Disposition of Nursing Staff Toward Using Information Systems

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Abstract
Currently hospitals are spending much money in Information Systems (IS) to enhance quality of care, efficiency and safety**. Aim:** The study aimed to assess the disposition of nursing staff toward using information systems. **Research design:** A descriptive design was carried out in this study. **Setting:** The study was performed at Intensive care units of Assuit University Hospitals (Chief Assuit University Hospital, Women Health Hospital and Pediatric University Hospital) **Subjects:** A convenient sample **(250)** of nursing staff from the previous setting. **Tools of the study:** Two tools were used, the first one was: A self-administered questionnaire about Knowledge of nursing staff about using information systems and the second one was: A self-administered questionnaire about nursing staff attitudes toward using information systems **Results:** The nursing staff have good knowledge and positive attitudes toward using information systems and there was a positive relationship between all variables of the study participants' knowledge and total score of attitudes toward using information systems with great statistically significant difference. **Conclusion:** The nursing staff have good knowledge and positive attitudes toward using information systems. **Recommendation:** The study recommended that, Hospital administration should work to implement a health information system for the hospital.

Keywords: Disposition, Information Systems, Knowledge, Attitudes & Nursing Staff.

Introduction
Health Information Technology is a part that conjoins Information Systems, Computer Science and Healthcare. This part is acquiring attention globally as a result of advancement in technology and challenges concerning healthcare delivery. Systems developed in this area are sometimes named Health Information Systems (HIS), Health Informatics, etc. **(Kulkarni., et al., 2011).**

To a greater extent health care organizations are establishing electronic systems to store patient information. These are recognized as electronic patient records (EPR), although the systems can be identified differently locally, using terms such as electronic nursing records, electronic health records, or computer-based patient record systems. The uses of these systems may vary, e.g. some are applied by nursing staff only, whereas others are also applied by physicians and other professionals. Characteristics of the professionals themselves work a significant role in whether new work routines are applied and actually used (**Francke et al., 2008)**.

Since the 1960s, the first EHRs emerged in academic medical centers. EHRs in their essential form have four basic clinical components: a) order entry with warnings, evidence based order sets, and adverse drug actions; b) review of results for lab values, diagnostic tests, medications, and care plans; c) certification of assessments, education, medication administration, care plans, and flow sheets; and d) care management including referrals, scheduling, and/or patient disease archive. (**Trangenstein & Weiner 2011**) There are more comprehensive formulas of EHRs available that include dvance directives, even larger integrated decision support program (**The Office of the National Coordinator(ONC) for Health Information Technology , 2012).**

Hospitals describe that EHRs have been "life savers" by avoiding drug interactions, allergy conflicts, and human fault in ordering, filling, and administering drugs through functions that compare physicians' orders against standards and verify a patient is receiving the right medication or treatment. The Sentara health system calculated that it avoided 117,400 potential medication errors due to medication barcoding.**(Zlabek, Wickus, & Mathiason, 2011) .**

Preparing 21st century nurses with the knowledge, skills and attitudes (KSAs) to supply safe, quality patient care and to be valued for nursing's continuing contribution to informatics and EHRs is serious. **(Quality & Safety Education for Nurses QSEN, 2013).**

Employing Health Information Systems implies a new mode of structuring work. The nurse must have approach to a computer to read or fill in a patient record for example, and information itemized will be more standardized as an outcome. In addition, nursing staff members must be able and willing to work with computers **(Dahm & Wadensten, 2008).**

Chiefs in nursing must play the role of supporters for nursing informatics. Encouragement is about influencing people, policies, practices, structures and systems in order to create about change. In advocating for nursing informatics, Chiefs need to link clearly and briefly and to configuration their message to fit both the situation and the intended audience (the intended audience could be nursing students or practicing nurses). Chiefs should be comfortable in interconnecting in verbal, written, and electronic formats. Lastly, nurse chiefs must set positive, collaborative relationships with others to gain the support necessary to address the issue of nursing informatics **(Tomajan, 2012)**.

Significance of the study

Generally **(HIS)** are linked with decreases in medication administration faults and time consumed on documentation, as well as enhanced quality of nursing documentation. Nurse communication and workflow appear to be supportively influenced by technology as studies have identified nurse satisfaction with enhanced integration of technology systems into workflow procedures, such as documentation, medication, and patient discharges and transfers (**Burns et al., 2008)** So it is significant to evaluate nursing staff knowledge and attitudes toward using information systems at I.C.Us in Assuit University Hospitals.

Aim of the study

This study targets to assess the disposition of nursing staff regarding using information systems at I.C.Us in Assuit University Hospitals.

Specific objectives

-Identifying nursing staff knowledge toward using information systems at I.C.Us at Assuit University Hospitals.

-Identifying nursing staff attitudes toward using information systems at I.C.Us at Assuit University Hospitals.

Research questions

1-What is the knowledge of nursing staff about using information systems at I.C.Us at Assuit University Hospitals?

2-What is the attitudes of nursing staff toward using information systems at I.C.Us at Assuit University Hospitals?

Subjects & Method

The methodology of the current study will be described according to the four following designs Technical design, Administrative design, Operational design and Statistical design.

1. Technical design: Included the study design, setting, subject and tools of data collection.

1.1) Study design.

The current study was carried out by a descriptive study design.

1.2) Setting.

The study was performed in Intensive Care Units (I.C.Us) at Assuit University Hospitals (Chief Assuit University Hospital, Women Health Hospital and Pediatric University Hospital)**.**

1.3) Subject.

All nursing staff at I.C.Us.in Assuit University Hospitals (Chief Assuit University Hospital, Women Health Hospital and Pediatric University Hospital). The total number (250) classified as follows: (73) had Bachelor degree of Nursing , (55) had Technical Institute of Nursing and (122) had Diplom or Secondary Technical Nursing School.

1.4) Data collection tools.

The following two tools were used to collect data for the study these were: (1) Knowledge of nursing staff toward using information systems questionnaire sheet (2) Nurses attitudes toward using information systems questionnaire sheet.

Tool (1): Knowledge of nursing staff toward using information systems questionnaire sheet it includes two parts:

-1st part related to personal characteristics data.

Data was collected from the study participants including: age, unit, years of experience in hospital, and educational qualifications.

-2nd part related to questionnaire sheet: **Knowledge of nursing staff toward using information systems**

It was a self-administered questionnaire which established by **Mohamed , (2012)** and implemented by the researcher . It was manipulated to assess the nursing staff knowledge about using information systems at I.C.Us in Assuit University Hospitals.

- The questionnaire sheet consists of **(57)** questions related to nursing staff knowledge toward using information systems. It was classified into 4 categories: Importance of computer included (13) questions, Importance of information systems that included (24) questions, Importance of internet included (10) questions, Obstacles to use of the information systems which meeting nurses when using information systems included (10) questions.

Scoring system

The scoring system for all points of the variables was answered by (Yes) or (No) .The answer chooses was (one) mark for (yes) and (zero) mark for (No).

The total score of the questionnaire ranged from one to three levels first is poor **(below 50%)**.Second level is fair if ranged from **(50%-70%).**and third level is good if the scoring was above **(70%).**

Tool (2) Nurses attitudes regarding using information systems: - Questionnaire Sheet was

handled to evaluate nursing staff attitudes toward using information systems. It was developed by **Chan**, **(2007)**. It was comprises of five objects.

Scoring system

The scoring system of this questionnaire is a three points Likert- scale ranging from 1 = Disagree; 2 = Uncertain; and 3 = Agree. Total score of the questionnaire classified into positive attitude **(above 70%)** and Negative attitude **(below 70%)**.

2. Administrative Design

An official approval to carry out the study was acquired from the Dean of Nursing Faculty-Assuit University followed by letters to the managers of Assuit University Hospitals for authorization to collect required data of the present study.

3-Operational Design:

The operational design included Preparatory phase, pilot study, and field work.

3.1) Preparatory phase.

Review of the literature related to the issue of the study and translated the questionnaire sheet that used to assess nursing staff attitudes toward using information systems into Arabic. This phase took about three months from October to December 2015.

Ethical considerations

The study proposal was agreed by ethical committee in the Faculty of Nursing Assuit University. Oral agreement was taken from all participants in the study, confidentiality of taken data was assured, and the purpose, nature and the aim of the study was clarified prior to beginning of data collection.

3.2) Pilot study.

A pilot study was carried out to evaluate applicability of the study participants' attitudes toward using information systems questionnaire Sheet .It was done on 10% with total number 25 study participants working in general medical and surgical units. It was excluded from the studied participants. The questionnaire was tested for its content validity by jury consisted of (5) experts from Nursing Administration Department to assess the coverage, relevancy and clarity of items. No necessary modifications were done. Data collected from the pilot study were analyzed and the study participants' attitudes toward using information systems questionnaire total reliability was **(α = 0.920).** The data collection for pilot study it took less than one month.

3.3) Field work

Data collected by the researcher through a self-administered questionnaire which introduce to the study participants at the work unit. The researcher explained the goal of the study, and clarified that the information will be applied for scientific research. The study tools took about fifteen minutes for each one to be filled. The data collection took about three months from January to March 2016.

4.)Statistical analysis

Data entry and analysis was done by using "Statistical Package for the Social Sciences" (SPSS) version 20.0**.** Data were showed using descriptive statistics in the form of frequencies, mean, and standard deviation were utilized to analyze data. Relevant statistical tests of significance were used to identify the relations among the study variables. Kruskal Wallis test, Mann-Whitney test and Spearman correlation were worked. It was considered significant when p- values were a lesser amount of 0.05.

Results

Table (1): personal characteristics of the study participants at ICUs at Assuit University Hospitals, (n= 250*).*

personal characteristics	No. (n= 250)	%
Department of work:		
Trauma ICU	64	**25.6**
General ICU	61	24.4
Coronary ICU	46	18.4
Pediatrics ICU	39	15.6
Obstetrics ICU	22	8.8
Post-operative ICU	18	7.2
Age in years:		
< 30 years	157	**62.8**
≥ 30 years	93	37.2
Mean ± SD (Range)	29.26 ± 6.15 (20.0 – 50.0)	
Level of education:		
Bachelor degree of Nursing	73	29.2
Technical Institute of Nursing	55	22.0
Diploma of Secondary Technical Nursing School	122	**48.8**

personal characteristics	No. (n= 250)	%
Years of experience:		
< 5 years	73	29.2
5 - 10 years	109	**43.6**
> 10 years	68	27.2
Mean ± SD (Range)	8.55 ± 6.25 (1.0 – 27.0)	

Table (2): Mean score of the study participants' Knowledge about using information systems at ICUs at Assuit University Hospitals.

Variables	Mean ± SD	Range
Importance of the computer	9.48 ± 2.68	0.0 - 12.0
The importance of information systems and electronic medical record	20.40 ± 4.52	0.0 - 24.0
Importance of the Internet	8.34 ± 1.58	0.0 - 9.0
Barriers to the use of information systems	8.32 ± 2.06	2.0 - 10.0
Total	46.54 ± 8.48	3.0 - 55.0

Table (3): Distribution of the study participants' attitudes toward using Information Systems at ICUs at Assuit University Hospitals.

Statements	Agree		Uncertain		Disagree	
	No.	%	No.	%	No.	%
HIS can improve the productivity of hospital healthcare workers	217	86.8	26	10.4	7	2.8
The use of HIS can improve patient care by giving nursing staff more time with patients	214	85.6	25	10.0	11	4.4
By using passwords and keeping them secret in the HIS, nurses can be protected from being convicted of disclosing patient information	222	88.8	22	8.8	6	2.4
HIS saves steps and enhances nursing staff efficiency as compared with manual procedures	218	87.2	23	9.2	9	3.6
HIS makes me feel like my job is more up to date from a technological standpoint	218	87.2	23	9.2	9	3.6

Table (4): Relationship between study participant's personal characteristics and total knowledge and attitudes toward using information systems at ICUs at Assuit University Hospitals.

Personal characteristics	Knowledge	P-value	Attitudes	P-value
	Mean ± SD		Mean ± SD	
Age: ●				
< 30 years	**48.14 ± 8.15**	0.000*	**21.15 ± 3.20**	0.013*
≥ 30 years	43.85 ± 8.40		20.13 ± 3.00	
Level of education:				
Baccalaureate of Nursing	**48.44 ± 7.56**		**22.02 ± 1.68**	
Technical Institute of Nursing	48.04 ± 5.33	0.082	20.88 ± 3.08	0.001*
Diploma of Secondary Technical Nursing School.	45.34 ± 9.74		20.15 ± 3.54	
Department:				
Coronary ICU.	**49.20 ± 5.49**		**21.44 ± 2.11**	
General ICU.	46.39 ± 7.19		20.75 ± 2.40	
Obstetrics ICU.	37.95 ± 16.42	0.000*	17.14 ± 6.54	0.000*
Pediatrics ICU.	47.74 ± 4.53		21.35 ± 2.20	
Post-operative ICU.	43.89 ± 6.50		20.83 ± 2.23	

Trauma ICU.	47.75 ± 8.06		21.20 ± 2.64	
Years of experience:		0.000*		0.000*
< 5 years	45.88 ± 10.73		20.55 ± 4.21	
5 - 10 years	**50.06 ± 4.23**		**21.70 ± 1.84**	
> 10 years	41.62 ± 8.35		19.53 ± 3.10	

Kruskal Wallis test ● *Mann-Whitney test* ** Statistical significant difference (P < 0.05)*

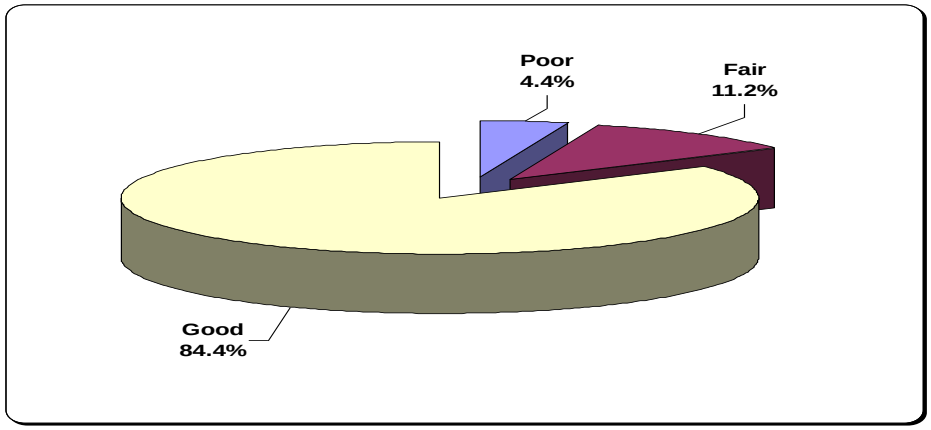

Fig. (1): Distributions of study participants regarding total score of knowledge about using information systems at ICUs at Assuit University Hospitals.

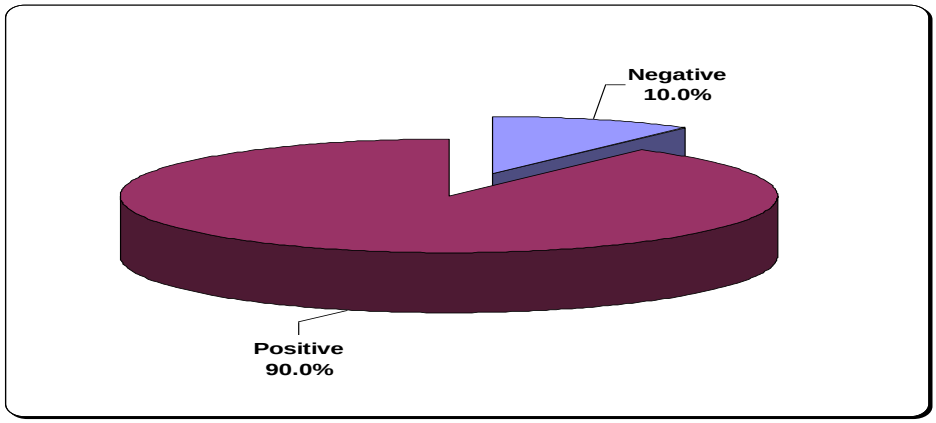

Fig. (2): Distributions of study participants regarding total score of attitudes toward using information systems at ICUs at Assuit University Hospitals.

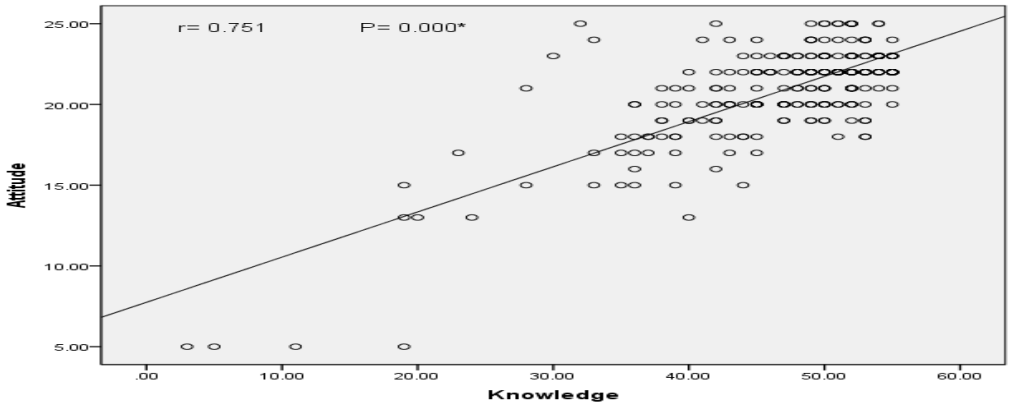

Fig. (3) Correlation between total scores of knowledge and total score of attitudes toward using information systems at ICUs at Assuit university hospitals.

Table (1): Shows the personal characteristics of the study participants at ICUs at Assuit University Hospitals. Regarding their departments of work more than one quarter of the studied participants (25.6%) are working in trauma ICU. Regarding educational level (48.8%) of them have Secondary Technical Nursing School diploma. Nearly to two thirds (62.8 %) of the studied participants aged less than 30 years and (43.6%) of them have between 5-10 years of experience.

Table (2): Shows that the highest mean score regarding to the importance of information systems and electronic medical record and Importance of the computer were (20.40 ± 4.52 & 9.48 ± 2.68) respectively. While the lowest mean score regarding to barriers to the use of information system (8.32 ± 2.06)

Table (3): Illustrates that the majority of the study participants agree about all the statements about their attitudes concerning the using of the information systems, the greater part of the study participants (88.8%) agree about using passwords and keeping them secret in the HIS and nurses can be protected from being convicted of disclosing patient information. only (10.4%) of the sample were uncertain about if HIS can improve the productivity of hospital healthcare workers ,while only (4.4%) disagree that the use of HIS can improve patient care by giving nursing staff more time to care for patients.

Table (4): Reveals that, the highest mean scores concerning to the study participant's total knowledge were at the age less than 30 years (48.14 ± 8.15) In addition, the highest mean scores were between Baccalaureate of Nursing graduates (48.44 ± 7.56) Concerning to departments the highest mean scores were in coronary department (49.20 ± 5.49) and regard to years of experience the highest mean score were among the study participants with experience from 5-10 years (50.06 ± 4.23). While there were statistically significant differences found between the study participant's age, level of education, department and years of experience and their total score of knowledge about using information systems p-value (0.000*,0.082, 0.000*,0.000*)

Concerning the attitudes the highest mean scores were at the age less than 30 years (21.15 ± 3.20), and among Bachelor degree of Nursing graduates (22.02 ± 1.68). Concerning departments the highest mean scores were in coronary department (21.44 ± 2.11) While regarding to years of experience the highest mean score were among the study participants with experience from 5-10 years of experience (21.70 ± 1.84). While there were statistical significant differences were found among the study participant's age, level of education, department and years of experience and their total score of attitudes toward using information systems value (0.013*, 0.001*, 0.000*, 0.000*) respectively.

Fig (1): It is clear that the majority (84.4%) of studied participants have good knowledge about health information systems Also (11.2) of them have fair knowledge and (4.4) have poor knowledge**.**

Fig (2): clears that the majority (90.0%) of studied participants have positive attitudes and (10.0%) have negative attitudes toward using information systems at ICUs at Assuit University Hospitals.

Fig (3): Illustrates the correlation between total scores of knowledge and total score of attitudes toward using information systems .There was a positive association between all variables of the study participants' knowledge and total score of attitudes toward using information systems with high statistically significant difference (p = 0.000*)., r = (0.751)

Discussion

The present study was conducted with the purpose to assess the disposition of nursing staff toward using information systems at ICUs at Assuit University Hospitals.

The result of the current study revealed that the highest mean score of the study participants' knowledge, using information systems were for the importance of information systems and electronic medical record **(Table 2)**. This may be due to information systems are becoming dominant with the vision of improving data handling and communication in healthcare organizations.

This result is consistent with **WHO and International Telecommunication Union, (2012**) which incorporating different information technologies (ITs) into the healthcare system of developing countries is not all about updating the health system but it is about saving life by make easy communication, practicing evidence based decision, incorporating e-learning to distant health professionals, use it as a medium to access recent healthcare information, data handling and processing activities among staffs.

This result is inconsistent with **Kotz, et al., (2015)** who mentioned that fragmented health information systems may create barriers to enhancements in quality of care, efficiency, and patient safety. Moreover, the growing use of mobile devices to capture and replacement electronic health information presents complex security and confidentiality problems.

From the finding of the current study, it appeared that the vast majority agreed on the using passwords and keeping them secret in the Health Information System (HIS), nurses can be protected from being convicted of disclosing patient information **(Table 3)**

This finding is consistent with **Blumenthal, (2009)** who mentioned that technical challenges still result from lack of standardization of technology, the absenteeism of a well-developed healthcare information exchange (HIE) which will let healthcare institutions in a given region to be able to freely share healthcare data. The ability to have an interoperable health information exchange that can both share information quickly and seamlessly also raises concerns on privacy and security of electronically transmitted data.

This finding was inconsistent with **Cronquist& Spector ,(2011)** who illuminated that there are some privacy relates using the internet as some nurses violate patient's confidentiality by publishing patient information and photographs. National Council State Board of Nursing (NCSBN.2011) demonstrated the survey for the misuse of social networking sites, The state boards of nursing had obtained complaints about the nurses who violated patients' privacy and published patient information on social networking sites.

The result of the present study demonstrated that the highest mean scores were at the age below 30 years. While the study participants with age group above 30 years reported the lowest mean score in relation to the knowledge and attitudes toward using information systems **(Table 4).**This may be because the older personnel did not have the chance to study the computer sciences at their study schools and also did not have the chance to take a computer courses at their work. While the younger have studied the computer sciences at their study schools, they lived in modern years and they had the chance to learn more.

This result in accordance with **Ward, et al., (2008)** he mentioned that older staff would as a minimum try to use a computer. The study finding was in disagreement with **Eley, et al., (2008)** who found in his study about barriers to usage of information and computer technology by Australia's nurses with old age were more likely to use computers for appointments, consultation, all the identified administration tasks, communication, and accreditation.

The result of this current study revealed that the staff nurses with baccalaureate stated the highest mean score, while staff nurses with nursing diploma stated the lowest mean score in relation to total of knowledge and attitudes concerning using information systems**(Table 4)**. This might be due to the computer science was an integral part of baccalaureate courses and the students have to pass these courses to have the baccalaureate degree. Also the new circulars of the nursing faculty emphasis on the importance of the computer sciences to make the nurses able to face any challenge in her work field.

This result is consistent with **Nurs, (2012)** who observed nurses' perceptions toward computers, and indicated that head nurses had significantly greater access to computers and technical support. While **Ayres et al., (2006)** found that there is no change in educational background and time spent using the information systems. The finding of the current study revealed that nursing staff working in the coronary department stated the highest mean score in relative to the total knowledge and attitudes regarding using information systems. This result may be due to nursing staff at coronary departments dealing more with some electronic devices as monitors, ECG, ventilators and complexity of care, constant change in patient condition and the elevated amount of the information **(Table 4)**.

While **Morrison, et al., (2008)** study of: Electronic patient records usage throughout ward rounds a qualitative study of interaction among medical staff who found that information technology at intensive care unit may introduce new barriers to communications to staff nurses.

The Findings of the current study showed that the highest mean scores were between study participants with years of experience from 5-10 year. While the lowest mean scores were between study participants with years of experience more than10 years in relation to their total knowledge and attitudes regarding using information systems **(Table 4)** This could be due to the older nurse that had more experiences in her work found that the ordinary work on the paper chart is useful for her to accomplish their work better than start learning to use computer first and then work which make it a difficult process. In addition nurses need to learn English language .While the younger and those with the least time in nursing were more experienced , confident and ready to use more advanced and new devices to be more perfect and excellent in their work.

This result in accordance with findings of **Lin, J., et al., (2007)** who found that nurses who have spent fewer years in nursing are typically early adopters or digital natives of hospital technology while many more mature nursing faculty and clinical nurses tend to be slower technology adopters or digital immigrants.

This result in disagreement with **lee, et al., (2008)** who found that respondent who wrote comments were older, had more nursing experience and had administrative job titles and possessed more computer skills than those who did not write any comments.

As concern to knowledge of the study participants about information systems, it appeared that the majority of the study participants have good knowledge about information systems **(Fig, 1).** This

might be attributed to nowadays, a computer has become key tool for development it is not possible without using of the computer and using new technology for ease and accuracy in collection, classification, archiving, retrieval and processing of data.

This finding was consistent with **King et al., (2014)** who reported that the majority of nursing staff are aware of benefits of using Computer-based information systems were anywhere/anytime access, improved care coordination, and ability to share data with decision makers.

This finding was inconsistent with **Urquhart, et al., (2009)** who mentioned that most of nursing staff in the hospitals are unaware of the health information systems benefits and using including the potential for misuse (e.g. playing computer games) and information technology downtime because of crashes and power-cuts.

Concerning to attitudes of the study participants regarding information systems, it presented that the vast majority of the study participants have positive attitudes toward using information systems **(Fig, 2)** this might be attributed to that the information systems use can improve the effectiveness and efficiency of the healthcare institution. Inaccuracy, non-timeliness, incompleteness, inconsistency and lack of secrecy of paper-based data are basic triggering points to adopt using of information systems. These findings are reliable with **Kivuti, (2012)** who found that the nurses have a positive attitude concerning computerization**.**

But the findings of this study are inconsistent with those of **Laramee et al., (2010)** who found that nurses had negative attitudes towards computerization. The attitude of nurses regarding computers has enhanced over the years.

The current study findings appeared that the majority of the study participants has positive attitudes regarding information systems and there is significant statistical differences and positive relation between the study participant's knowledge and their attitudes about information systems **(Fig, 3)** this might be attributed that more knowledge and acceptance of information systems lead to more disposition and likelihood of successful implementation.

This finding is consistent with **Chan, (2007)** who said that although nurses' attitudes toward computer use has become increasingly positive, resistance to use and negative attitudes regarding computers have often been attributed to lack of knowledge about computers.

Conclusion

Nursing staff at Assuit University Hospitals have good knowledge and positive attitudes regarding using information systems**.** There was statistical significant difference between study participants' knowledge and attitudes regarding using information systems and their Age, Level of education, Department and years of experience.

Recommendations:

Based on the previous findings of the current study, the following recommendations are proposed:

1-Policy makers of the hospitals have to adopt and applicate computer-based nursing documentation system as a part of their policies and involve nurses in more educating courses, in-service training programs about computer particularly in documentation system**.**

2-Hospital administration should work to adopt a health information system that suitable for the hospital.

3-The hospital administration should provide departments with computers as a mean supported with network and internet access to introduce computerized activities.

4-Nursing Faculty Administrators should adopt the view of adding health information systems courses in the curriculum of the nursing students.

References

1. **Ayres, D., Soar, J., & Conrick, M., (2006):** Health information systems. In Transforming healthcare with technology: Informatics in healthcare, ed. Conrick, M., Melbourne, Thomson Social Science Press. PP. 110–127. Google Scholar.
2. **Blumenthal D., (2009):** Stimulating the adoption of health information technology. *The New England Journal of Medicine*, *360*(15), 1477–1479.
3. **Burns L., Gassert A., & Cipriano P., (2008):** Smart technology, enduring solutions. JHIM;Vol 22 No (4):pp. 24–30.
4. **Chan M., (2007):** A cluster analysis to investigating nurses' knowledge, attitudes, and skills regarding the clinical management system. Computers Informatics Nursing; Vol 25 No(1), PP.45-54.
5. **Cronquist R., & Spector N., (2011):** Nurses and social media: Regulatory concerns and guidelines. Journal of Nursing Regulation Vol 2, No 3, PP. 37-40.
6. **Dahm M., & Wadensten B., (2008):** Nurses' experiences of and opinions about using standardized care plans in electronic health records-a questionnaire study, Journal of Clinical Nursing Vol 17 No (16) pp 2137-2145

7. **Eley R., Fallon T., Soar J., Buikstra E., Hegney D., (2008):** Barriers to use of information and computer technology by Australia's nurses: a national survey. J Clin Nurs.Vol. 18.No.(8),PP.1151-1158.
8. **Francke A., Smit M., de Veer A., & Mistiaen P., (2008):** Factors influencing the implementation of clinical guidelines for health care professionals: a systematic meta-review, BMC Medical Informatics and Decision Making,PP 8-38
9. **King J., Patel V., Furukawa M., Hsiao C., Jha A., & Mostashari F., (2013):** Office-based physicians are responding to incentives and assistance by adopting and using electronic health records. *Health Affairs, Vol.32.No(8),pp.*1470–1477 .
10. **Kivuti, D., (2012):** nursing classification and computerized nursing information systems(CNIS):situation and issues . perspect infirm,Vol. 4No.(4) ,pp.24-28.
11. **Kotz, D., Fu, K., Gunter, C., & Rubin, A., (2015):** "Privacy and Security: Security for Mobile and Cloud Frontiers in Healthcare." Communications of the Association for Computing Machinery, Vol.58 No(8),pp21-23.Available http://www.cs.dartmouth.edu/~dfk/papers/kotz-frontiers.pdf.
12. **Kulkarni P., Ozturk Y., & Mphasis, (2011):** Mobile patient healthcare and sensor information system. Journal of Network and Computer Applications. Vol. 34. No(1),pp. 402-417.
13. **Laramee A., Bosek M., Shaner-McRae H., & Powers-Phaneuf T., (2010):** Nurses' attitudes toward the electronic health record still uncertain after 6 months. Heart and Lung The Journal of Acute and Critical Care Vol. 39 No. (4),pp.357-358.
14. **Lee T., Mills M., Bausell B., and Lu M., (2008):** Two-stage evaluation of the impact of a nursing information system in Taiwan. International journal of medical informatics.;Vol. 77 .No .(10),pp 698-707
15. **Lin J., Lin K., Jiang W., Lee T., (2007):** An exploration of nursing informatics competency and satisfaction related to network education. J Nurs Res. 2007; 15(1): 54-66. http://dx.doi.org/10.1097/01.JNR.0000387599.17285.76
16. **Mohamed, H., (2012):** Disposition of nursing personnel Toward using information systems ,Unpublished Master degree Thesis, Faculty of Nursing, Benha University**.**
17. **Morrison C., Jones M., Blackwell A., & Alain, (2008):** Electronic patient record use during ward rounds: a qualitative study of interaction between medical staff. Published by ACM (Association for Computing Machinary), New York; Vol. 2 .pp. 2587–2590.
18. **Nurs, J., Dustin Charles, Michael Furukawa, & Meghan Hufstader, (2012):** Electronic Health Record Systems and Intent to Attest to Meaningful Use among Non-federal Acute Care Hospitals in the United States: 2008-2011, http//www.ncbi.nih.govl/pumped available on 4/7/2012.
19. **Office of the National Coordinator (ONC) for Health Information Technology, (2012)** Data Brief. No.1. Available from:http://www.healthit.gov/media/pdf/ONC_Data_Brief_AHA_2011.pdf
20. **Quality & Safety Education for Nurses QSEN, (2013):** Retrieved from http://qsen.org/competencies
21. https://link.springer.com/content/pdf/10.1007%2F978-3-540-76805-0.pdf
22. **Tomajan, J., (2012):** Advocating for Nurses and Nursing http://nursingworld.org/MainMenuCategories/ANAMarketplace/ANAP eriodicals/OJIN/Table of Contents/Vol.17,No.1, pp.1:17. **Trangenstein ,P. and Weiner, E, (2011):** Nursing informatics consultation. University of Louisville
23. **Urquhart, C., Currell, R., Grant, M., & Hardiker, N., (2009):** 'Nursing record systems effects on nursing practice and healthcare outcomes', Cochrane Database of Systematic Reviews, 1, CD002099. PMid:1916020637(1) Art. #1150, 6 pages
24. **Ward, R., Stevens, C., Brentnall, P., & Briddon, J., (2008):** 'The attitudes of health care staff to information technology: a comprehensive review of the research literature', Health Information and Libraries Journal,Vol. 25 .No.(2),pp 81–97
25. **World Health Organization and International Telecommunication Union, (2012):** National eHealth Strategy Toolkit. ITU. Available from https://www.itu.int/pub/D-STR-E_HEALTH.05-2012
26. **Zlabek, J., Wickus, W., & Mathiason, M., (2011):**"Early Cost and Safety Benefits of an Inpatient Electronic Health Record J Am Med Inform Assoc.; Vol.18.No(2),pp.169–172.