Utilization of Information Communication and Technology Among Students in St Philomena Catholic Hospital, Benin City

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ABSTRACT: *In today's society, information and communication technologies (ICT) play an important part in almost every area. This descriptive cross-sectional study assessed utilization of information communication and technology among students in St. Philomena Catholic Hospital, Benin City. Convenience sampling approach was used to recruit the 212 participants. The instrument for data collection was structured questionnaire with reliability of 0.786. SPSS version 22 was used to analyze the data. The result shows that the mean ± SD age of the respondent is (22.7 + 4.6 years). Only 29(14.5%) have good access to information communication and technology and 171(85.5%) have poor access information communication and technology. High utilization of information communication and technology was 133(66.5%) while low usage was 67(33.5%). perceived factors affecting utilization of information communication and technology among the respondents include faulty equipment/lack of maintenance 180(90.0%), lack of technical support 178(89.0%), and inadequate computers 165(82.5%), and unavailability of IT equipment in the school 150(75.0%). It is concluded that there is good utilization but poor access to information communication and technology among the students. Therefore, nursing institutions (academic/clinical) should continue to invest in professional development with student-centered ICT labs to encourage students to use modern technology.*
KEYWORDS: Information Communication and Technology, Students, Utilization

INTRODUCTION

Information technology serves as the fundamental basis for the development of the contemporary healthcare system (Onu & Agbo, 2017). The term "information and communication technologies" refers to a broad range of digital technologies that facilitate the electronic acquisition, retention, manipulation, and transmission of information. These technologies have a crucial role in advancing healthcare by promoting wellness, preventing diseases, providing medical treatment, and managing chronic conditions (Sebbani, et al., 2021). Health Information Communication Technology (HICT) refers to the electronic exchange of health information, as outlined by the U.S. Department of Health and Human Services (2018). Its primary objective is to enhance the quality of healthcare, minimise errors, optimise administrative efficiency, reduce costs, minimise paperwork, and uphold patient privacy through secure transmission of information in a database (Education & Gasaymeh, 2018).

The field of healthcare benefits from several applications of Information Technology, with Electronic Health Records (EHR) being a prominent example. The utilisation of Electronic Health Record (EHR) systems has the potential to enhance the quality of care and facilitate the effective coordination of population and public health information requirements. Furthermore, EHRs can play a significant role in shaping government health policies and finance, as highlighted by Ergado et al. (2021). The utilisation of information and communication technology (ICT) to augment the process of learning and instruction has gained significant prominence in recent times. The use of information and communication technology (ICT) in the realm of education has emerged as a contemporary, successful, and economical approach, prompting a necessity to revolutionise the learning and teaching methods of students and teachers in higher educational institutions (Honey, 2018).

In contemporary times, the utilisation of computers and technology has been expanded to encompass various domains within the healthcare sector, beyond the realms of human resources, financial management, and logistics systems. These include clinical communications and the storage of patients' historical data, physicians' orders, laboratory results, and computerised nursing care plans (Ergado, et al., 2021). It possesses the potential to enhance communication, enhance the quality of care, mitigate medical errors, and eradicate inefficiencies. The current trajectory in healthcare involves a significant emphasis on technological advancements in clinical applications, which is anticipated to persist as a prominent factor in the field for the foreseeable future (Infante-moro & Gallardo-pérez, 2019).

The prioritisation of patient care has emerged as a central objective in the advancement of novel concepts and knowledge within the realm of healthcare technology. The acquisition of Information Technology (IT) skills empowers nurses with the ability to augment the calibre of patient care delivered. Nurses contend that the integration of computer technology in healthcare does not align with the holistic and humanistic principles that are fundamental to the nursing profession (Bester,

et al., 2021). Despite the myriad advantages of information and communication technology (ICT), nurses continue to exhibit hesitancy in completely adopting and integrating this technology into their nursing practise. One possible explanation for this phenomenon is the insufficient training in information technology, as indicated by a survey done in 2014 titled "Positioning Nursing in a Digital World." The survey findings revealed that around two-thirds of nurses had not undergone any sort of training in the field of Information Technology (Brown & Ainsley, 2018).

The lack of successful integration of computer systems in nursing practise can be attributed to the direct correlation between users' attitudes towards computerization and the outcomes of implementation. According to Chatterjee and Chakraborty (2021), there is a consensus among nursing educators, leaders, and practitioners that computer competencies have become indispensable for nurses. The adoption of health information technology in poor nations, such as Nigeria, has exhibited a sluggish pace, potentially attributable to issues such as inadequate technological infrastructure and limited computer literacy, proficiency, and user attitudes (Allari et al., 2022; Brown & Ainsley, 2018).

The rapid evolution of Information Technology (IT) is transforming the world into a global village. The healthcare system is also included in this endeavour. Nurses constitute a significant proportion of the healthcare workforce, and it is concerning that a considerable number of nurses lack familiarity with Information Technology. As per the U.S. Department of Health and Human Services (2018), nurses possess the responsibility of assimilating diverse information sources and orchestrating resources in their routine administration of patient care. The concept of health refers to the overall state of well-being, encompassing physical, mental The field of information technology has made significant contributions to tackling the escalating problem in the health care sector. These contributions encompass various aspects such as the reduction of medication errors, enhancement of time management efficiency, monitoring of treatment plan adherence, reduction of in-patient days, and tracking of emerging trends (Sebbani, et al., 2021). In order to fully realise this promise, it is imperative that healthcare practitioners possess both the willingness and capability to effectively utilise the technology (Forman, et al., 2020).

According to Ergado et al. (2021), a significant number of healthcare professionals obtained their educational training prior to the widespread adoption of information technology, resulting in a deficiency in fundamental computer skills necessary for effective utilisation of IT. Consequently, in order to mitigate the potential overwhelm resulting from the introduction of computers, it will be necessary to undergo repeated training sessions due to the existing deficiency in abilities (Chatterjee & Chakraborty, 2021). Furthermore, nurses are inclined to embrace novel technological advancements when they are believed to align with nursing practise, enhance patient outcomes, and alleviate the workload of nurses. The Nursing and Midwifery Council of Nigeria recently made an announcement regarding the implementation of computer-based professional exams for nursing and midwifery practitioners. This new approach will commence in September 2022 and will involve the utilisation of accredited computer-based testing centres. Consequently,

various nursing and midwifery training institutions are currently undertaking measures to adapt to this significant change in examination methodology. Nevertheless, there is limited knowledge regarding the utilisation of information technology (IT) among students enrolled in different educational institutions. Therefore, the purpose of this study was to assess the usage of information communication and technology among students at St. Philomena Catholic Hospital in Benin City.

The aim of this study is to evaluate utilization of information communication and technology among students in St. Philomena Catholic Hospital, Benin City. The specific objectives are to:

1. evaluate level of accessibility of information communication and technology by students of St. Philomena Catholic Hospital, Benin City;
2. assess utilization of information communication and technology by students of St. Philomena Catholic Hospital, Benin City; and
3. ascertain perceived factors affecting utilization of information communication and technology by students of St. Philomena Catholic Hospital, Benin City

Research questions

1 What is level of accessibility of information communication and technology by students of St. Philomena Catholic Hospital, Benin City?
2 What is level of utilization of information communication and technology by students of St. Philomena Catholic Hospital, Benin City?
3 What are the perceived factors affecting utilization of information communication and technology by students of St. Philomena Catholic Hospital, Benin City?

literature review

In nursing literature, the phrases "Information technology," "Informatics," and "Nursing informatics" are sometimes employed interchangeably. Nursing Informatics is a discipline that encompasses the integration of nursing science, computer science, and information science in the context of diagnosing and treating human responses to health and illness. Health informatics is the term used to describe the utilisation of information technology in the healthcare sector for the purpose of managing information (Elewa & El Guindy, 2017). The provision of nursing services in the current era necessitates the integration of nursing informatics. According to Achampong (2017), while the field of nursing informatics (NI) encompasses various intricate competencies necessary for optimal performance in the digital healthcare setting, it is essential for all nurses to possess fundamental informatics abilities. Computer literacy/competencies refer to the comprehension of fundamental computer-related knowledge and terminology, including but not limited to Personal Digital Assistants (PDAs), Central Processing Unit (CPU), memory, software, as well as the ability to effectively utilise computers, manage files, create presentations, and navigate the internet. In contrast, information literacy pertains to the capacity to identify the

characteristics and extent of desired information, as well as the ability to acquire, employ, and critically assess nursing information (Elewa & El Guindy, 2017).

The concept of information management refers to the ability to gather data, analyse it, and convert it into valuable knowledge that can be applied to enhance healthcare results (Forman, et al., 2020). According to Jibril et al. (2018), it is argued that although not every nurse needs to possess expertise in informatics, it is imperative for every nurse to possess computer and information technology literacy. This is because nurses, as knowledge workers, rely on precise and current information. Furthermore, the continuous expansion of information technology is expected to significantly influence the conceptualization and delivery of healthcare. Information and communication technologies (ICTs) encompass a wide range of digital technologies that facilitate the electronic acquisition, retention, manipulation, and transmission of information (Forman et al., 2020). The utilisation of computers and technology in healthcare has expanded beyond human resources, financial, and logistics systems. It now encompasses clinical communications and the storage of patients' historical data, physicians' orders, laboratory results, and computerised nursing care plans (Elewa & El Guindy, 2017).

In order to adapt to the dynamic nature of the healthcare industry, it is imperative for healthcare professionals to remain updated on emerging practise advances, such as Health Information Technology (HIT) and Electronic Health Record (EHR) systems (Buabeng-Andoh, 2018). Nursing constitutes a significant element within the healthcare industry. The optimal utilisation of information technology (IT) is contingent upon the knowledge, attitudes, and facilitating conditions of nurses. Over the course of numerous years, nurses have been actively engaged in the direct use of technology, which has undergone a swift and significant transformation within the healthcare sector. Nurses and healthcare practitioners encounter a range of technologies in their daily practise, including electronic records, prescription prescribing tools, telehealth, online appointment scheduling, and mobile laboratories (Achampong, 2017).

The study conducted by Olajubu et al. (2020) highlights that the expansion of hospital information systems has exerted notable influences on the field of nursing. The incorporation of computer technology into the professional practises of nurses is a novel development that necessitates the adaptation of their work methodologies and potentially even their roles within the healthcare department. The integration of computers into the routine and professional practises of nurses has occurred swiftly. However, scholarly literature suggests that nurses have exhibited a reluctance to embrace the use of computers within the healthcare domain (Honey, 2018). According to Buabeng-Andoh (2018), nurses contend that the integration of computers in healthcare does not align with the holistic and humanistic principles that underpin the nursing philosophy. Furthermore, nurses assert that computers are intricate technology that poses challenges in terms of usability and proficiency.

According to Christe (2017), existing research suggests that while nurses may demonstrate a willingness to acquire knowledge regarding novel technologies, such as intricate monitoring devices or intricate life-saving techniques, the acquisition of information technology skills has not been given significant emphasis thus far. A comprehensive analysis was conducted on a total of 11 studies pertaining to the attitudes and anxiety exhibited by nurses towards computer systems implemented in hospital settings. The findings of these studies revealed that nurses harboured concerns regarding potential job displacement and data loss resulting from computerization. Additionally, nurses expressed apprehension that increased reliance on computers would lead to a reduction in the amount of time spent directly interacting with patients (Infante-moro & Gallardo-pérez, 2019).

The presence of ambivalence and a dearth of knowledge among nurses has been seen as substantial obstacles to the voluntary integration of information technology in the workplace. In order to contribute to the progress of scientific research and enhance nursing practise, it is imperative for nurses to possess a strong sense of motivation and a willingness to effectively employ information technology. The correlation between users' attitudes towards computerization and the effective integration of computer systems in nursing practise has been identified by Lambooji et al. (2017). The implementation of a nursing information system has been found to impact clinical patterns and reduce the amount of time nurses allocate to indirect care (Darvish & Salsali, 2018). The advancement of information and communication technology has facilitated the potential for enhancing healthcare through electronic education, regardless of temporal and spatial constraints. The utilisation of patient education systems available on the internet has the potential to enhance patient happiness and exert an impact on their self-care behaviour. E-health training programmes serve the purpose of enhancing individuals' understanding of disease management and fostering improved coordination with their healthcare professional team. It exerts an impact on individuals' lifestyle choices and plays a role in the prevention of several diseases, including cancer, HIV, and chronic illnesses. Conversely, it confers authority to medical organisations by augmenting and refining their knowledge. The implementation of a web-based computer simulation instructional programme has been found to result in a reduction of medical errors within emergency departments during crisis situations. The concept of information technology application involves the provision of concurrent access to education in designated areas, necessitating substantial financial investment. According to Kardan and Darvish (2018), there is a reduction in cost loss. The availability of online access to journal papers serves as a deterrent to redundant research initiatives and facilitates convenient evaluation. According to Darvish (2018), online databases offer current article access, enabling nurses to stay informed about new technologies, user-friendly software, and the findings of research.

In 2020, a study was undertaken by Ademuyiwa et al. to evaluate the extent of nurses' understanding and utilisation of nursing informatics at Lagos University Teaching Hospital (LUTH) in Idi-Araba, Lagos. The study utilised a cross-sectional descriptive research approach.

The researchers employed a multi-stage sampling procedure in order to attain a sample size of 162. The researchers employed a self-administered questionnaire to collect data from the participants, and the collected data was analysed using Version 22 of the Statistical Package for the Social Sciences (SPSS). The average age of the respondents is 35 ± 0.48. The respondents exhibited a considerable level of general knowledge in the field of nursing informatics. However, our analysis did not reveal any statistically significant correlation between knowledge and the utilisation of nursing informatics among the respondents, with a p-value greater than 0.05. Conclusion: The findings of the study indicate that the participants exhibited a commendable level of proficiency in nursing informatics knowledge and demonstrated effective utilisation of nursing informatics practises. Hence, it is recommended that the management should persist in offering further training opportunities to ensure the continued acquisition and use of informatics knowledge among the participants.

In their research conducted at the Department of Nursing Science, Obafemi Awolowo University, Ile-Ife, Nigeria, Olajubu et al. (2020) investigated the levels of competency and identified the constraints hindering the utilisation of nursing informatics among nurses in primary, secondary, and tertiary healthcare facilities in Nigeria. Using a cross-sectional survey design, the researchers collected data from a sample of 350 nurses. The nurses were selected from a total of 37 health care institutions, including one tertiary facility, six secondary facilities, and thirty primary facilities. The researchers employed a multistage sampling strategy to select the participants from six towns within the State. These towns were chosen based on the criterion that they had at least two out of the three categories of health care facilities. This research investigated the understanding and assessment of nurses' competencies, as well as their view of nursing informatics use, and the obstacles encountered throughout the three levels of care within a specific state in Nigeria. The primary objective of this endeavour was to gather fundamental data that would serve as a foundation for designing interventions aimed at improving the acquisition of knowledge and the utilisation of nursing informatics in practical settings. The samples were drawn in a proportionate manner, taking into account the population of nurses in three distinct kinds of health facilities. Specifically, 175 nurses were selected from tertiary health care facilities, 115 from secondary health care facilities, and 60 from primary health care facilities. The findings indicated that 55.4% of the participants had a satisfactory level of understanding in the field of nursing informatics. Within the three distinct levels of competency, participants indicated their perception of their own abilities by categorising themselves as either "competent" or "not competent" by self-assessment. The majority of respondents (55%) identified limited access to computers as the primary barrier to the utilisation of nursing informatics. Findings: The research study reached the conclusion that there exists a deficiency in the proficiency of nurses in the field of nursing informatics. This inadequacy may be attributed to a range of perceived obstacles.

In a study undertaken by Ebrahem et al. (2018), an assessment was made about the knowledge, attitude, and practise of nurses in relation to the nursing informatics system in the out-patient

clinics at Children's Cancer Hospital (57357) in Cairo. The study employed a descriptive research design. The sample comprises a group of nineteen nurses, both male and female, who are now employed in out-patient clinics. The present investigation was carried out at various outpatient clinics located at the Children Cancer Hospital (57357) in Cairo. Two data collection tools were employed for the purpose of gathering relevant information for the study. The first tool utilised was a socio-demographic data sheet, while the second instrument employed was a structured interview questionnaire schedule that was prepared by the investigator. The results of this survey revealed that a significant proportion of the participants were female, with a majority being unmarried. Furthermore, it was shown that over 50% of the surveyed individuals belonged to academic faculties. Furthermore, a substantial statistical difference was observed in the overall understanding of nursing informatics systems when considering both the level of practise and the attitude towards nursing informatics systems. The findings of this study indicate that nurses bear a significant portion of the responsibility for maintaining patient records, making them particularly susceptible to the impact of computerization.

In their study, Brown and Bonnie (2017) conducted a cross-sectional descriptive investigation to examine the influence of informatics on nursing education in Nigeria. The findings indicate that the participants possessed a moderate level of expertise in the field of nursing informatics. The study additionally determined a clear correlation between the degree of familiarity with Nursing Informatics and its use among the participants.

Methodology

Descriptive cross-sectional study design was used for the study. This design is for describing relationships among phenomena at fixed point in time (McLeod, 2019). Therefore, it was considered appropriate in assessing the utilization of information communication and technology among student midwives in St. Philomena Catholic Hospital, Benin City, Nigeria. The study involved all student midwives in St. Philomena Catholic School of midwifery, Benin City, Edo State, Nigeria. According to the available statistics from the office of the principal of the school, there are a total number of 368 students currently enrolled in the school.

The studied sample was calculated from the study population using the Taro Yamane equation. The Taro Yamane formula is given by: $n = N / (1 + Ne^2)$

> Where　　　　N = population size (368), and
>
> 　　　　　　e = alpha level, i.e. $e = 0.05$ at confidence interval of 95%.

Therefore, n 　= $368/[1+ 368(0.05)^2]$

　　　　　　= $368/[1+ 368(0.0025)]$

$$= 368/ [1 + 0.92]$$

$$= 368/1.405$$

$$= 192$$

Adjusting attrition, 10% of sample was added = 212 sample size

For the purpose of this study, convenience (accidental) sampling approach was used to recruit the participants. Convenience sampling is a type of non-probability sampling, which does not involve random selection of subject, object or items. In other words, this sampling method involves getting participants that were readily available (McLeod, 2019). .

Data for this study was collected using structured questionnaire. A questionnaire was preferred as it maintains participants' anonymity and also allows access to a large group. The questionnaire consisted of four sections A-D. Section A contained 5 questions of both closed and open ended questions which dealt with socio-demographic characteristics of the respondents. Section B elicited responses on Accessibility of IT among the students. Section C assessed utilization of IT among the student. The likert scale scoring was as follows: Key: Always (ALW) = 4, Most Time (MST) =3, Seldom (SDM) =2, Never (NV) =1. Section D assessed perceived factors that affect utilization of IT among the student. It contained 5 questions

The face and content validity of the research instrument (structured questionnaire) was evaluated by experts of tests and measurement. Their observation and corrections were effected before the instrument were administered on the participants

The research instrument was pretested on 22 student midwives in UBTH. A split half technique was adopted to test the reliability of the instrument. A coefficient reliability of 0.786 was obtained which was considered as significant for the instrument to be reliable.

The questionnaires were administered by the researcher along with two research assistants that were trained for such purpose. Data were collected Monday to Friday for one week during the students' break time until the desired sample size is obtained. The questionnaires retrieved were reviewed for completeness. The raw data retrieved were coded and imputed into a computer for easy analysis using Statistical Package for Social Science (SPSS) version 22.0. Descriptive data were express as percentages, frequency counts, and mean ± standard deviation. Data were presented in words and frequency distribution tables. P < 0.05 was considered the level of significance for all measured variables.

Results

Table 1: Showing the socio-demographic variable of the respondents (n = 200)

Variable		Frequency	Percent
Age	17-21years	75	37.5
	22-27years	90	45.0
	28-33years	26	13.0
	>33years	9	4.5
	Mean $\pm$ SD = 22.7 $\pm$ 4.6		
Sex	Male	6	3.0
	Female	194	97.0
Religion	Christianity	200	100.0
Year of study	Year 1	71	35.5
	Year 2	97	48.5
	Year 3	32	16.0
Marital status	Single	188	94.0
	Married	12	6.0

Table 1 shows that 75(37.5%) of the respondents were within 17-21 years of age, 90(45.0%) were within 22-27years, 26(13.0%) were within 28-33years while 9(4.5%) were >33years. The mean $\pm$ SD age was 22.7 $\pm$ 4.6 years. Majority 194(97.0%) were female while 6(3.0%) were male. All 200(100.0%) were Christians. On basis of year of study, 71(35.5%) are in year 1, 97(48.5%) are year 2 while 32(16.0%) are in year 3. Majority 188(94.0%) are single while only 12(6.0%) were married.

Research question 1: What is level of accessibility of information communication and technology by students of St. Philomena Catholic Hospital, Benin City?

Table 2: Showing accessibility of information communication and technology among the respondents (n = 200)

S/N	Items	Response		Remark
		Yes(%)	No(%)	
1.	Access formal IT training	50(25.0)	150(75.0)	Poor
2.	Having personal computer	94(47.0)	106(53.0)	Poor
3.	Free internet access	-	200(100.0)	Poor
4.	IT course in current study	200(100.0)	-	Good
5.	Having lab session in IT course	35(17.5)	165(82.5.)	Poor
6.	Access to electronic lecture note from lecturers	94(47.0)	106(53.0)	Poor

| 7. | Access to E-library in the school | - | 200(100.0) | Poor |

Table 2 shows that 50(25.0%) of the respondents have access to formal IT training, 94(47.0%) have personal computer, none of the respondents have accesses to free internet, all 200(100.0%) of them have taken IT course in their current study, only 35(17.5%) had lab session in IT course, 94(47.0%) have access to electronic lecture note from lecturers, while none have access to E-library in the school. In composite, there is only 29(14.5%) good access to information communication and technology and 171(85.5%) poor access information communication and technology

Research question 2: What is level of utilization of information communication and technology by students of St. Philomena Catholic Hospital, Benin City?

Table 3: Showing utilization of information communication and technology among the respondents (n = 200)

S/N	Items	Response					Remark
		NV (%)	SDM (%)	MST (%)	ALW (%)	Mean ± SD	
1.	I use power point in my academic presentations	62 (31.0)	62 (31.0)	42 (21.0)	34 (17.0)	2.24 ± 1.072	Low
2.	I type my assignments and other academic work using Microsoft word myself	16 (8.0)	48 (24.0)	96 (48.0)	40 (20.0)	2.80 ± .851	High
3.	I surfed the internet for latest academic literatures for my academic assignments	1 (0.5)	36 (18.0)	99 (49.5)	64 (32.0)	3.13 ± .711	High
4.	I participant in the usage of class group social media (whatsapp) as a means of communication	-	21 (10.5)	60 (30.0)	119 (59.5)	3.49 ± .680	High
5.	I use nursing informatics system to ensure accuracy of patients information and care	6 (3.0)	42 (21.0)	98 (49.0)	54 (27.0)	3.00 ± .777	High
6.	I use Microsoft excel for research data computation	99 (49.5)	56 (28.0)	30 (15.0)	15 (7.5)	1.81 ± .955	Low
	Grand mean					**2.75 ± .723**	

Mean cut-off = 2.5. Key: NV – Never, SDM - Seldom, MST – Most Time, ALW – Always

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Table 3 shows that there is low usage of power point for academic presentations (2.24 ± 1.072) and Microsoft excel for research data computation (1.81 ± .955) among the respondents. However, there is high usage of Microsoft word for academic work (2.80 ± .851), internet surfing for latest academic literatures for academic assignments (3.13 ± .711), class group social media (whatsapp) as a means of communication (3.49 ± .680), and nursing informatics system in ensuring accuracy of patients information and care (3.00 ± .777). In composite, there 133(66.5%) high utilization of information communication and technology while 67(33.5%) low usage.

Research questions 3: What are the perceived factors affecting utilization of information communication and technology by students of St. Philomena Catholic Hospital, Benin City?

Table 4: Showing perceived factors affecting utilization of information communication and technology among the respondents (n = 200)

S/N	Items	Response		Remark
		Yes(%)	No(%)	
1.	Unavailability of IT equipment in the school	150(75.0)	50(25.0)	Factor
2.	Low IT knowledge	94(47.0)	106(53.0)	Non-factor
3.	Lack of technical support	178(89.0)	22(11.0)	Factor
4.	Faulty equipment/lack of maintenance	180(90.0)	20(10.0)	Factor
5.	Inadequate computers	165(82.5)	35(17.5)	Factor

Table 4 shows that perceived factors affecting utilization of information communication and technology among the respondents include faulty equipment/lack of maintenance 180(90.0%), lack of technical support 178(89.0%), and inadequate computers 165(82.5%), and unavailability of IT equipment in the school 150(75.0%)

Discussion of Finding

In contemporary society, the pervasive influence of information and communication technologies (ICT) is seen across various domains. Information and Communication Technologies (ICTs) possess the capacity to facilitate patient-centered healthcare in a cost-effective manner, enhance the provision of high-quality care and the sharing of information, educate healthcare professionals and patients, foster a novel type of contact between patients and healthcare providers, and mitigate the need for extensive travel (Roztocki, et al., 2019). The present study aimed to assess the use of information communication and technology (ICT) among students enrolled at St. Philomena Catholic Hospital in Benin City.

In the current investigation, the average age (22.7 + 4.6) of the participants is similar to the mean age (21.45±0.69) stated in the study conducted by Bello et al. (2017). The observed patterns of

mean ages in early child education are not unexpected, given the current global trend towards prioritising early childhood education. The prevalence of females in this study aligns with the conventional gender distribution observed in nursing and midwifery professions worldwide. Given its status as a missionary organisation, it is not surprising that all the participants in this study identify as Christians.

The healthcare sector is experiencing a growing reliance on technology, leading to an expectation for nurses worldwide to enhance their proficiency in information and communication technology (ICT). The availability and accessibility of information communication and technology (ICT) are of utmost importance. The current investigation revealed a low level of accessibility to information communication and technology, with only 14.5% of participants reporting adequate access. The percentage (25.0%) of participants who received formal IT training is similar to the finding (23%) reported by Hailegebreal et al. (2022) in their study on undergraduate students at Arba Minch University's College of Medicine and Health Science in Ethiopia. All of the respondents (100.0%) acknowledged that they are currently enrolled in an IT course, which is in contrast to the Ethiopia research. However, it should be noted that there is a complete absence of free internet access and e-library facilities. There exists a disparity between the theoretical comprehension of information technology (IT) and the practical manifestation of its use in improving academic achievement, with the exception being instances where students must rely on their personally acquired online data.

Despite limited access to information communication and technology, there is a notable level of utilisation, reaching 66.5%. The transition from a paper-based to a computer-based examination method by the Nursing and Midwifery Council of Nigeria (NMCN) may have had an impact on the extent to which participants utilise information technology (IT). The current study reveals a higher level of usage compared to the findings reported by Hailegebreal et al. (2022) from Arba Minch University, Ethiopia (55.77%), Woreta et al. (2013) from the University of Gondar, North Western Ethiopia (46.0%), and Omoare and Oyediran (2020) from Colleges of Education in Ogun State, Nigeria (33.3%). However, the percentage recorded by Dery et al. (2016) from the University of Ghana is higher, standing at 93.0%.

Several factors were recognised as obstacles to the efficient utilisation of nursing informatics among the participants. These factors encompassed malfunctioning equipment or lack of maintenance, insufficient technical support, inadequate computer resources, and the unavailability of information technology equipment within the educational institution. These findings are in line with the reports of Irinoye et al. (2013), Hailegebreal et al. (2022), and Bello et al. (2017).

Implication for Nursing Practice

The influence of information communication and technology in nursing has been a topic of discussion in relation to the contemporary nursing practise paradigm in the 21st century. The

utilisation of this technology aids in the enhancement of nursing care delivery by optimising the allocation of time towards direct patient care, reducing the occurrence of errors, and minimising the amount of time dedicated to documentation tasks. There is no doubt that nursing informatics has had an impact on the delivery of nursing care. However, it is necessary to investigate whether nurses in developing African countries are effectively utilising this technology to optimise the quality of care provided to patients. This includes examining its potential in enhancing decision-making processes and minimising redundant tasks. The findings of this study highlight the necessity of fully integrating information communication and technology (ICT) in nursing academic institutions. Additionally, it emphasises the importance of providing periodic in-service training and specialised courses on nursing ICT for professional nurses to ensure they possess sufficient expertise in this area. Hence, it is imperative for nursing leaders to prioritise the provision of adequate professional development opportunities for younger nurses, particularly in the realm of nursing information communication and technology.

Conclusion

The study revealed that there was effective utilisation of information communication and technology (ICT) but limited access to it. This limited access was mostly attributed to many factors, including malfunctioning equipment or lack of maintenance, insufficient technical support, inadequate availability of computers, and a lack of IT equipment within the school environment.

Recommendations

1. It is imperative to undertake affirmative measures aimed at enhancing the extent of information and communication technology (ICT) utilisation among undergraduate students. One such measure involves the formal integration of ICT training within the framework of undergraduate student education.

2. Nursing academic and clinical institutions ought to persist in allocating resources towards professional development, namely by establishing information and communication technology (ICT) laboratories. This initiative aims to foster the utilisation of contemporary technological advancements among students and professionals in the field.

3. The Federal Ministry of Health should arrange many training sessions for nurses in order to adequately equip them for the swift updates in nursing informatics.

4. The procurement and implementation of computers in hospitals should be a priority for the federal government and hospital authorities to ensure they remain up-to-date with worldwide advancements in information technology.

References

Achampong, E.K. (2017). Assessing the current curriculum of the nursing and midwifery informatics course at all nursing and midwifery institutions in Ghana. *Journal of Medical Education and Curricular Development,* 4, 1–4. https://doi.org/10.1177/2382120517706890

Ademuyiwa, I. Y., Faleke, S. O., & Otetubi, E. E. (2020). Knowledge and use of nursin informatics among nurses in a universityteaching hospital in Lagos, Nigeria. *International Journal Health Science and Research,* 10(12):63-69.

Allari, R., Hamdan, K., Alkaid, M., & Shaheen, A. (2022). Information literacy: assessment of undergraduate and graduate nursing students. Reference Services Review ahead-of-print(ahead-of-print). DOI:10.1108/RSR-09-2021-0052

Bello, U. L., Abd, L., Abd, E., Hassan, E., Yunusa, U., Abdulrashid, I., Usman, R. H., Khadija Nuhu Nasidi, K. N. (2017). Challenges of information and communication technology utilization among undergraduate community health nursing students in Tanta University. *American Journal of Nursing Science,* 6(3), 274-279

Bester, P., Smit, K., De Beer, M., & Myburgh, P. H. (2021). When online learning becomes compulsory: Student nurses' adoption of information communication technology in a private nursing education institution. *Curationis*, *44*(1), e1–e9. https://doi.org/10.4102/curationis.v44i1.2152

Brown, A. H., & Ainsley, B. (2018). The Impact informatics on nursing education: A review of the Literature. *Journal of continuing Education in Nursing,* 4(5): 228-232.

Buabeng-Andoh, C. (2018). New technology in health education: Nursing students' application of mobile technology in the classroom in Ghana. *Interactive Technology and Smart Education*, 15, 46–58. https://doi.org/10.1108/ITSE-09-2016-0039

Chatterjee, I., & Chakraborty, P. (2021). Use of information communication technology by medical educators amid COVID-19 pandemic and beyond. *Journal of Education Technology System*, 49(3):310–24.

Darvish, V. & Salsali (2018). Nurses and internet health-related information: review on access and utility. *Clujul Medical,* 91(3):266-273

Dery, S., Vroom, F., Godi, A., Afagbedzi, S., & Dwomoh, D. (2019). Knowledge and use of information and communication technology by health sciences students of the University of

Ghana. *Ghana Medical Journal,* 50(2): 180-188. http://dx.doi.org/http://dx.doi.org/10.4314/gmj.v50i3.10

Ebrahem, R., EL-Din, S., Habib, N., & Abou, S., & Kheir, E.L. (2018). Nurses knowledge, attitude and practices of nursing informaics system in outpatient clinics of children's cancer hospital at Cairo. 4(6): 23-43.

Education, T., & Gasaymeh, A. A. (2018). Study of undergraduate students ' use of information and communication technology (ICT) and the factors affecting their use : A developing country. Perspective, 14(5):1731–46.

Elewa, A.H. & El Guindy, H.A. (2017). Nursing students' perception and educational needs regarding nursing informatics. International *Journal of Nursing Didactics*, 7, 12–20. https://doi.org/10.15520/ijnd.2017.vol7.iss3.197.12-20

Ergado, A. A., Desta, A., & Mehta, H. (2021). Determining the barriers contributing to ICT implementation by using technology-organization-environment framework in Ethiopian higher educational institutions. *Education & Information Technology,* 26(3):3115–33. https://doi.org/10.1007/s10639-020-10397-9.

Forman, T. M., Armor, D. A., & Miller, A. S. (2020). A review of clinical informatics competencies in nursing to inform best practices in education and nurse faculty development. Nursing Education Perspectives, 41, E3–E7. https://doi.org/10.1097/01.NEP.0000000000000588

Hailegebreal, S., Sedi, T.T., Belete, S., Mengistu, K., Getachew, A., Bedada, D., Molla, M., Shibiru, T., & Mengiste, S. A. (2022). Utilization of information and communication technology (ICT) among undergraduate health science students: a cross-sectional study. BMC Med Educ 22, 215 (2022). https://doi.org/10.1186/s12909-022-03296-9

Honey, M. (2018). Undergraduate Student Nurses' Use of Information and Communication Technology in Their Education. *Studies in health technology and informatics*, *250*, 37–40.

Infante-moro, A., & Gallardo-pérez, J. (2019). The Importance of ICTs for Students as a Competence for their Future Professional Performance : the Case of the Faculty of Business Studies and Tourism of the University of Huelva, 8; 201–13

Irinoye, O.O., Ayandiran, E.O., Fakunle, I., & Mtshali, N. (2013). Nurses' perception and barriers to use of information communication technology in a teaching hospital in Nigeria. *Computers, informatics, nursing: CIN,* 31(8). http://dx.doi.org/10.1097/NXN.0b013e3182997a6e

Jibril, U. N., Morisola, R. F., Ayoade, I. M., Abubakar, I. A., & Olayinka, O. O., & Oluwaseun, I. F. (2018). Use of Health Information Communication Technology for Patient Care among Nurses in University of Ilorin Teaching Hospital, Ilorin. *International Journal of Information Processing and Communication (IJIPC)*, 6(2), 274-281

Lambooji, M. S., Drewes, H. W., & Koster, F. (2017). Use of electronic medical records and quality of patient data: different reaction patterns of doctors and nurses to the hospital organization. *Journal of medical informatics and decision making,* 17(1).

Olajubu, R., Irinoye, A.,& Olowokere, K. (2020). Competencies and barriers to the use of nursing informatics among nurses in primary, secondary and tertiary health care facilities in Nigeria. *Journal of Health Informatics in Africa.* 1 2(6):121-125

Omoare, A. M., & Oyediran, W. O. (2020). Utilization Of Information Communication Technology In Teaching Profession: Synergy For Advancing Educational Development In Ogun State, Nigeria. *International Journal of Digital Society (IJDS)*, 11(1), 1570-1574

Roztocki, N., Soja, P., & Weistroffer, H. R. (2019). The role of information and communication technologies in socioeconomic development: towards a multi-dimensional framework. *Informational Technology Development,* 25(2):171–183. doi: 10.1080/02681102.2019.1596654.

Sebbani, M., Adarmouch, L., Mansouri, A., Mansoury, O., Michaud, S., ElAdib, A. R., Bouskraoui, M., & Amine, M. "(2021). Implementation of Online Teaching in Medical Education: Lessons Learned from Students' Perspectives during the Health Crisis in Marrakesh, Morocco". *Educational Research International,* (5547821):9.

Woreta, S. A., Kebede, Y., & Zegeye, D. T. (2013). Knowledge and utilization of information communication technology (ICT) among health science students at the University of Gondar, North Western Ethiopia. *BMC medical informatics and decision making*, *13*, 31. https://doi.org/10.1186/1472-6947-13-31