JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

"Impact Of Information And Communication Technologies On Nursing Practice Among Staff Nurses In Selected Hospitals."

Mr. Rahul. U. Khillare

M.sc Nursing (Mental Health Nursing) Dr. Vithalrao Vikhe Patil foundations College of Nursing Ahmednagar, *rahulkhillare505@gmail.com*

Ms. Pallavi Bhagoji Kharade

M.sc Nursing (Mental Health Nursing) Dr. Vithalrao Vikhe Patil foundations College of Nursing Ahmednagar, pallavikharade9222@gmail.com

Authors:

1. **Rahul Uttamrao Khillare**

Department of Mental Health Nursing
Dr. Vithalrao Vikhe Patil College of Nursing
Ahmednagar, Maharashtra, India

Corresponding Author Details:
2.**Pallavi Bhagoji Kharade**
Department of Mental Health Nursing
Dr. Vithalrao Vikhe Patil College of Nursing
Ahmednagar, Maharashtra, India

ABSTRACT

"Impact of information and communication technologies on nursing practice among staff nurses in selected hospitals." Purposive sampling technique was used to select the samples. Sample selected 120 staff nurses working in wards from a selected hospital as the sample for the study **.** All statistical analysis performed by using descriptive and inferential statistics. Result Showed that the staff nurses working hospital with using ICT for nursing care practice shown that 103 sample was very high impact of ICT and 17 sample was high impact of ICT on nursing practice .there was no association between demographic variable with impact of information and communication technologies among staff nurses. Using chi-square test p value 0.05 calculated value was the findings are beneficial to the advancement of healthcare technology in that designer of healthcare information technology systems need to keep in mind that perceptions regarding impacts of the technology will influence Many times.

KEY WORDS: *ICT, impact, staff nurses, descriptive study, survey*

INTRODUCTION

Nursing history suggested that beginning of professional nursing in nineteen century information technology was used for patient care by nurses that in paper, pen or type writer levels, there was nothing specially required, something as digitalization. Slowly when world improves technological means in every field, health sector also immersed in technology and started acquiring benefit of technology in nursing care. Past two decades, changes have occurred in the nature and effect of communication and information technology use in nursing worldwide. The need for nurses to be well trained for the use and application of information technology in nursing is now

necessary. The challenge for training providers to prepare nurses for ever-changing technology and technological applications in their workplace is highlighted .[1]

New technology and demand for higher quality of care, combined with low health budgets and nursing turnovers are creating new challenges for health care. To support and educate with different kind of information systems and data capturing, there is an essential need for nurse informaticists in nursing syllabus.[1]

ICT USAGE IN NURSING CARE:

1.Nursing Administration:

Computers are used in the administrative areas of nursing for basic tasks that once were done on paper. Staffing and scheduling systems are used to construct daily, weekly or monthly schedules. Many scheduling systems also collect data on individual employees such as the amount of sick time used or vacation hours accumulated. Staffing and scheduling systems often provide a variety of reports to the administrative nurse. Budgeting and financial tracking are another way in which computers are used in nursing administration.[2]

2.Education:

Computers are valuable for patient and nursing education. Hospitals often use computer programs to teach patients about chronic disease management or to provide educational handouts. Preprinted documents such as discharge or preoperative instructions can also be stored in the computer and printed as necessary. Nurses use computers for a variety of continuing education programs as part of the re-licensure process and can also complete educational programs on the computer to obtain advanced degree.[3]

3.Clinical Use:

Clinical applications of computers in nursing are numerous. Physicians prescribe medications and treatments on the computer, and the nurse can either transcribe those orders onto paper tools or print the paper documents for use in patient care. Staff nurses can order medications or supplies on the computer, look up drug interactions or research medical condition. Many nurses use hand-held computers such as personal digital assistants to communicate with physicians about the patients in their care.[4]

4.Electronic Medical Records:

Nurses use computers for documentation with an electronic health record or electronic medical record. When an organization uses an EMR, all documentation related to patient care, diagnostic testing, specialty referrals or any other aspect of patient care or management is done on the computer. The computers can be stationed at the bedside, used on mobile carts or might be in the form of a portable electronic tablet that the nurse carries in lieu of a clipboard with paper documents.[5]

Technological advancements for nurses:

1.Enhanced communication:

When nurses received pagers back in the 1980-1990's, they were able to increase patient care. Each health care professionals are accompanied with cell-phones with ability to order medicine all at the same time. Most hospitals have advanced communication systems. By smart phone technology usage health care professionals are able to receive messages from patients. Forget those old-fashioned pagers. All health care professionals are in touch with all patients. Its' efficiency at its finest and the nursing staff of today wouldn't know how to do it any other way.[6]

2.Electronic records: Written medical records are older paper communication among nurses. Electronic Medical Records (EMR) is becoming more popular among health care professionals to track patients' information. It enables to communicate among patients' and health care professionals.[7]

3.GPS tracking:

Hospital efficiency has been increased through GPS tracking. Tagging and tracking medical equipment is much easier than it was before. It sounds like a simple matter, but being able to centrally monitor equipment has increased bed management and patient care incredibly.[7]

4.Enhanced Diagnostic devices:

Take for instance diagnostic exams. These can now be performed non-invasively. Enhanced diagnostic devices are becoming more popular in health care sectors to govern the disease a patient is affected with. More painless diagnostic devices are being devised and used effectively.[7]

METHODOLOGY

Descriptive study was conducted with survey approach to assess the impact of information and communication technologies on nursing practice among nursing staff in selected hospital. The study sample consisted of 120 (n=120) staff nurses selected by purposive sampling methods. Data was collected from all sample within 15 days planned. Administered structured (Likert type) rating scale to assess impact of ICT on nursing practice.

RESULT AND DISCUSSION

This chapter deals with the analysis and interpretation of the data collected from the student nurse in a selected college in selected area. Analysis is a process of organizing and synthesizing data in such a way that research questions can be answered and hypothesis tested. The data obtained were analysed and interpreted in the light of objectives and the hypothesis of the study. The collected data were tabulated in a master data sheet and analysed by using descriptive and inferential statistics.

Showed that the staff nurses working hospital with using ICT for nursing care practice shown that 103 sample was very high impact of ICT and 17 sample was high impact of ICT on nursing practice .there was no association between demographic variable with impact of information and communication technologies among staff nurses. Using chi-square test p value 0.05 calculated value was the findings are beneficial to the advancement of healthcare technology in that designer of healthcare information technology systems need to keep in mind that perceptions regarding impacts of the technology will influence Many times.

OBJECTIVES

1) To assess the impact information and communication technologies on nursing practice among staff nurses.
2) To find out association between impact of information and communication technologies on nursing practice with their selected demographic variables.

PRESENTATION OF DATA

To being with, the data was entered in a master sheet, for tabulation and statistical processing. To find the relationship, the data were tabulated, analysed, and interpreted by using descriptive and inferential statistics.

The data is presented under the following headings.

Sections A: - Socio-demographic variables for staff nurses.

Section B:- Structured (Likert type) rating scale for assessment of impact of ICT on nursing practice.

Section C: To find out association between impact of information and communication technologies on nursing practice with their selected demographic variables.

Sections A: - socio-demographic dada

This section has consisted of 10 items of demographic variables such as age, gender, educational qualification, language known, years of experience in hospital, marital status, monthly income, place of working, trained in HIS system, years of experience in HIS.

Sections B: - Structured (Likert type) rating scale for assessment of impact of ICT on nursing practice.

This structured (Likert type) rating scale was prepared by investigator based on the first objective of the study, that is, to assess the impact of ICT on nursing practice.

Section C: To find out association between impact of information and communication technologies on nursing practice with their selected demographic variables.

SECTION- A

DESCRIPTION OF SOCIO-DEMOGRAPHIC CHARACTERISTICS OF STAFF NURSES.

Sr. No.	Demographic Variable	Category	Frequency	Percentage
1	Age	20–25 Years	74	88.8%
		26–30 Years	41	49.2%
		31–35 Years	02	2.4%
		Above 35 Years	03	3.6%
2	Gender	Male	35	29.2%
		Female	85	70.8%
3	Marital Status	Married	34	28.3%
		Unmarried	86	71.7%
4	Spouse is Nurse	Yes	14	11.7%
		No	106	88.3%
5	Child	Yes	12	10%
		No	108	90%
6	Language Known	Marathi	120	100%
		Hindi	120	100%
		English	120	100%
7	Qualification	ANM	05	4.2%
		GNM	47	39.2%
		P.B.B.Sc Nursing	32	26.2%
		B.B.Sc Nursing	36	30%
8	Monthly Income	₹2,391–11,836/month	44	36.7%
		₹11,837–23,673/month	75	62.5%
		₹23,674–47,374/month	01	0.8%
		Above ₹47,374/month	00	00%
9	Place of Working	Cardiac ICU	04	3.33%
		Casualty	06	05%
		CSSD	04	3.33%
		CVTS ICU	03	2.5%
		Female Ortho	08	6.66%
		Male Ortho	02	1.66%
		Female Onco	02	1.66%
		Oncology	05	4.16%
		Radiation Oncology	03	2.5%
		FMW	02	1.66%
		MMW	06	05%
		FSW	04	3.33%

		MSW	07	5.83%
		Gynac & OBGY	10	8.33%
		L.R	05	4.16%
		MICU	10	8.33%
		NICU	07	5.83%
		OT	07	5.83%
		Ophthalmic	04	3.33%
		Pediatric	04	3.88%
		SICU	10	8.33%
		SPR	03	2.5%
		TKR	04	3.33%
10	Year of Experience in Hospital	<1 Year	23	19.16%
		1–3 Years	64	53.3%
		3–5 Years	14	11.7%
		>5 Years	19	15.8%
11	Trained in HIS	Yes	120	100%
		No	00	00%
12	Year of Experience Using HIS	1–3 Years	90	75%
		3–5 Years	14	11.66%
		5–7 Years	16	13.33%

Table.no.01. frequency & percentage distribution of demographic variable of staff nurses working in hospital.

Section B: Assessment of the level of impact of ICT on nursing practice among staff Nurses:

N=120

Sr. No.	Levels of Impact	Scale	No. of Nurses (f)	%
1	Very high impact	100-125	103	85.83
2	High impact	75-100	17	14.16
3	Moderate impact	50-75	0	0
4	Low impact	25-50	0	0
5	Very low impact	1-25	0	0
Total			120	100

Table.no.02. Level of Impact of ICT on Nursing practice

The findings of the distribution of nurses according to the level of impact of ICT on nursing practice among staff nurses reveals that highest percentage (85.83%) of the nurses had very highly impact of ICT on nursing practice, whereas highly impact of ICT on nursing practice among staff nurses was found in 14.16%.

Assessment of the level of impact of ICT on nursing practice among staff Nurses

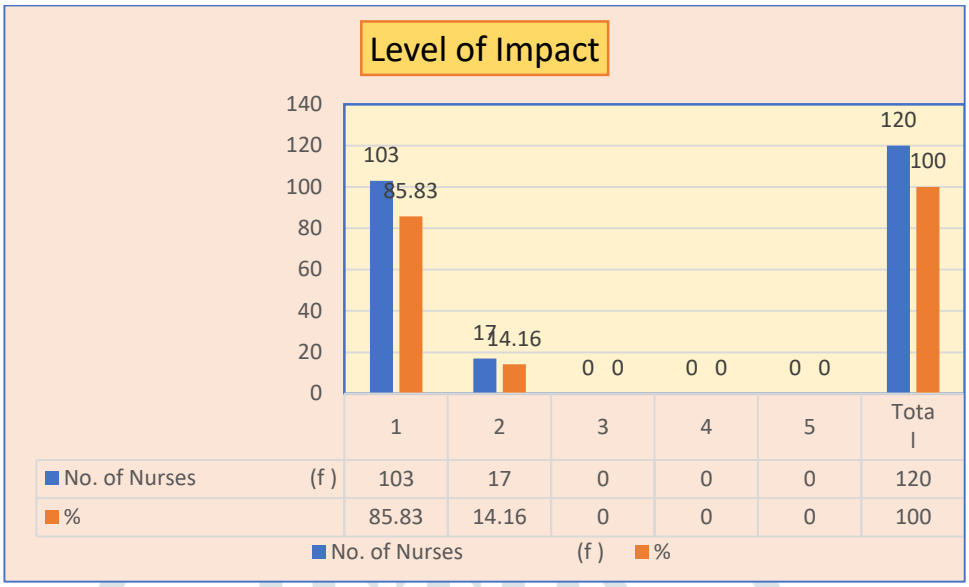

Figure no.1. distribution of nurses according to the level of impact of ICT on nursing practice among staff nurses reveals that highest percentage (85.83%) of the nurses had very highly impact of ICT on nursing practice, whereas highly impact of ICT on nursing practice among staff nurses was found in 14.16%.

Section C: To find out association between impact of information and communication technologies on nursing practice with their selected demographic variables.

Sr. No.	Variable	Category	Median (<108)	Median (>108)	Chi-Square Value	P Value	Significant
1	Age	20–25 Years	44	30	1.029	0.3103	*
		26–30 Years	22	19			
		31–35 Years	0	2			
		Above 35 Years	1	3			
2	Gender	Male	20	15	0.0344	0.852	*
		Female	47	38			
3	Marital Status	Married	19	15	0	0.994	*
		Unmarried	48	38			
4	Spouse is Nurse	Yes	9	5	0.4592	0.498	*
		No	58	48			
5	Child	Yes	7	5	0.0338	0.8541	*
		No	60	48			
6	Qualification	ANM	3	2	0.146	0.701	*
		GNM	25	22			
		B.B.Sc Nursing	22	14			
		P.B.B.Sc Nursing	17	15			
7	Monthly Income	₹2,391–11,836	21	21	0.592	0.441	*
		₹11,837–23,836	45	32			
		₹23,674–47,347	1	0			
		Above ₹47,347	0	0			
8	Place of Working	Female Onco	1	1	0.073	0.786	*
		Casualty	3	3			
		Cardiac ICU	2	2			
		CSSD	2	2			
		CVTS ICU	1	2			
		Female Ortho	5	3			
		FMW	2	0			
		FSW	1	3			
		Gynecology	6	4			
		L.R	3	2			

		Male Ortho	1	1			
		MMW	5	1			
		MICU	8	2			
		MSW	5	2			
		NICU	4	3			
		OT	4	3			
		Oncology	2	3			
		Ophthalmology	1	3			
		Radiation Oncology	2	1			
		Pediatric	2	2			
		SICU	4	6			
		TKR	2	2			
		SPR	1	2			
9	Year of Experience in Hospital	<1 Year	12	11	2.47	0.1159	*
		1–3 Years	40	24			
		3–5 Years	8	6			
		>5 Years	7	12			
10	Year of Experience Using HIS	1–3 Years	52	38	0.698	0.403	*
		3–5 Years	8	6			
		5–7 Years	6	9			
		>8 Years	0	0			

Table no.03: Significant association structured (Likert type) rating scale score and selected demographic variables of staff nurses.

Not Significant = *

Table no.03. shows that There is no significant association between the structured (Likert type) scale scores and selected demographic variables of staff nurses.

The study Findings revealed that the mean impact of ICT score was 107 ± 6.03. χ^2 was used to analyse, the association of impact of ICT on nursing practice level with demographic variables which showed that there is no significant association between the demographic variables such as age (χ^2=1.029, P <0.05),marital status of the staff nurses (χ^2=0.99; P < 0.05),qualification of the staff nurses (χ^2=0.146 ; P < 0.05) ,years of experience in hospital (χ^2=2.47; P < 0.05) and monthly income (χ^2=0.592; P < 0.05),place of working (χ^2=0.073; P < 0.05),year of experience using HIS system of staff nurses (χ^2=0.698; P < 0.05).

DISCUSSION

The findings are discussed under the following subheadings:

1. Impact of information and communication technologies on nursing practice among staff nurses.
2. Findings related to demographic characteristics of samples.
3. Association between impact of information and communication technologies on nursing practice and their selected demographic variables.

1.Impact of information and communication technologies on nursing practice among staff nurses

The impact regarding ICT in nursing practice among staff nurses was assessed by self-structured questionnaire schedule. Out of 120 staff nurses, 103 staff nurses (86%) percent had very high impact of ICT on nursing practice and 17 staff nurses (14.16) percent had high impact of ICT on nursing practice. The overall mean percentage were 53.9 percent mean 16.17 with standard deviation of 6.031. These findings showed that most of the staff nurses had very high impact regarding ICT on nursing practice.

The study was online survey of the 13,588 members of the Nurses Association of Barcelona who had a registered email account was carried out. Factor analysis, cluster analysis and binomial logit model was undertaken. Although most of the nurses (76.70%) are utilizing the Internet within their daily work, multivariate statistics analysis revealed two profiles of the adoption of ICT. The first

profile (4.58%) represents those nurses who value ICT and the Internet so that it forms an integral part of their practice. This group is thus referred to as 'integrated nurses. The second profile (95.42%) represents those nurses who place less emphasis on ICT and the Internet and are consequently labelled 'non-integrated nurses. From the statistical modelling, it was observed that undertaking research activities an emphasis on international information and a belief that health information available on the Internet was 'very relevant' play a positive and significant role in the probability of being an integrated nurse. The emerging world of the 'integrated nurse' cannot be adequately understood without examining how nurses make use of ICT and the Internet within nursing practice and the way this is shaped by institutional, technical and professional opportunities and constraints.[37]

CONCLUSION

The study was conducted with the objective of assessment of impact of information and communication technologies on nursing practice among staff. The following conclusions were drawn on the basis of the findings of the study.

A simple random sample of 120 staff nurses selected from selected hospitals based on the specific criteria. The data on baseline sample characteristics were analysed using descriptive statistics.

The study showed that the level of impact of ICT on nursing practice among staff nurses reveals that highest percentage (85.83%) of the nurses had very highly impact of ICT on nursing practice, whereas highly impact of ICT on nursing practice among staff nurses was found in 14.16%.

Study was showed that there is no association between impact of ICT on nursing practice scores of staff nurses and selected demographic variables such as age ($\chi^2 = 1.029$), gender ($\chi^2 = 0.034$) Qualification ($\chi^2 = 0.146$), marital status ($\chi^2 = 0.994$),monthly income ($\chi^2 = 0.592$), year of experience in hospital ($\chi^2 = 2.47$), place of working ($\chi^2 = 0.073$), year of experience using HIS system ($\chi^2 = 0.69$).

CONFLICT OF INTEREST:

The authors have no conflicts of interest regarding this investigation**.**

REFERENCES

1) Westra, B., L. Pruinelli, C. Delaney, 2015. Nursing Knowledge, Big Data Science, CIN 33: 427-431.
2) Carrington JM, Tiase VL. Nursing informatics year in review. Nurs Adm Q 2013; 37(2):136-143.
3) Mair F, May C, Murray E, Finch T, Anderson G, O'Donnell C, et al. NETSCC. 2009. Understanding the implementation and integration of e-Health services.
4) Institute of Medicine. The Future of Nursing: Leading Change, Advancing Health. Washington, DC: The National Academic press; 2011.
5) Roper N. et al, The Roper-Logan-Tierney Model of Nursing: Based on activities of living (2000), Churchill Livingstone.
6) Bourhis, R., Roth, S., and MacQueen, G. (1989). Communication in the hospital setting: A survey of everyday language use amongst patients, nurses and doctors. Social Science and Medicine, 28(4), 33+9-346.
7) Haux Reinhold, 2006, Health information systems – past, present, future, International Journal of Medical Informatics (2006) 75, 268—281.
8) Yoo H, Lim O, Shim J. Critical care nurses' communication experiences with patients and families in an intensive care unit: A qualitative study. PLOS ONE. 2020;15(7): e0235694. https://onlinelibrary.wiley.com/doi/10.1111/nicc.12141