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Relation between Nursing Informatics Competency and Nurses' Attitude toward Evidence-Based Practice among Qualified Nurses at Mansoura Oncology Center

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Abstract: Nowadays, Nursing informatics and evidence based practice (EBP) are considered an important practices in the success of patient care in any organization. Accordingly, nurses, have to establish informatics experience to effectively implement evidence based practice. **The aim** of this study was to assess the relation between nursing informatics competency and nurses' attitude toward evidence-based practice among qualified nurses at Mansoura Oncology center. **Design** of the study descriptive correlation study was used. **Sample** of the study included all qualified nurses with bachelor degree of nursing. **Tools** of data collection: two tools were used namely Nursing Informatics Competency Assessment Tool (NICAT) and the Evidence-Based Nursing Attitude Questionnaire (EBNAQ). **Result:** The result of the study showed that there was statistical significant positive correlation between the qualified nurses' total nursing informatics competency scores and their total attitude score toward evidence based practice. **Recommendations:** Incorporating nursing informatics and evidence-based knowledge and skills in the nursing curriculum.

Key words: Nursing informatics competency, evidence based practice, qualified nurse.

INTRODUCTION

The advent of new century has created innovative challenges in the health care settings, great emphasize was directed toward technology to deliver innovative therapies at the bedside, and to interpret substantial amounts of quality-related outcomes data in the executive boardroom (Godsey, 2015). Technology is considered an important part of health care that has increased rapidly over the past four decades. Nurses have participated in, structure, design and implement information technology in health care. The field of nursing informatics (NI) is now a recognized specialty in nursing profession especially after expanding the knowledge required for this field (Maryniak, 2013).

Nursing profession as a practical discipline is expected to be accountable for integrating the best research evidence into the decision-making process with the aim of improving care. To achieve this goal, EBP was introduced as an important initiative to healthcare system. EBP gives competent, valuable, and cost-effective method to give protected care. EBP in nursing is the process by which nurses make clinical decisions using the best available research evidence, which is blended with their clinical expertise, patient preferences and clinical guidelines (Farokhzadian *et al*, 2015).

The term "nursing informatics" was originally seen in literature in the 1980s, including a definition of joining nursing, information, and computer sciences for managing and processing data into knowledge for using in nursing practice (Liston & McKinnon, 2017; Murphy, 2010). In 1994, the American Nurses Association (ANA) began developing a statement to designate and define the scope of nursing informatics (Baker, 2012). The meaning of nursing

informatics has developed and been refined, with the American Nurses Association as "a specialty that integrates nursing science, computer science, and information science to manage and communicate data, information and knowledge in nursing practice" (ANA, 2008). It focuses on how nurses constructing knowledge and organizing data to support nursing management, practice, and research (Daniel & Oyetunde, 2013). Nursing informatics (NI) contains computer literacy, informatics literacy, and informatics management. (Rahman, 2015)

Nursing informatics is a significant quality tool for patient care, which in turn facilitates, improves and increases the development of the organization as well as influences value and cost of health care and finally enhances information administration and communication among health care providers. When nurses have a level of informatics skill, they are better ready to direct multifaceted medical data of patients, increase quality, enhance outcomes, increase patient satisfaction, and promoting evidence-based practice (Liston & McKinnon, 2017). Nursing informatics reduces ambiguity, redundancy and the boring process of documentation, reduces turnaround time; the turnaround time starts from the time a request is made to the time it is fully accomplished (McGonigles & Mastrian, 2008). Moreover, computer information systems prevent nurses from making medication errors, assist nurses easily understand physicians' orders in patient management, facilitate teamwork and allotment of patient data with other health care providers, better evaluation and following up of patients diseases and conditions, aids nurses use research to give evidence based care, and finally helps nurses work more rapidly, smoother and further proficient in whatever they do (Daniel & Oyetunde, 2013). Therefore, all nurses

must have a minimum set of competencies in nursing informatics.

several healthcare data technology implementation are including programmed decision-support systems that have been established from evidence-based practice (EBP) (Fehr, 2014). previous researchers have documented that EBP would be dependent upon nursing's ability to demonstrate expert knowledge in patients' individual and collective decision making processes. Such expert knowledge in practice is based on a foundational ability to use information technology effectively and manage electronic sources of information, which assumes at least a basic education in informatics (Godsey, 2015).

Evidence-based practice (EBP) has been defined as the conscientious, explicit and judicious use of theory-derived, research-based information combined with clinical expertise while considering resources, individual needs and preferences to make clinical decisions. It involves making clinical decisions informed by the most relevant and valid evidence available through integration of clinical expertise and patient preferences (El-sayed, 2014).

SIGNIFICANCE OF THE STUDY

In any health care organization, the key to successful patient care is to keep on informed and as up to date as possible on the latest practice. The EBP process emphasize on incorporating good information-seeking habits into a daily routine. Digitization and internet have improved accessibility to information, regardless of space and time. Therefore, it is very important for all health care providers to become friendly with and proficient at utilizing information technology, including the internet and other electronic information resources. Proficient use and access to computers are essential to EBP and best practices (Fineout-Overholt & Stillwell, 2011). Nursing informatics was considered as a requirement for evidence based practice and is the base required to advance patient care. Accordingly, nurses, have to to enhance informatics proficiency to successfully interpret and utilize EBP. However, up to our knowledge limited studies were conducted in Egypt to assess the relation between nursing informatics capability and nurses' attitude toward EBP.

Aim of the study:

The aim of this study was to assess the relation between nursing informatics capability and nurses' attitude toward EBP among qualified nurses at Oncology center, Mansura University

Research question:

- 1- What is the level of nursing informatics competency among qualified nurses
- 2- What is nurses' attitude toward evidence based practice?
- 3- Is there a relation between nursing informatics competency and Nurses' Attitude toward Evidence-Based Practice?

SUBJECTS AND METHODS

Research design: Descriptive correlation study design was used.

Setting of the study: The study was conducted at Oncology center, Mansura University hospital, Egypt, which consists of eleven (11) floors. The hospital bed capacity is 350 beds approximately.

Sample: convenience sample was used included all qualified nurses with bachelor degree of nursing who work in the above-mentioned settings. 50 qualified nurses were available at the time of data collection, and agree to participate in the study.

Tools of data collection: Two tools were used for data collection: Nursing Informatics Competency Assessment Tool (NICAT) and the Evidence-Based Nursing Attitude Questionnaire (EBNAQ).

The first tool consists of two parts: The first part is demographic characteristics of studied sample as (age, sex, and years of experienceetc.).

The second part is Nursing Informatics Competency Assessment Tool (NICAT). It was developed by Rahman (2015) to assess nursing informatics competency. It is composed of three subscales namely, Computer Literacy Assessment (10 items), Informatics Literacy Assessment (13 items) and Informatics Management Skills Assessment (7 items).

Scoring system:

The questionnaire consists of five- point Likert scale ranged from not competent to Expert. Not competent (1), somewhat competent (2), competent (3), very competent (4), and Expert (5). Nursing Informatics Competency Scoring Interpretation: Novice: 30. Advanced Beginner: 31-59, Competent: 60-89, Proficient: 90-119 and Expert: 120 -150. In this study the internal consistency for the NICAT was 0.976 indicating high reliability of the tool

The second tool is: The Evidence-Based Nursing Attitude Questionnaire (EBNAQ), which developed by (Ruzafa-Martínez, 2011) to measure attitudes of nurses toward evidence-based practice. The questionnaire contains 15 items.

Scoring system:

The questionnaire consists of five- point Likert scale ranged from strongly disagree (1), disagree (2), neutral (3), agree (4), and strongly agree(5). The maximum score obtainable is 75 with a higher score indicating a positive attitude toward evidence-based nursing. The internal consistency for the EBNAQ was reported by the developed author to be 0.85. In this study the internal consistency for the EBNAQ was .845, indicating high reliability of the tool.

Validity of the tools

Data was collected using a self-administered questionnaire, after the translation of the instruments to Arabic. Back translation was conducted for all the instruments in this study. A group of expertise (3) from academic nursing staff (Nursing administration and medical surgical departments, Faculty of nursing, Mansoura University), conducted the content validity of the instruments after translation into Arabic.

Pilot study:

A pilot study was carried out before starting data collection on 5 qualified nurses out of actual sample (10% of the total study sample) selected randomly to ensure the clarity, feasibility and applicability of the tool and to calculate the duration required to fill in the tool's items by each participant. Necessary modification was made before starting data collection. Data obtained from the pilot study was excluded from the study results.

Data Collection:

The questionnaire was distributed on qualified nurses with the help of the head nurses of the units after explaining the aim of the study. The answered sheets were collected in a large folder from the participants at their units by hand in the morning, and afternoon shifts. The time consumed in answering the questionnaire sheet was about 20 to 25 minutes. It was taken three weeks to complete data collection (from 10/12/2016 to 1/1/2017).

Administrative and ethical considerations:

Approval to conduct the study was obtained from the Scientific Research Ethics Committee at Faculty of Nursing – Mansura University. The participants were informed that their participation in the study is voluntary and there is no harm if they choose not to participate and no individual information is shared outside of the research. The anonymity and confidentiality of the data was assured. Consent was established with the completion of the questionnaires.

Statistical Design:

Statistical analysis was done using IBM SPSS 22 statistical software package. Cleaning of data was done to be sure that there is no missing or abnormal data by running frequencies and descriptive statistics. Data was presented using descriptive statistics in the form of frequencies and percentages for categorical variables, means and standard deviations for continuous variables (e.g., age), Chi-square was used. Pearson correlation analysis was used for assessment of the inter-relationships among quantitative variables. The significant level of all statistical analysis was at < 0.05 (P-value)

RESULTS

Table (1): Distribution of personnel characteristics of the studied subjects (N=50).

Personnel characteristics	Frequency	%
Age in years		
<25years	5	10.0
25-30years	21	42.0
31-35years	21	42.0
>40years	3	6.0
Years of experience		
<5 years	16	32.0
5-10years	9	18.0
11-15years	22	44.0
>20 years	3	6.0
Educational qualification		
BSN degree	47	94.0
master degree	3	6.0
Position		
Specialist	25	50.0
head nurse	23	46.0
nurse director	2	4.0

This table shows the distribution of personnel characteristics of the studied subjects. According to the table, 84% of the studied subjects' age ranged from 25 to 35 years old. 44% of them have years of experience ranged from 11 to 15 years.

The table also shows that 50 % of the studied subjects have nurse specialist position. While 46 % of them have head nurse position. Almost all of the studied subjects have BSN degree. Only 6 % have master degree.

Table (2): Distribution of total nursing informatics subscales scores among studied subjects (n= 50).

Scale	Total score	% of mean score	Mean	Std. Deviation	Minimum	Maximum
computer literacy	50	64.24	32.12	12.02	13.00	50.00
Informatics Literacy	65	72.40	47.06	12.26	19.00	65.00
informatics management	35	70.85	24.80	6.69	12.00	35.00
Total nursing Informatics Competency	150	69.32	103.98	28.37	55.00	147.00

This table shows the distribution of total nursing informatics subscales scores among studied subjects. According to the table, the percent mean score of total nursing informatics

competency was (69.32%). The highest percent mean score was related to Informatics Literacy subscale (72.4), followed by informatics management subscale (70.85 %). while the

lowest percent mean score was related to computer literacy (64.24 %).

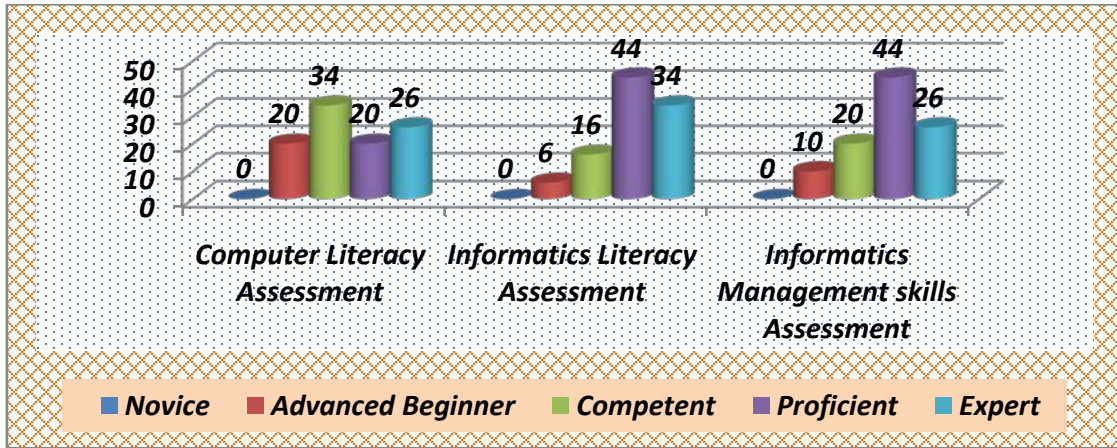


Figure (1) percentage distribution of nursing informatics competency level among the studied subjects

Figure (1) demonstrates percentage distribution of nursing informatics competency level among the studied subjects. According to this figure 78 % of the studied subjects rated themselves as proficient or expert in informatics literacy

subscale followed by informatics management subscale (70%) while, only 46 % of them rated themselves as proficient or expert in computer literacy subscale.

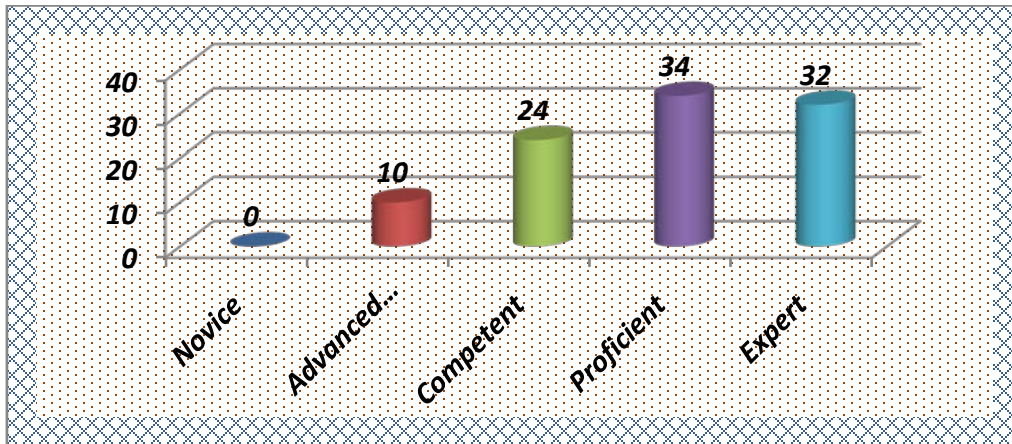


Figure (2): percentage distribution of total nursing informatics competency level among the studied subjects

Figure (2) illustrates the percentage distribution of total nursing informatics competency level among the studied subjects. According to this figure 34% of the studied

subjects have proficient level of nursing informatics competency, followed by expert (32%). While advanced beginner level has the lowest percentage score (10%).

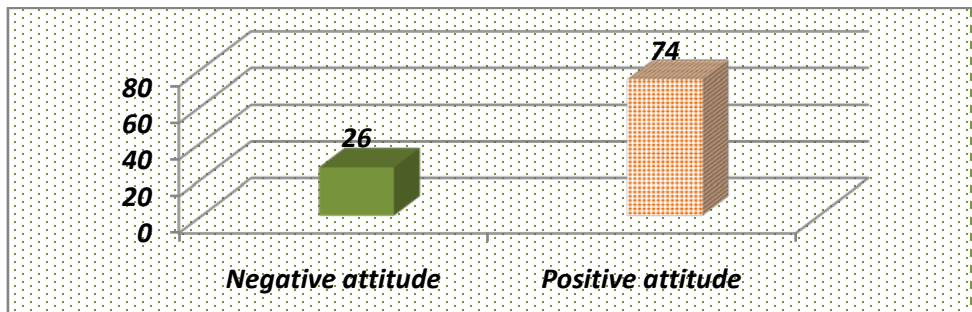


Figure (3): percentage distribution of studied subjects' total attitude score toward evidence-based nursing.

Figure (3) demonstrates the percentage distribution of studied subjects' total attitude score toward evidence-based nursing. According to this figure, (74%) of the studied

subjects have positive attitude toward evidence-based practice, while the rest have negative attitude (26%).

Table (3): correlation between studied subjects' total nursing informatics competency and total attitude score toward evidence-based nursing practice

Variables	Total attitude score toward EBP	
	r-test	P value
Total nursing informatics competency score	.542	.000**

(**) Statistically significant at p<0.01

This table represents the correlation between studied subjects' total nursing informatics competency and total attitude score toward evidence-based nursing practice. According to this table, there was statistical significant

positive correlation between the professional nurses total nursing informatics competency scores and their total attitude toward EBP (r= .542 & p value= .000).

Table (4): Distribution of studied subjects' total nursing informatics competency score in relation to their personnel characteristics.

Personnel characteristics	Total nursing informatics competency score.								Chi square	P value
	Advanced Beginner N=5		Competent N=12		Proficient N=17		Expert N=16			
	No	%	No	%	No	%	No	%		
Age in years										
<25years	0	0.0	2	16.7	0	0.0	3	18.8	32.24	<0.001**
25-30years	5	100.0	7	58.3	4	23.5	5	31.3		
31-35years	0	0.0	0	0.0	13	76.5	8	50.0		
>40years	0	0.0	3	25.0	0	0.0	0	0.0		
Years of experience										
<5 years	2	40.0	9	75.0	2	11.8	3	18.8	39.54	<0.001**
5-10years	3	60.0	0	0.0	2	11.8	4	25.0		
11-15years	0	0.0	0	0.0	13	76.5	9	56.3		
>20 years	0	0.0	3	25.0	0	0.0	0	0.0		
Educational qualification										
BSN degree	5	100.0	10	83.3	17	100.0	15	93.8	3.82	>0.05
master degree	0	0.0	2	16.7	0	0.0	1	6.3		
Position										
Specialist	0	0.0	6	50.0	9	52.9	10	62.5	8.65	>0.05
head nurse	5	100.0	5	41.7	8	47.1	5	31.3		
nursing director	0	0.0	1	8.3	0	0.0	1	6.3		

(**) Statistically significant at p<0.01

Table (4) shows the distribution of studied subjects total nursing informatics competency score in relation to their personnel characteristics. According to this table there is a highly statistical significant correlation between total score of the studied subjects' informatics competency and their

personnel characteristics related to age and years of experience (p value< 0.001).While, there was no statistical relationship between total score of the studied subjects informatics competency and their educational qualification, or their current position in the hospital (p value >0.05).

Table (5): Distribution of studied subjects' total attitude score regarding evidence-based nursing in relation to their personnel characteristics.

Personnel characteristics	Total attitude Scoring				Chi square	P value
	Negative N=13		Positive N=37			
	No	%	No	%		
Age in years						
<25years	2	3	15.4%	8.1%	4.65	>0.05
25-30years	8	13	61.5%	35.1%		
31-35years	3	18	23.1%	48.6%		
>40years	0	3	0.0%	8.1%		
Years of experience						
<5 years	5	11	38.5%	29.7%	7.11	>0.05
5-10years	5	4	38.5%	10.8%		
11-15years	3	19	23.1%	51.4%		
>20 years	0	3	0.0%	8.1%		
Educational qualification					1.12	>0.05

BSN degree	13	34	100.0%	91.9%	1.38	>0.05
master degree	0	3	0.0%	8.1%		
Position						
Specialist	8	17	61.5%	45.9%		
head nurse	5	18	38.5%	48.6%		
nursing director	0	2	0.0%	5.4%		

This table shows the distribution of studied subjects' total attitude score regarding evidence-based nursing in relation to their personnel characteristics. According to this table, there was no statistical significant correlation between total score of the studied subjects attitude toward evidence based practice and their personnel characteristics related to age, years of experience, educational qualification, or their current position in the hospital (p value > 0.05).

DISCUSSION

The aim of this study was to assess the relation between nursing informatics competency and nurses' attitude toward evidence-based practice among qualified nurses at Oncology center, Mansura University. Regarding computer literacy subscale, the findings of the present study showed that this scale has the lowest mean score compared with informatics literacy or informatics management subscales. This result agreed with (Ajayi, 2013) who study the "effect of health informatics on nurses' computer skills and the role of the library", the findings of that study reported that the majority of the respondents did not have knowledge of computers. These findings disagreed with (Fehr, 2014) who found that fundamental computer information and skills had a medium score of 3.40 which was elevated than the standard for that subscale, and disagree also with (Hsu *et al*, 2009) who conducted a study to assess factors influencing computer literacy of Taiwan and South Korea nurses. The findings of that study revealed that nurses' computer literacy was at an intermediate level.

The result of the current study showed that the highest percentage of qualified nurses in this study have competency level ranged from proficient to expert level. Indicating a high competency level in nursing informatics among the studied subjects. This result may be related to that the nursing curriculum was modified and contained nursing informatics as an important and new topic which affect nursing practices in our hospitals. In addition to the academic staff at all levels of nursing education are concerned with nursing informatics both practically and theoretically. On the other hand, oncology center was successfully applied system of electronic medical record since 2012 in most hospital departments in all nursing services, which reflects on the level of nurses' competency.

The results of the present study revealed that the percent mean score of total nursing informatics competency was 69.3%, which means that the studied sample is competent in nursing informatics. This result may be related to that the oncology center applied successful implementation of electronic medical record since 2012 in most departments of the center, which enable the nurses to be competent in applying nursing informatics. This result is supported by (Yoon *et al*, 2009) who conducted a study on 121 nurses and showed that the mean of total nursing informatics competency was (61.4%), and agree with (Yang *et al*, 2014)

who conducted a study about "Perspectives from Nurse Managers on Informatics Competencies" and found a medium level of informatics competency among the studied participants.

Regarding the distribution of studied subjects attitude toward evidence-based nursing, the findings of the present study showed that more than two third of the studied subjects have positive attitude toward evidence based practice. It was noticed that the highest percentage of the qualified nurses in this study were strongly agree that evidence-based nursing should play an important role in clinical nursing practice, the application of evidence-based nursing improves health care results, they would be pleased if evidence-based nursing became an important part of daily practice, and the practice of evidence-based nursing helps to unite criteria for introducing care. All these reasons demonstrated the positive attitude of qualified nurses toward evidence-based nursing practice. This finding coincides with (Koehn & Lehman, 2008) who conducted a study to assess nurses' experience of EBP at United States of America. The results of that study shows that participants had moderate scores on practice and attitudes towards evidence-based practice. While, disagreed with (Farokhzadian *et al*, 2015) who conducted a study to evaluate factors associated with implementing evidence-based practice in nursing, and reported that respondents' attitude towards EBP was unfavorable.

The findings of the current study showed that there was statistical significant positive correlation between the qualified nurses' total nursing informatics competency scores and their total attitude score toward evidence based practice. Indicating that professional nurses with high level of nursing informatics competency have positive attitudes toward evidence based practice (in response to our research hypothesis). This may be due to that informatics competences are essential components of an infrastructure that support and provide the framework for evidence-based practice. This explanation was supported by (Antiqua *et al*, 2016) who mentioned that without the proper information literacy skills needed to select high-quality clinical practice guidelines for decision making when developing treatment plans, nurse practitioners would be ill- equipped to perform evidence-based practice (EBP) during their clinical practicum experiences. The incorporation of informatics literacy skills training is utmost for the actualization of EBP in clinical nursing. This result agreed with (Fehr, 2014) who conducted a study to observe the association between nursing informatics capability and EBP skill among acute care nurses, the findings of that study showed that, there was a reasonable and important optimistic relationship between EBP skill and nursing informatics capability.

The findings of the current study showed that there was highly statistical significant correlation between total score

of the qualified nurses' informatics competency and their personnel characteristics related to age and years of experience. This result coincide with (Fehr, 2014) and (Hsu *et al*, 2009) who revealed that age and years of experience are significant factors in nursing informatics competency.

The findings of the current study showed that, there was no statistical significant relation between total nursing informatics competency score and the educational level of the study participants. This may be due to that almost all of the study participants have BSN degree, and only few of them have master degree. This result disagreed with (Yang *et al*, 2014) who study perspectives from Nurse Managers on Informatics Competencies and reported that education level had a significant impact on informatics competencies, and disagree with (Fehr, 2014) who found a statistically significant difference in nursing informatics competency between the Diploma nurses and MSN nurses.

The findings of the current study showed that there was no statistical significant correlation between total score of the professional nurses attitude toward evidence based practice and their personnel characteristics related to age, years of experience, educational qualification, or their current position in the hospital. This finding disagreed with (Farokhzadian *et al*, 2015) who found significant differences between mean scores of attitude of respondents based on different age groups and years of nursing experience and also disagreed with (Koehn & Lehman, 2008) who reported that Statistically significant differences were found for attitudes between those with baccalaureate and higher education compared to those with associate and diploma education.

CONCLUSION

In the light of the current study findings, it was concluded that, the highest percent mean score was related to Informatics Literacy subscale followed by informatics management subscale. The majority of the studied subjects rated themselves as proficient or expert in informatics literacy subscale and have positive attitude toward evidence-based practice. There was statistical significant positive correlation between the qualified nurses' total nursing informatics competency scores and their total attitude toward evidence based practice.

RECOMMENDATION

- Incorporating nursing informatics and evidence-based knowledge and skills in the nursing curriculum
- Encourage qualified nurse to increase their knowledge and computer literacy through workshops.
- Increase the opportunity of the qualified nurse in understanding and applying evidence based practice in nursing services.
- Further studies are wanted to observe other variables that influence nursing informatics competency and evidence based practice competency among qualified nurses in other settings.

REFERENCE

- [1]. Ajayi, N. A. (2013) "effect of health informatics on nurses' computer skills and the role of the library", Vol. 31 Issue: 2, pp.157-166, doi: 10.1108/02640471311312357
- [2]. American Nurses Association (ANA), (2008): Nursing informatics: Scope and standards of practice. Silver Spring, MD: Nursebooks.org.
- [3]. Antiqua, S. N., Carter-Templeton, Heather, C. D., & Sandra, B. C.(2016): Developing an Information Literacy Workshop to Foster Evidence-Based Practice among Nurse Practitioner Students. Journal of Doctoral Nursing Practice, 9 (1), 145-151
- [4]. Baker,J. (2012): Nursing informatics, Preoperative Nursing Clinics, 7,151 - 160
- [5]. Daniel, G. O.,&Oyetunde, M. O. (2013): Nursing informatics: A key to improving nursing practice in Nigeria, International Journal of Nursing and Midwifery, 5(5), pp. 90-98.
- [6]. El-sayed, S. H., Hassona, F. M., &Winkelman, C. (January, 2014). Effect of a Training Program on Evidence Based Practice Profiles and Skills. Zagazig Nursing Journal, January; 10 (1), 1-18
- [7]. Farokhzadian J, Khajouei R, Ahmadian L. (2015): Evaluating factors associated with implementing evidence-based practice in nursing. Journal of Evaluation in Clinical Practice 21; 1107–1113
- [8]. Fehr, S.,T. (2014): Examining the relationship between Nursing informatics competency and evidence based practice competency among Acute Care Nurses, Published Doctorate Thesis, George Mason University
- [9]. Fineout-Overholt, E., & Still well, S. (2011) in Melnyk, B., B., &Fineout- over holt, E. (2011): Evidence based practice in nursing &health care; A Guide to best practice, 2nd ed., Lippincott Williams &Wilhins . Philadelphin, 25-39
- [10]. Godsey, J., A. (2015): Towards an informatics competent nursing profession: Validation of the self- assessment of nursing informatics competency Scale (SANICs) before and after online informatics training. PhD thesis, University of Hawai.
- [11]. Hsu HM, Hou YH, Chang IC, Yen DC. (2009): Factors influencing computer literacy of Taiwan and South Korea nurses. *Journal of Medical Systems*, 33(2) 133–139.
- [12]. Liston, J., & McKinnon, T. (2017): Self-Assessment of Perceived Informatics Competencies among Staff Nurses at Sutter Maternity and Surgery Hospital, Journal of Informatics Nursing. 2 (1),12
- [13]. Koehn, K., & Lehman, K. (2008): Nurses' perceptions of evidence-based nursing practice. JAN. 62 (2), 209-215
- [14]. Maryniak, K.,(2013): Nursing Informatics the Future is Here, AMN health care education service, 1st edition, page 1-10.
- [15]. McGonigles D, Mastrian K (2008): Nursing informatics and thefoundationof knowledge; Overview of nursing informatics. Jones andBarlett Publishers, LLC.

- [16]. **Murphy, J. (2010):** Nursing informatics: The intersection of nursing, computer, and information sciences, *Nursing Economics*, 28(3), 204 -207.
- [17]. **Rahman, A. (2015):** Development of a Nursing Informatics Competency Assessment Tool (NICAT), published doctoral studies, page 1-100.
- [18]. **Ruzafa-Martinez M, Lopez-Iborra L, Madrigal-Torres M. (2011):** Attitude towards Evidence-Based Nursing Questionnaire: development and psychometric testing in Spanish community nurses. *J Eval Clin Pract.*; 17: 664-670.
- [19]. **Yang L, Cui D, Zhu X, Zhao Q, Xiao N, & Shen X. (2014):** Perspectives from Nurse Managers on Informatics Competencies. Hindawi Publishing Corporation, *Scientific World Journal*. 1-5
- [20]. **Yoon, S., Yen, P., & Bakken, S. (2009):** Psychometric properties of the Self-Assessment of Nursing Informatics Competencies Scale. *Studies in Health Technology and Informatics*, 146, 546-550.