

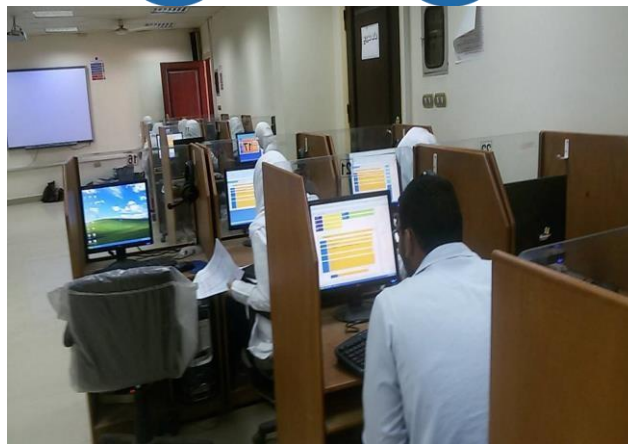
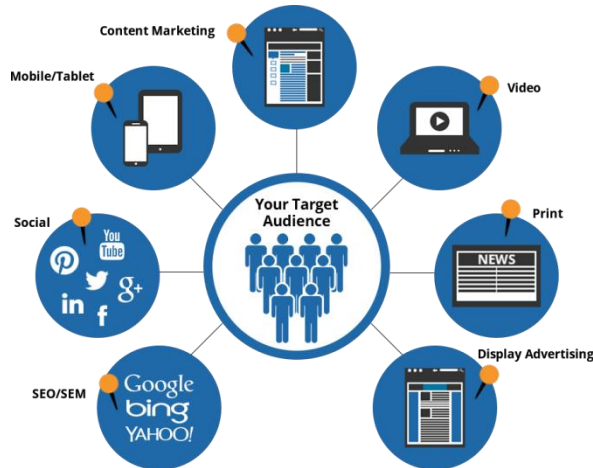


كلية معتمدة

The 4<sup>th</sup> Annual and 1<sup>st</sup> International Scientific Conference of The Faculty of Nursing Benha University In Collaboration with Psychological Intelligence Foundation (PIFCIC), Hertford, UK

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## Nursing In Generation "Y": Challenges and Opportunities



Wednesday, 19- 7 -2017

Celebration Hall, Benha University

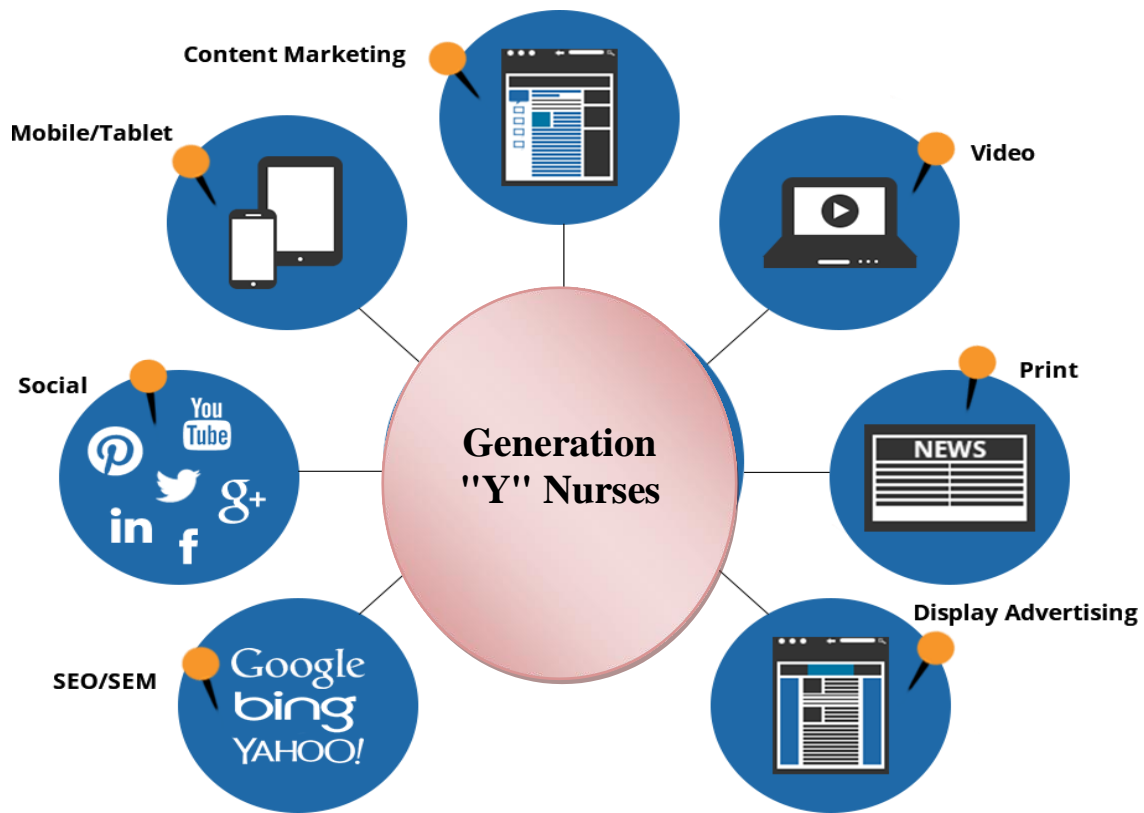


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# Relationship between Nurses' Perception and Readiness to Implement Electronic Medical Record System

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**Abstract:** Nurses' perception and readiness assessment provides a proper image of the existing conditions and an explanation of facilitated operational plans and functional approaches to successful implementation of electronic medical record. **Aim of the study:** this study aimed to find out the relationship between nurses' perception and their readiness to implement electronic medical record system. **Design:** A descriptive correctional design was used in this study. **Setting:** This study was conducted at Benha University Hospital in Medical and Surgery Departments. **Subjects:** were composed of 200 nurses with more than two year of experience (124 working in Medicine Departments and 74 working in Surgery Departments). **Tools for data collection:** Two tools were used for data collection: Electronic Medical Record (EMR) Perception Questionnaire and Electronic Medical Record (EMR) Readiness Questionnaire. **Results:** The findings of this study showed that 53.0% of nurses had high level of perception, While 62.0% of nurses had low level of readiness regarding implementation of Electronic Medical Record (EMR) in the hospital, there was highly statistical significant correlation between nurses' perception and their readiness. **Conclusion:** The study concluded that there was statistically highly significant correlation between total score of perception and total score of readiness ( $r=0.237$ ,  $P<0.001$ ). **Recommendation:** In-service training and education programs must be conducted for enhancing and increasing nurses' perception and readiness about the concept of EMR as well as to emphasize electronic documentation skills especially newly employed nurses, planning for workshops about the strategies to motivate nurses and how nurse to adopt EMR in the hospital

**Key words:** Electronic medical records, Nurses' Perception, Readiness assessment, operational plans.

## 1. Introduction

Through the last decades, there has been a tremendous shift from paper-based processing and storage to computer-based processing and storage. This shift had disadvantage mainly a higher technological complexity and advantages a significantly higher functionality and much better opportunities in using patient data or medical knowledge. Parallel to this development there was an increase of data to be processed and stored, mainly due to the increase of diagnostic and therapeutic procedures, and due to new information technologies allowing processing more patients' data <sup>(1)</sup>

Electronic health record systems have slowly been introduced to the nursing profession. The electronic health record allows for rapid access to patient records, which leads to improved patient care, patient safety, and significantly influences patient outcomes <sup>(2, 3)</sup>. The goal of an electronic documentation system is to improve patient safety, communication and documentation, provide greater access to patient's charts, decrease paperwork, and

improve patient outcomes. Therefore, it is crucial that the documentation system meets the needs of the clinicians in a particular practice setting <sup>(4)</sup>.

Electronic Medical Record (EMR) is used generally by nurses in hospitals <sup>(5)</sup>. Since the advent of EMR systems, the adoption of this technology continues to progress rapidly within the healthcare system <sup>(6)</sup>. The EMR is a computerized record of clinical, demographic and management information. EMR systems are an enabling technology that allows nurses to improve patient safety and quality of care utilize quality improvement processes in the practice of medicine. EMRs are an encompassing and complete process <sup>(7, 8,9)</sup>.

EMR is an electronic record of health-related information on an individual that can be created, gathered, managed, and consulted by authorized clinicians and staff within one health care organization. An EMR characteristically contains lists of patient problems, medications, allergies, as well as health maintenance data, progress notes, various test results, and ordering functions <sup>(10)</sup>.



Assessment of electronic medical record, particularly readiness assessment, is the first and the most important step to implementation and helps identification of processes for ranking priorities in EMR implementation and establishment of required operational functions to support process optimization in EHR implementation (11, 12,13).

The electronic medical record readiness assessment, as a part of a pre implementation assessment is considered essential and must include the human factors (14). It aims to evaluate the preparedness of each organizational component for a new system implementation (15). Therefore, identifying areas and requirements before the implementation will help to identify the areas of focus which need to be done during implementation.

Core Readiness is the realization of needs and expressed dissatisfaction with the current way of working, while Engagement Readiness is defined as active willingness and participation of people for EMR implementation. So, Overall readiness is the intersection of core readiness and engagement readiness. Health professional is said to have overall readiness when having both engagement readiness and core readiness (16).

The movement from a narrative system of charting to an Electronic health records system requires major changes in mindset, knowledge, performance and skills (17,18). The purpose of this research was to assess nurses` perception and readiness to implement electronic medical record system.

### 1.1 Significance of the study:

Successful implementation of electronic patient records requires listening to nurses` perception of the impact that a system change would have on core work values, recognizing the barriers to adoption of the technology, and creating an action plan for working through likely user resistance (19). Even though nurses have used computers for many years to place orders and lookup test results, they are reluctant to give up the traditional means of charting and adopting electronic documentation (20). Since nurses represent the largest group of computer users in healthcare system, it is imperative to understand nurses` perceptions, readiness towards the use of

computers in order to ensure a successful implementation of a documentation system. So, the present study was intended to assess nurses` perception and readiness to implement electronic medical record system.

### 1.2 Aim of the study:

The present study aimed to: Find out the relationship between nurses` perception and their readiness to implement electronic medical record system.

### 1.3 Research questions

- 1- What is nurses` perception level regarding electronic medical record system?
- 2- What is nurses` readiness level toward implementation of electronic medical record system?
- 3- Is there a relationship between nurses` perception and their readiness toward implement electronic medical record system?

## 2. Methodology

### 2.1 Design

A descriptive correctional design was used to achieve the aim of the study.

### 2.2 Setting

The study was conducted at medical departments (14 units) as follows: general medical department (6 units), and specific medical departments are: pediatric department (4units), psychiatric and neurology department (1 unit), dermatology department (1 unit), chest department (1 unit), and rheumatology department (1 unit).

Surgical departments (13 units) as follows: general surgical department (4 units), urology department (2 units), Ear, nose and trachea department (1 unit), orthopedic department (3 units), neurology department (1 unit), ophthalmology department (1 unit) and obstetric department (1 unit), Benha University Hospitals.

### 2.3 Subjects

A purposive sample of a two hundreds nurses working; who are responsible for providing direct nursing care activities to patients in the above mentioned study setting, that met the following inclusion criteria were recruited at





the study. Nurses had working experience more than two years.

## 2.5 Tools of data collection

Two tools were utilized for data collection.

### Tool (1):- EMR Perception Questionnaire:

It was designed to measure the perception level that nurses had regarding to electronic medical record. It was adopted from **Otieno et al.**, (21) and modified by the researcher. It had two main parts:

#### Part I: Socio-demographic data:

It was consisted of items related to personal characteristics of the study subjects such as (i.e. department, age, etc)

#### Part II: EMR Perception Questionnaire:

It was comprised 44 questions grouped into three subscales; use of EMR (15 items), quality of EMR (14 items), user satisfaction with EMR (15 items).

**Scoring system:** Each statement response was measured on a three-point Likert scale that ranged from: (1) disagree, (2) not sure, (3) agree. Total score was calculated as: Low :< 60%, Moderate: 60-75 %, and High: > 75 %.

### Tool (2):- EMR Readiness Questionnaire:

It was consisted of 20 items, aimed to assess nurses` readiness toward implement electronic medical record system at Benha University Hospital. It was developed by the researcher through review of literature (16, 22-27).

**Scoring system:** Each Statement response was ranged from: (1) no, (2) yes. Total score was calculated as: Low :< 60%, Moderate: 60-75 %, and High: > 75 and High: > 75

## 2.6 Field of work

Written approvals were obtained from Benha University Hospital. The purpose of the study was explained to each participant, assured confidentiality and informed about their right to withdraw from the study at any time without giving any reason for withdrawing. The questionnaires were filled in by the participants over a time of 30 minutes

.Data was collected over a period from May, 2016 to, July 2016.

## 2.7 Validity and reliability

Tools validity test were done through five panels of expertise in the academic field of nursing administration to test the content validity for the two tools. Slight modification was carried out according to the panel judgment on clarity of sentences and appropriateness of content. The internal consistency of Likert scale has been tested using Cronbach's alpha coefficient. Cronbach's alphas were (r= 0.918, & 0.769) Electronic medical record Perception questionnaire, and Electronic medical record Readiness Questionnaire respectively.

## 2.8 Pilot study

A research pilot study was carried out on 10% (20 nurses) of the total sample to check estimate the time needed for data collection and accessibility of the samples. No modifications were done. All nurses who participated at research pilot study were included in the main research sample.

## 2.9 Ethical considerations

The purpose of the study was explained to each nurse and a written informed consent was obtained from 200 enrolled nurses after explaining the purpose of the study, assuring confidentiality and their right to withdraw from the study at any time without any reason for withdrawing.

## 2.10 Statistical analysis

Data entry and statistical analysis were performed using the statistical package for social sciences (SPSS), version 16. Suitable descriptive statistics were used such as; frequency, percentage, mean and standard deviation. In addition, correlation coefficient (r) test was used to estimate the closeness association between variables. For all the tests, statistical significance was considered at p-value < 0.05.



### 3. Results

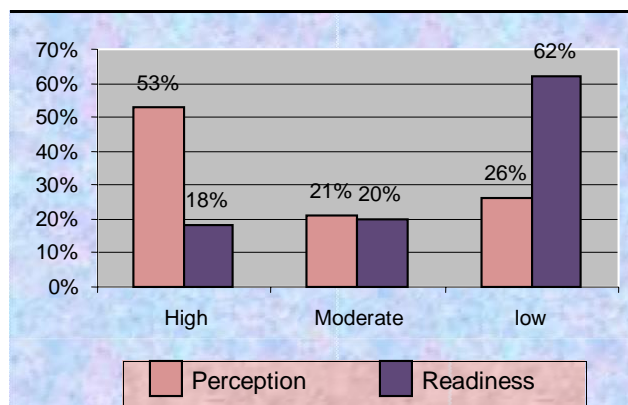
**Table (1):** Clearly portrayed that 52.0% of studied nurses were aged between 26-30 years with Mean± SD (27.79 ± 5.08). 63.0% of the study nurses working in medicine department, as regarding to the years of experience 50.5% of the study nurses having 5-10 years of experience with Mean± SD (9.57 ± 5.64). In relation to, nurses' educational qualification 68.5% of them had baccalaureate of nursing education. All studied nurses did not have any training about electronic medical record.

**Table 1: Personal characteristics of studied nurses (n=200).**

Items	Frequency	%
<b>Age</b>		
< 25 year	45	22.5
26-30 year	104	52.0
> 30 year	51	25.5
Mean ± SD	27.79 ± 5.08	
<b>Department</b>		
Medical	126	63.0
Surgery	74	37.0
<b>Years of experience</b>		
<5 years	42	21.0
5-10 years	101	50.5
>10 years	57	28.5
Mean ± SD	9.57 ± 5.64	
<b>Educational qualification</b>		
Secondary nursing education	34	17.0
Technical nursing education	29	14.5
Baccalaureate of nursing education	137	68.5
<b>Training about electronic medical record</b>		
Yes	0	0.0
No	200	100.0

Note. SD= standard deviation

**Figure (1):** Illustrated level of nurses' perception and readiness regarding EMR implementation. The result revealed that 53.0% of nurses had high level of perception, While 18.0% of studied nurses had a high level of readiness regarding EMR implementation in the hospital. On the other hand, 26.0% of nurses had a low level of perception, while 62.0% of nurses had a low level of readiness regarding EMR implementation in the hospital.



**Figure 1: level of nurses' perception and readiness to EMR implementation (n=200).**

**Table (2):** Showed that more than half of studied nurses (53.5%, 51.0%, 50.0%, 50.0%) agreed that EMR system used in answer questions concerning general medical knowledge (concerning treatment, symptoms, complications, etc.), write nursing care plans, write nurse care worksheets (Kardex), check drug information (such as allergy and interactions) respectively.

**Table (3):** Presented that more than half of the study nurses (55.0%, 54.0%, 54.0%) agreed that EMR system will subject to frequent system problems and crashes, information content will meet their needs, they will get the information they need respectively.

**Table (4):** Clearly shows that (58.5%, 58.5%, 57.5%) of studied nurses agreed that the quality of information will be improved due to EMR, their performance will be improved due to EMR, and EMR will be an important system for their hospital respectively.



**Table (5):** Presented the correlation coefficient among scores for the EMR system dimensions; use, quality and user satisfaction. The result showed that there was highly statistically significant correlation among scores for the EMR system dimensions.

**Table (6):** Clearly showed the Percentage distribution of the studied nurses` readiness regarding EMR implementation. The results presented that most of studied nurses (80.5%, 79.0%) had fear about the potentially negative impacts of EMR, and they accept EMR training while (84.0%, 79.0%, and 79.0%) didn't enjoy learning new information, hadn't difficulty in sharing patient records , EMR will not decrease workload.

**Table (7):** portrayed correlation coefficients between total score of perception and total score of readiness among studied nurses; the result revealed that there was

statistically highly significant correlation between total score of perception and total score of readiness ( $r=0.237$ ,  $P<0.001$ ).

**Table (8):** Presented correlation coefficients between total score of EMR perception and total score of EMR readiness among studied nurses with their personal characteristics. The results revealed that there was the highly significant correlation coefficient between nurses' personal characteristics and total score of EMR perception. Also, was highly significant correlation coefficient between nurses' educational qualification and total score of EMR readiness and negative significant correlation coefficient between nurses' age and years of experience with their total score of EMR readiness.

**Table 2: perception of the studied nurses regarding the use of EMR (n = 200)**

Variables	Agree		Not sure		Disagree	
	No	%	No	%	No	%
<b>Nursing care management</b>						
Write nursing care plans	102	51.0	58	29.0	40	20.0
Enter daily nursing care notes	95	47.5	69	34.5	36	18.0
Write nurse care worksheets (Kardex)	101	50.0	57	28.5	42	21.0
Capturing patient observations at the bedside	93	46.5	69	34.5	38	19.5
Document physical assessment of patients	91	45.5	65	32.5	44	22.0
Collect patient information for discharge reports	84	42.0	71	35.5	45	22.5
Review the patient's problems	99	49.5	63	31.5	38	19.5
<b>Frequency of use of order entry</b>						
Obtain information on investigation or treatment procedures	95	47.5	46	23.0	59	29.5
Obtain the results from new tests or investigations	97	48.5	48	24.0	55	27.5
Answer questions concerning general medical knowledge (concerning treatment, symptoms, complications, etc.)	107	53.5	43	21.5	50	25.0
Obtain results of tests and investigations	98	49.0	51	25.5	51	25.5
To check drug information (such as allergy and interactions)	101	50.5	50	25.0	49	24.5
<b>Knowledge management</b>						
Produce data reviews for specific patient groups, complication rate, diagnoses, etc.	99	49.5	44	22.0	57	28.5
Seek out specific information from patient records	92	46.0	47	23.5	61	30.5
Give written individual information to patients, e.g. about medications, disease status	98	49.0	56	28.0	46	23.0



**Table 3: perception of the studied nurses regarding quality of EMR (n = 200)**

Variables	Agree		Not sure		Disagree	
	No	%	No	No	%	No
<b>Information quality</b>						
Do you think the output will be presented in a useful format?	95	47.5	67	33.5	38	19.0
Do you think the system is accurate?	98	49.0	45	22.5	57	28.5
Does the system will provide sufficient information?	93	46.5	52	26.0	56	27.5
Are you will be satisfied with the accuracy of the system?	101	50.5	56	28.0	43	21.5
Do you think the information is clear?	106	53.0	55	27.5	39	19.5
Does the information content will meet your needs?	108	54.0	58	29.0	34	17.0
Will the system provide the precise information you need?	99	49.5	56	28.0	45	22.5
Does the system will provide reports that seem to be just exactly what you need?	107	53.5	43	21.5	50	25.0
Do you think you will get the information you need in time?	105	52.5	46	23.0	49	24.5
Does the system will provide up-to-date information?	103	51.5	55	27.5	42	21.0
Do you think the system is user-friendly?	107	53.5	48	24.0	45	22.5
<b>Service quality</b>						
Can you count on the system to be up and available?	106	53.0	48	24.0	46	23.0
Do you think the system is subject to frequent system problems and crashes?	110	55.0	56	28.0	34	17.0
Do you think you will get the information you need?	108	54.0	57	28.5	35	17.5

**Table 4: perception of the studied nurses regarding user satisfaction with EMR (n = 200)**

Variables	Agree		Not sure		Disagree	
	No	%	No	No	%	No
<b>EMR System impact on clinical care</b>						
Quality of your work will be improved?	111	55.5	39	19.5	50	25.0
Quality of information will be improved due to EMR?	117	58.5	38	19.0	45	22.5
The performance will be improved due to EMR?	117	58.5	38	19.0	45	22.5
EMR will be an important system for your hospital?	115	57.5	34	17.0	51	25.5
EMR will be successful in your hospital?	107	53.5	39	19.5	54	27.0
Safety of patients will be improved due to EMR?	107	53.5	46	23.0	47	23.5
EMR will worth the time and effort require using it?	111	55.5	41	20.5	48	24.0
EMR will be useful?	104	52.0	54	27.0	42	21.0
<b>EMR functions</b>						
Does the lack of staff computer skills impede the use of EMR system	107	53.5	54	27.0	39	19.5
Does the computer workstation will derange your workflow	43	21.5	39	19.5	118	59.0
<b>System awareness</b>						
Are enough workstations will be available for use by nurses?	107	53.5	42	21.0	51	25.5
Have you need to be trained in using EMR?	101	50.5	56	28.0	43	21.5
Are computerized documentation well integrated into the workflow?	109	54.5	47	23.5	44	22.0
Are you aware of the procedures to request changes to EMR system?	101	50.5	53	26.5	46	23.0
Overall, are you will be satisfied with the EMR system?	101	50.5	40	20.0	59	29.5





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**Table 5: The correlations among scores for the EMR system dimensions**

Dimensions	Correlation coefficients & significance	Use	Quality	User satisfaction
Use	r	1		
	p			
Quality	r	0.906**	1	
	p	0.000		
User satisfaction	r	0.830**	0.932**	1
	p	0.000	0.000	

\*Correlation is significant at the 0.01 level (2-tailed)

**Table 6: Percentage distribution of the studied nurses` readiness regarding EMR implementation (n = 200)**

Variables	Yes		No	
	No	%	No	%
Do you have computer related skills as writing	42	21.0	158	79.0
Do you have willing to use computer in documenting nursing care	51	25.5	149	74.5
Do you concern about the potentially negative impacts of EMR	90	45.0	110	55.0
Do you unsatisfied with the completeness of patient data	59	29.5	141	70.5
Do you unsatisfied with accuracy of patient data	56	28.0	144	72.0
Do you feel that documentation of patient data are inefficient	47	23.5	153	76.5
Do you fear about the potentially negative impacts of EMR	161	80.5	39	19.5
Do you enjoy learning new information	32	16.0	168	84.0
Do you have difficulty in sharing patient records	42	21.0	158	79.0
Do you accept EMR training	158	79.0	42	21.0
Do you weight the benefits of EMR	49	24.5	151	75.5
Do you accept the risk of using EMR	43	21.5	157	78.5
EMR will decrease workload	41	20.5	159	79.5
EMR will increase time of documentation spent on data entry	52	26.0	148	74.0
Feeling confident when dealing with computer.	50	25.0	150	75.0
Needing support and training to accept computer in the work	55	27.5	145	72.5
Computer will someday put health professionals out of job.	52	26.0	148	74.0
Computer will improve nurse's career.	49	24.5	151	75.5
Computers will save nurses time for nursing tasks.	47	23.5	153	76.5
Computer keeps nurse away from her patients.	66	33.0	134	67.0



**Table 7: Correlation coefficients between total score of perception and total score of readiness among studied nurses (n= 200)**

Readiness	r	p
Perception	0.237	0.001**

\*\* Correlation is significant at the 0.01 level (2-tailed).

**Table (8): Correlation coefficients between total score of EMR perception and total score of EMR readiness among studied nurses with their Personal characteristics (n= 200).**

Personal characteristics	Total Score Of EMR perception		Total Score Of EMR readiness	
	r	p	r	p
Age	0.899	0.000**	- 0.220	0.002**
Years of experience	0.226	0.001**	- 0.711	0.026*
Educational qualification	0.708	0.001**	0.966	0.003**

\*\* Correlation is significant at the 0.01 level (2-tailed).

#### 4. Discussion

The present study was conducted to assess nurses' perception and readiness to implement an electronic medical record system. The current study involved two hundreds nurses working at Benha University Hospital, about two thirds of them were working in medicine department, and more than half of them were aged between 26-30 years with 5-10 years of experience in nursing. All studied nurses did not have any training about electronic medical record.

Nurses' perceptions about EMR were examined in multiple studies. Some common themes identified are concerns about impact on nurse workflow and impact on patient outcomes, patient safety, satisfaction, efficiency (5, 28).

As regarding to nurses' perception of EMR, the findings of the current study showed that more than half of studied nurses

agreed that EMR system used in answer questions concerning general medical knowledge (concerning treatment, symptoms, complications, etc.), write nursing care plans, write nurse care worksheets (Kardex), check drug information (such as allergy and interactions). This may be due to that nurses are the largest proportion of healthcare professionals and will interact mostly with EMR systems due to the nature of their work. They make nursing diagnoses, check physician orders, and write nursing care plans, record vital signs, and sometimes transcribe physician orders and they think that EMR system will help them in carrying out their work.

This study result in disagreement with **Top and Gider** (9) who reported in his study about Nurses' Views on Electronic Medical Records (EMR) in Turkey that: most of the nurses responded -never/almost never for Write nursing care plans, -Write nurse care worksheets, and -Capturing patient observations at the bedside. These findings may result from the fact that nursing care plans are not usually written in Turkish Hospitals. An EMR can be used to prescribe medication (dosages), check allergy information, drug interactions, view X-rays, order and access lab results, support diagnosis, make referrals, see a patient's history (age, disease state, insurance plan) and document a clinical encounter (28).

As regard nurses' perception regarding quality of EMR. The findings of the current study showed that more than half of studied nurses agreed that EMR system will subject to frequent system problems and crashes, information content will meet their needs, they will get the information they need. This result supported with **Daniel** (29) who stated that, despite advances in technology, even with the best planning and preparation, problems will undoubtedly arise. Adoption of computers in care and an electronic medical record



(EMR) within healthcare organizations is no longer an option, but a necessity for safe and cost effective provision of care <sup>(30)</sup>.

As regard nurses` perception regarding user satisfaction with EMR. The findings of the current study showed that more than half of studied nurses agreed that quality of information will be improved due to EMR, their performance will be improved due to EMR, and EMR will be an important system for their hospital. This result is in consistent with the results of **Top and Gider** <sup>(9)</sup> study indicated that nurses perceived that the EMR impacted nurse workflow and performance in multiple ways. Also, **Kosman and Scheidenhelm** <sup>(31)</sup> reported similar findings in terms of nurses` perceptions of EMR in nursing work. And it was found that nurses positively perceive the EMR as helpful in their daily work in their hospitals <sup>(32)</sup>.

The findings of this study was contradicted to the results conducted by **Gamm** <sup>(33)</sup> who found that health workers perceived EMR as negatively interfering with clinical workflow, reducing productivity and performance, and finally, introducing disruptive changes to the workplace. This tendency is much more serious in developing countries where computer anxiety is very high.

In relation to, the correlation coefficient among scores for the EMR system dimensions; use, quality and user satisfaction. The result showed that there was highly statistically significant correlation among scores for the EMR system dimensions. Correlation analysis revealed a significant correlation between the use of EMR and quality of EMR, the use of EMR and user satisfaction with EMR score, and the quality and user satisfaction scores . The findings showed that the highest correlation was between quality and user satisfaction scores for EMR systems. All of the three subscales were positively correlated with each other.

Other Reported studies have portrayed that EMR system quality will positively influence the use of EMR system **Otieno and Hosoi** <sup>(34)</sup>. The more the users use the system, the more likely they are to be satisfied with it

and vice versa. These results are consistent with previous studies examining the attitude of nurses towards computerization in health care <sup>(35, 36)</sup>.

The results presented that most of studied nurses had fear about the potentially negative impacts of EMR, and they accept EMR training. Some effects are perceived as negative effects of EMR; (slowing nurses down, decreased time with patients, limited critical thinking, and limited communication) effect on nurses` role. Nurse perceptions of EMR also consider the impact of EMR on the quantity of time spent with patients and influence nurse attitudes regarding service quality <sup>(28)</sup>.

This is in agreement with **Dahm & Wadensten** <sup>(37)</sup> who found that staff nurses have a less positive attitude towards adopting electronic patient record before this technology is actually introduced, which may be due to anxiety about working with computers and resistance to changing work routines. This in his study about Nurses` experiences of and opinions about using standardized care plans in electronic health records.

The findings of the current study revealed that more than half of nurses had high level of perception regarding electronic medical record system implementation in the hospital. This may be due to nurses perceived that overall, the EMR made their nursing job easier, improved their ability to make important patient care decisions, allowed them to improved access to patient information, and allowed them to spend less time communicating with other members of the patient care team.

Also, the majority of nurses had baccalaureate of nursing education and they had take bigger chance in learning a computer educational program at nursing faculty. And continuing training unit at Benha University Hospital periodically conduct training workshops about news trends that affect quality of nursing care and patient satisfaction.

This result in consistent with **Stay, (2012)** who, conduct Study about" Uses of computer in hospitals: An analysis of intensive &no intensive users" and observed nurses'



perceptions toward computer, indicated that nurse had significantly greater access to computers and technical support

The findings of the present study revealed that less than two thirds of nurses had low level of readiness regarding EMR implementation in the hospital

The results was in the same line with **Mosa, (2012)**, stated that staff nurses reported the lowest mean score in relation to total of disposition toward using information systems in his study about "Disposition of Nursing Personal Toward Using Information Systems at Benha University Hospitals"

This is also a good explanation for the need to create awareness about EMR system before implementation in order to engage professionals during the system implementation so that they will have good attitude and develop their readiness for a better adaptation of the system <sup>(38, 39, 40)</sup>

Nurses do not resist technology itself. What they resist is the addition of one more item to their work day. A significant point of resistance may come down to the nurses' fear that online charting will take more time than paper charting <sup>(41)</sup>. **Webster** <sup>(42)</sup> found that Over 30% of nurses in a study in Brisbane considered that computers detract from direct patient care and cause duplication of work. And **Morrison** <sup>(43)</sup> his study of: "Electronic patient records use during ward rounds: A qualitative study of interaction between medical staff". Found that information technology at intensive care unit may introduce new barriers to communication to staff nurses. One major barrier to successfully implement an EMR system reported by many studies is whether clinicians accept the new system and the potential disruptions and changes that follow <sup>(44,45)</sup>.

Correlation coefficients between total score of nurses' perception and total score of nurses' readiness regarding implementation of EMR ; the result revealed that there was statistically highly significant correlation between total score of perception and total score of readiness.

This study result contradicted to the results conducted by **Liu** <sup>(46)</sup> who revealed that nurses' computer knowledge was not correlated to their attitude and readiness to use computer.

The findings of the current study revealed that there was highly significant correlation coefficient between nurses' personal characteristics and total score of EMR perception. The finding was in the same line with

Also, was highly significant correlation coefficient between nurses' educational qualification and total score of EMR readiness and negative significant correlation coefficient between nurses' age and years of experience with their total score of EMR readiness. The finding was in the same line with **Mohamed, (2012)** who conducts study about "Identifying of Critical Care Staff Nurses Readiness toward Using Computer System in Nursing Practice" stated that there is a relationship between staff nurses' educational qualification and their readiness towards using computer in nursing practice. And **Mosa, (2012)**, stated that the staff nurse with baccalaureate reported the highest mean score; while staff nurses with nursing diploma reported the lowest mean score in relation to total of disposition toward using information systems.

### Conclusions:

There was statistically highly significant correlation between total score of perception and total score of readiness ( $r=0.237$ ,  $P<0.001$ ). The result revealed that more than half of nurses had high level of perception readiness regarding EMR implementation in the hospital, While 62.0% of nurses had low level of readiness regarding EMR implementation in the hospital.

### Recommendation

The findings of the study suggest that:

1. The hospitals should conduct practical training courses on computer uses and applications.
2. Related course on health information systems /HER should be included in the curriculum of nursing.





3. In-service training and education programs must be conducted for enhancing and increasing nurses' nurses' perception and readiness about the concept of EMR as well as to emphasize electronic documentation skills especially for newly employed nurses.
4. Planning for workshops about the strategies to motivate nurses and how nurse to adopt EMR in the hospital.

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