Nurses Perceptions towards the use of ICT in patient Care in KwaZulu Natal Province, South Africa. *Nurses Perceptions Towards the Use of ICT.* Vol. 8 (1): ISSN 1936-0282

Nicholson, E. C., & Damons, A. (2022). Is medication administration in the elderly influenced by nurses' demographics in South Africa? Health SA, 27, 1750. https://doi.org/10.4102/hsag.v27i0.1750

Raja, E. E. J., Mahal, R., & Masih, V. B. (2004). An exploratory study to assess the computer knowledge, attitude and skill among nurses in health care setting of a selected hospital, Ludhiana, Punjab, India. In *MEDINFO 2004* (pp. 1304-1307). IOS Press.

Royal College of Nursing. (2022). Men in nursing: Addressing the gender imbalance. https://www.rcn.org.uk/Professional-Development/publications/pub-009-522

Salameh, B., Eddy, L. L., Batran, A., Hijaz, A., & Jaser, S. (2019). Nurses' Attitudes Toward the Use of an Electronic Health Information System in a Developing Country. SAGE Open Nursing, 5, 2377960819843711. https://doi.org/10.1177/2377960819843711

Schleder Gonçalves, L., Cândida Castro, T., & Fialek, S. (2015). Computer Experience of Nurses. *Studies in health technology and informatics*, *216*, 1012.