A Case Study of Nurses Perceptions and Attitude of Electronic Medical Records in Riyadh and Jeddah's Hospitals

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Abstract *- The purpose of this study was to investigate the perceptions, level of knowledge, attitudes, and behaviour of nurses at the hospitals in Riyadh and Jeddah city towards using electronic medical records. A questionnaire comprised of closed and open questions was distributed online to all participated MOH's hospitals in Riyadh and Jeddah's city. This paper will present the results of the study highlighting key findings in relation to nurses' perceptions, knowledge, and attitudes to EMR with a view to identifying ways to help plan and organise better education and training programs for nurses in order to gain their support for enhanced use of EMR, thereby contributing to the success of the Ministry of Health's (MOH) e-health project in Saudi Arabia.*

Keywords: *E-Health, Electronic Medical Records, Nurses, Health Informatics, Hospitals, Saudi Arabia.*

1 Introduction

Health care in the Kingdom of Saudi Arabia has been developing since 1949, with one such development being the move from handwritten records as the method used to store medical information to the use of electronic health systems in many hospitals and organizations in Saudi Arabia. Health care and medical service in Saudi Arabia are divided into three major sectors (1) Ministry of Health, (2) Other Governmental agencies such as Teaching Hospitals, University Hospitals, Military Hospitals and (3) the private Health Care Sector [1]. The Saudi government and the private sector in Saudi Arabia have invested heavily to build the essential infrastructure required to ensure adequate health care is provides for all people [2, 3, 4, 5]. In doing so, they have established a high level of health care infrastructure and other resources analogous with health care levels in many developed countries [6, 7]. However, the use of EMR is often not centralized or standardized across hospitals and private health organizations, and harmonization between the different health care providers and other associated sectors is required [8]. Research by Gallagher highlights gaps that require further study such as improvements to learning systems and efforts made by hospitals to improve the readiness of staff to use EMR [5]. Al Sheifi suggests that in order to implement successful EMR, the Ministry of Health should give "strong support" to female nurses receiving computer training including search techniques and data entry skills, in preparation for their use of medical records [9].

Saudi government has given high priority to improve health care services at all levels: primary, secondary and tertiary. As a result, health care services in Saudi Arabia have improved but there still numeral of issues make challenges to the health care system, such as barrier, internal and external change, and technological, economical and social factors. This paper presents the case study survey involved 1428 nurses at MOH's hospitals in Riyadh and Jeddah city in Saudi Arabia to assess their view regarding the features of the current system, the benefits and barriers of more complete EMR. The findings show that there is a strong significant relation between years of Prior computer experience and the knowledge or attitude toward EMR P-value <0.000. The reason behind the significance relationship between level of qualification and knowledge or attitude toward EMR is because of the absence of proper teaching or modules that depend on EMR to perform nurses' tasks. This point highlights the need for improving the healthcare system to make it able to adopt with the development in medical recording.

1.1 Objective

Building on a previous pilot study undertaken with female nurses in single clinic at Jeddah, the aim of the PhD is to investigate more widely and in more depth the perceptions, knowledge, and attitudes of nurses at all levels of clinical practice toward the use of Electronic Medical Records in order to identify the main benefits of, and barriers that affect, adoption of EMRs within Riyadh and Jeddah City hospitals. The aim of this study to detect the perception, knowledge, and attitudes of nurses in Riyadh and Jeddah city toward using electronic medical records and how these can be used to build future adoption of EMR in Saudi Arabia.

2 Literature review

Nurses as a part of the medical teams in hospitals need to be targeted by investigating their perceptions, needs, and attitudes toward EMR and by using the information to conduct training programs and management initiatives to improve the commitment of nurses in the transition toward automated medical records. A study conducted at a large Magnet hospital in Southwest Florida used the five-item, Likert-type attitude

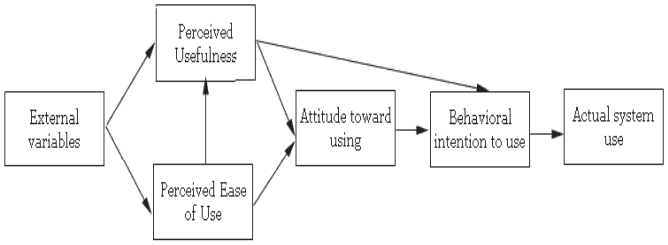
scale to assess 100 nursing personnel preferences, perceptions, and attitudes toward using Electronic Health Records; the study concluded that most of nurses believed that EHRs improved the quality and performance of patients care and nurses with expertise in computers, 80%, had positive attitudes toward EHRS than nurses with less expertise [10]. Another study conducted a survey among nurses to predict nurses willingness to participate and use a new electronic patient record system (EPRS); its results showed that there was an overall positive attitudes toward EPRS and age has a significant effect on determination toward the EPRS [11]. Whittaker et al., explain that the perceived of EHR usefulness was dependent on how the nurse acceptance it. The attitudes positive when a nurse perceived the advantages comparing with negative attitudes if a nurse had lacked on time management skills, poor training and technology[12]. Similarity with study suggested that to accept technology by healthcare professionals its need to be perceived as useful and has ease of use. Other study found that if a nurse had capability to use the IT system nervous tension and workload at work reduced. The study found that there was adiffrent of the size of the stress by gender female nurses reporting less stress and more satisfaction with work than the male nurses. The findings showed that nurses were more positive attitude and less nervous when not using IT or eaither internet which influnced nervous levels [13].

Other study was conducted in primary healthcare centres (PHC) in Al Ain, United Arab Emirates (UAE) by using qualitative study on three focus group interviews among physicians using open-ended questions. In this study Focus group contained of 7–9 physicians working in PHC as family medicine, a mix of males and females of different age groups and professional experience. The finding showed a positive perception of physicians who satisfied with EMR about the application of the system. Their participants stated that they were satisfied with EMR system because it was "fast, easy to use, well documented, more precise and provided patient engagement tools such as the patient education resources and patients' portal" [14].

In Saudi Arabia, however, there is a lack of information regarding the attitudes and perception of nurses toward EMR. This might have occurred due to what is described as "incomplete, inaccurate, unreliable and not timely" of data collection which lead to an ambiguous picture of the potential EMR systems in developing countries. One study in Saudi Arabia investigated the usefulness of EMR system implemented at a teaching hospital in the eastern province of Saudi Arabia [15]. The study surveyed 142 physicians in the hospital and considered confounding factors such as demographic data, physician computer experience. The study assessed the satisfaction of the physicians after the implementation of the EMR system. In Norway, more than 50% of the physicians were dissatisfied especially for those who do not have previous knowledge about computers and lack typing skills since going to different screens to review charts which take longer than reviewing paper records. Physicians preferred utilising paper records than utilising the system for less than half of the daily job [16].

3 Theoretical model of user acceptance

This study useed the Technology Acceptance Model (TAM) to assess the factors that particularly appropriate in the Health Information Technology field since it focuses on two particular variable assumed to effect the use of information technology. Perceived usefulness is the factor that signified the degree that the person trusts the IS which will evalute them in the performance of their job. Also, Perceived ease of use is the second factor that used to show how hard the person trusts the planned system would be to use. A review of the literature demonstrates few studies in the health information field which are used the TAM dealing with a large range of information technologies which found that person's behavioral intention is determined by the person's attitude. The Davis' model 1989 version (Figure 1), adopted to expect and clarify users' "acceptance and rejection" of computer technology [17].



Figuer.1 Technology acceptance model (Davis et al, 1989)

4 Research methods and Hypothesis

The researcher choose a mixed methods approach such as quantitative and qualitative methods to explore more about nurses perception, attitude and knowledge towards the use of EMR but this research primarily quantitative as it seek to evaluate the Health Information system between the nurses and EMR. It's let to test and identify the Hypotheses. To collect and analyse data the research design is used as a guideline to prepare the study [18]. The researcher used different technique when collecting the data, for example, distribute the questionnaire, interview with the most experience senior nurses and focus group with different group of nurses such as male female, Saudi and non Saudi, different ages to allow test different variable. In addition, after reviewed relevant studies, this research proposes three external variables: General Information, Professional Factors and Organizational Factors. The researcher trusts that the proposed external variables moderate the original TAM variables. Therefore, the following is null hypothises: 1) NH1: perceived ease of use affected negatively on perceived usefulness of the use of EMR.2) NH 2: perceived ease of use affected negatively on attitude towards the use of EMR.3) NH3: perceived usefulness affected negatively on Self Efficacy of the use of EMR.4) NH4: perceived ease of use affected negatively on Self-Efficacy of the use of EMR.5)

NH5: perceived ease of use affected negatively on Perceived Behavioural Control of the use of EMR.6) NH6: perceived usefulness affected negatively on Perceived Behavioural Control of the use of EMR.7) NH7: perceived usefulness affected negatively on Sufficient Training of the use of EMR.8) NH8: perceived ease of use affected negatively on Sufficient Training of the use of EMR. 9) NH9: general information affected negatively on attitude towards the use of EMR .

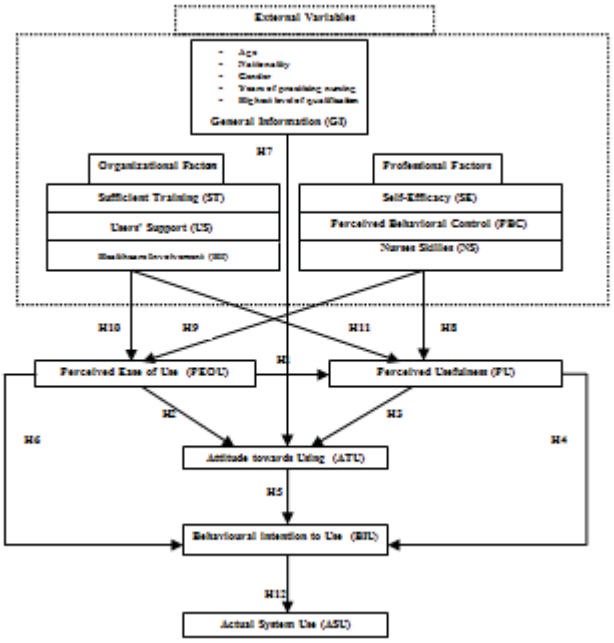


Figure 2 : Technology Acceptance Model for this study

5 Study methods

The study was conducted all nurses at the MOH's hospitals in Riyadh and Jeddah's City. Questionnaires were used as the primary research methodology in this study. The questionnaire used in this study was modified from the original David's measurement scales used in TAM and from other literatures by changing some wording and validation to fit the context of the use of EMR to make sure content validity. The questionnaire was written in both English and Arabic to take into account nurses' nationality and academic backgrounds. SPSS statically was applied to assess group differences across different variables. Participants – nurses at the MOH's hospitals in Riyadh and Jeddah's City – were asked closed questions about EMRs as well as being encouraged to write about their knowledge, perceptions and attitudes towards the use of EMR through three open-ended questions. The researcher designed a questionnaire 64-item. The questionnaire divided in to seven parts. The first section included questions about general information for nurse such as Age, Nationality, Gender, years of practicing nursing numbers of a years from "1 – 4" to "15 or more" *and* highest level of educational such as Licensed practical Nurse, Associates degree in Nursing, Bachelor of Science in Nursing, Master of Science in Nursing, Master of Science Non- Nursing, Doctorate Nursing and Doctorate Non-Nursing. The second section contained questions about computer literacy such as comfort with technology using a 5-point Likert scale ranging from "very uncomfortable" to "very comfortable", having personal computer or laptop, having computer in their office, spending time on using computer, having computer skills using "Yes" and "No" options and *years* of Prior computer *experience* numbers of a years from "1 – 4" to "15 or more". The third section included questions about nurses 'knowledge and perceptions of EMR contained a table of their perceptions regarding statements about EMR. These statements are: Paper-based are more credible than EMR, EMR require special training, EMR add a burden to nurses workloads, EMR are worth the time and effort required to use them, EMR will decrease productivity, EMR enable services such as access structured historic patient information to be efficiently provided, EMR mean that requested records are always available, EMR mean that requested records are delivered promptly, EMR improve communication between medical and nursing staff in hospitals, EMR enable medical staff to be cooperative and responsive to patients needs, There are concerns with the confidentiality of EMR, Staff is highly trained and knowledgeable about EMR, EMR documents/files are complete and well-organized, The format of EMR is highly acceptable, EMR documents are available in a timely manner to all authorized users, There are currently issues with EMR meeting international standards, EMR are Properly arranged, EMR works to reduce human errors, EMR improve patient safety and quality of care, EMR work well in practice, EMR works to facilitate the completion of the work, EMR assist patient data entry, EMR enable access to medical records from different places in the hospital, EMR assist medical staff to make the right decision in the care of patients, The use of EMR may lead to the loss of patient information because of technical errors. EMR will help in building a database of national health care using a 5-point Likert scale ranging from "strongly agree" to "strongly disagree".

The forth section contained questions about using EMR such as percentage of time spend when dealing with patient records at work using from "0%", "75-100%", recording and accessing clinical documentation using 100% as paper based records, 100% as Electronic Medical Records, Mostly paper based records, Mostly EMR, Approximately 50:50 paper based records and EMR and switch from paper=based records to EMR has been a positive experience overall using "Yes" and "No" options. The fifth section contained questions about nurses' satisfaction with EMR such as system provide the precise information, the information content meet their needs, provide sufficient information, the output is presented in a useful format, the information clear, easy to use, get the information on time and provide up-to-date information using a 4-point Likert scale ranging from "Never" to "Always" and their satisfaction with EMR in their department using a 5-point Likert scale ranging from "excellent" to "poor." EMR make it easier to review patients' problems, EMR make it easier to

find specific information from patient records and EMR can produce data reviews for specific patient groups, e.g. complication rate, diagnoses using "Yes" and "No" options. Select the problems that you have had with EMR use such as Downtime, Limits communication with other health care team members, Decrease amount of time spent with patient, Accessibility to computers, Accessibility of patient information, Speed of Log-in, No problems noted, Other. The sixth section included questions about global assessment about EMR in their department such as the performance of department, the performance of own tasks and the quality of the department using 7-point Likert scale ranging from "difficult" to "easier". The seventh section included questions about using EMR such as the ability to use EMR, EMR received any training in the use of EMR using "Yes" and "No" options, training received and for how long, ranking factors that might help to adapt with a new EMR in a hospital according to their importance to them. These factors are "training courses outside the hospital", "training courses inside the hospital", "and colleagues at the hospitals", "personal experience, other". The final items (62, 63, 64) was open-ended questions inviting a written response about the barriers and the benefits for applying effective EMR in hospitals and any issues the nurses felt were not adequately addressed by the questionnaire.

5.1 Demographics of Study Population

The reason to carried out this study to investigate nurses perceptions, knowledges, attitudes about the EMR system. The researcher contacted MOH's hospitals regarding to fill in the questionnaire and 21 Health care professionals responded (table 1). Some of participants have different backgrounds which are Religion, Geography and Art graduates with Licensed practical Nurse. The highst of them qualified Bachelor of Science in Nursing and only one Doctorate Non-Nursing.

Table :1 Data resourses used in this research

Items	Data resources	Number of return questionnaire	Location
Pilot study	Female Participants	230	Single clinic at Jeddah
	Questionnaire		
	Excel for analysis		
Case study	Different group of participants	1428	20 hospitals in Riyadh and Jeddah city
	Questionnaire		
	SPSS		
	Interview	3 Executive Director of Nursing	1 hospital in Riyadh and 2 hospitals at jeddah city
	Focus group	4 nurses at Riyadh hospital + 5 nurses at Jeddah hospital	2 hospitals in riyadh and jeddah city

5.2 Participants

The participants in this study were 1428 nurses from different hospitals and diffeent departments who willingly participated in the online survey +12 nurses willingly participated in the interviews and focus groups in Riyadh and Jeddah city. All participants in this study were member of private and public hospital working MOH, who suitable for the purpose and context of this study.

5.3 Instrumentation

The research instrument consists of seven main sections. The first section includes a nominal scale to classify particepants' demographic information. The second section containes computer Literacy such as skills and computer experience. The third and fourth section uses 5-point Likert scale where 5: Strongly disagree, 4: disagree, 3: don't know, 2: agree, 1: Strongly agree. The fifth section includes the use of EMR. The sixth section includes the overall Satisfaction of EMR. Finally, The seventh section includes training recived with EMR. The last sex sections includes TAM constructs.

5.4 Demographic characteristics

This section of the questioner defines particepantes' demographic characteristics. It includes 5 items such as age, gender, nationality, years of practicing nursing and highest level of qualification (table 2).

Table 2 : Questionnaire section1

Section 1: General information (GI)

1- Age :
□ 20-30 yrs □ 31-40 yrs □ 41-50 yrs □ > 50 yrs

2- Nationality: □ Saudi □ Non Saudi

3- Gender: □ Male □ Female

4- How many years do you practicing nursing?

- ☐ 1-4 yrs
- ☐ 5-9 yrs
- ☐ 10-14 yrs
- ☐ <15 yrs

5- Which of the following indicates your highest level of qualification preparation?

- ☐ Licensed practical Nurse.
- ☐ Associates degree in Nursing.
- ☐ Bachelor of Science in Nursing.
- ☐ Master of Science in Nursing.
- ☐ Master of Science Non- Nursing.
- ☐ Doctorate Nursing.
- ☐ Doctorate Non-Nursing.

5.5 Measuring TAM constructs

The second, third, fourth, fifth, fixth and feventh sections of the survey (Table3), as mentioned in the questionnaire design above, measures TAM constructs ulitised in this study. As shown in table 3, there are 59 items measured in accordance with the current study's research model. The measured items include Self-Efficacy (SE) (6 items), perceived ease of use (PEOU) (17items),perceived usefulness(PU) (16 items), attitude toward usage(ATU) (3 items), Perceived Behavioural Control (PBC) (14 items), and Sufficient Training as an external factor (ST) (3items).

Table 3 : Questionnaire sections 2, 3, 4, 5,6 and 7

Section 2: Self-Efficacy (SE)	
Computer Literacy:	
How would you rank your comfort with technology?	SE1
Do you have your own personal computer or laptop?	SE2
Do you have Computer in your office or word?	SE3
Do you spend time on using the computer and the internet every week?	SE4
Do you have computer skills?	SE5
How many years of Prior computer experience do you have?	SE6
Section 3: Perceived Ease of Use (PEOU)	
Knowledge and Perceptions of EMR:	
EMR require special training.	PEOU1
EMR enable services such as access structured historic patient information to be efficiently provided.	PEOU2
EMR mean that requested record are always available.	PEOU3
EMR mean that requested record are delivered promptly.	PEOU4
There are concerns with the confidentiality of EMR.	PEOU5
Staffs are highly trained and knowledgeable about EMR.	PEOU6
EMR documents files are complete and well-organized.	PEOU7
The format of EMR is highly acceptable.	PEOU8
EMR documents are available in a timely manner to all authorized users.	PEOU9
There are currently issues with EMR meeting international standards.	PEOU10
EMR are Properly arranged.	PEOU11
EMR enable access to medical records from different places in the hospital.	PEOU12
The use of EMR may lead to the loss of patient information because of technical errors.	PEOU13
Do you think you have the ability to use EMR effectively?	PEOU14
Please write below what you believe are the most significant benefits of adopting effective electronic medical records in hospitals	PEOU15
Write below what you believe are the most significant barriers or challenges for adopting effective electronic medical records in hospitals:	PEOU16
Are there any issues you feel they were not adequately addressed by the questionnaire?	PEOU17
Section 4: Perceived Usefulness (PU)	
Knowledge and Perceptions of EMR:	
Paper-based are more credible than EMR.	PU1
EMR add a burden to nurses' workloads.	PU2
EMR are worth the time and effort required to use them.	PU3
EMR will decrease productivity.	PU4
EMR improve communication between medical and nursing staff in hospitals.	PU5
EMR enable medical staff to be cooperative and responsive to patients needs.	PU6
EMR works to reduce human errors.	PU7
EMR improve patient safety and quality of care.	PU8
EMR work well in practice.	PU9
EMR works to facilitate the completion of the work.	PU10
EMR assist patient data entry.	PU11
EMR assist medical staff to make the right decision in the care of patients.	PU12
EMR will help in building a database of national health care.	PU13
The performance of our department's work has become	PU14
The performance of my own tasks has become	PU15
The quality of our department's work has become	PU16
Section 5: Attitude towards Using (ATU)	
The Use of EMR:	
Do you think whether the switch from paper=based records to EMR has been a positive experience overall?	ATU1
How do you currently record and access your clinical documentation?	ATU2
What percent of your time do you spend when you dealing with patient records at work?	ATU3
Section 6: Perceived Behavioural Control (PBC)	
The overall Satisfaction of EMR:	
How often does the EMR system provide the precise information you need?	PBC1
How often does the information contained in EMR meet your needs?	PBC2
How often does the EMR system provide reports that exactly meet your need?	PBC3
How often does the EMR system provide sufficient information?	PBC4
How often do you think the EMR output is presented in a useful format?	PBC5
How often is the EMR information clear?	PBC6
How often is the EMR system easy to learn how to use?	PBC7
How often does the EMR system deliver the information you need in a timely manner?	PBC8
How often does the EMR system provide up-to-date information?	PBC9
How would you rate your satisfaction with EMR in your department?	PBC10
Do you think EMR make it easier to review patients' problems?	PBC11
Do you think EMR make it easier to find specific information from patient record?	PBC12
Do you think EMR can produce data reviews for specific patient groups, e.g. complication rate, diagnoses?	PBC13
What are problems that you have had with EMR use?	PBC14
Section 7: Sufficient Training (ST)	
Have you received any training in the use of EMR?	ST1
Please write what training have you received and for how long?	ST2
Please tick, according to their importance to you, the following factors that might help you to adapt to the introduction of a new EMR system in a hospital?	ST3

6 Data analysis and results

6.1 Demographics

The majority of participants were between 20 and 30 years, with 25.56% from 31 to 40, 24.39% from 41 to 50, and 11.69% above 50. The female participants were almost more than male in term of gender, with 246 (17.23%) males and 1182 (82.77%) females. Saudi-nationality nurses the highest response rate, at 79.55%.The majority of participants practicing nursing were have 5-9 years, with 29.48% from 10-14 years, 16.39% from 1-4 years and with a low minority (13.80%) above 50. The majority of participants were have BS in nursing in term of highest level of qualification, with 36.83% have LP nurses, 11.55% have MS non nursing, 2.73% have Associates degree in nursing, 2.38% have MS in nursing, 1.12% have Doctorate nursing and with a low minority (0.07%) have Doctorate non nursing.(see table 4).

Table 4: Respondents' demographics information

Respondents	Frequency	Percent
Age		
20 -30 yrs	540	37.82%
31-40 yrs	365	25.56%
41-50 yrs	356	24.93%
>50 yrs	167	11.69%
Total	1428	100.00%
Gender		
Female	1182	82.77%
Male	246	17.23%
Total	1428	100.00%
Nationality		
Non Saudi	292	20.45%
Saudi	1136	79.55%
Total	1428	100.00%
Years of practicing nursing		
1-4 yrs	234	16.39%
5-9 yrs	576	40.34%
10-14 yrs	421	29.48%
>15 yrs	197	13.80%
Total	1428	100.00%
Highest level of qualification		
Associates degree in Nursing	39	2.73%
Bachelor of Science in Nursing	647	45.31%
Doctorate Non-Nursing	1	0.07%
Doctorate Nursing	16	1.12%
Licensed practical Nurse	526	36.83%
Master of Science in Nursing	34	2.38%
Master of Science Non-Nursing	165	11.55%
Total	1428	100.00%

6.2 Validity and reliability

The reliability is important for the researcher which protects his data and subject from repeat it by other study.

The reliability is an ability of the research creates consistent results (Sarantakos 1998).

Table 5: Instrument reliability Cronbach alpha

Scale	Number of Items	Cronbach Alpha
Self-Efficacy (SE)	6	-1.370 a
Perceived Ease of Use (PEOU)	17	0.978
Perceived Usefulness (PU)	16	0.750
Attitude towards Using (ATU)	3	0.094
Perceived Behavioural Control (PBC)	14	0.989
Sufficient Training (ST)	3	0.959
Overall reliability	59	0.754

The overall Cronbach's alpha reliability of the questionnaire items is 0. 754 (see table 5) and this value coefficient is considered as a high and acceptable. All measures for PU and PEOU in this study show a high level of reliability, ranging from 0.750 to 0.978. All Cronbach Alpha value > 0.70, and therefore the survey is considered reliable. Moreover, some of respondents were had plenty of knowledge and computer experience to respond to the entire questionnaire items. In this study, the reliability assessment was done using Statistical Package for Social Sciences (SPSS) version 21. As presented on table 6, there is a strong significant relationship between the perceived ease of use and perceived usefulness of the use of EMR .P-value = 0.000, NH1 is rejected.

Table: 6 PEOU and PU correlations

Correlations		
Factors		PU
PEOU	r-value	0.560**
	p-value	0.000
	N	1428
PEOU: Perceived ease of use; PU: Perceived usefulness		

As presented on table 7,8 there is a strong significant relationship between the perceived ease of use, perceived usefulness and attitude towards the use of EMR .P-value = 0.000, NH2 and NH3 are rejected.

Table: 7 PEOU and ATU correlations

Correlations		
Factors		ATU
PEOU	r-value	0.357**
	p-value	0.000
	N	1428
PEOU: Perceived ease of use; ATU: Attitude towards Using		

Table: 8 PU and ATU correlations

Correlations		
Factors		ATU
PU	r-value	-0.145**a
	p-value	0.000
	N	1428
PU: Perceived usefulness; ATU: Attitude towards Using		

a: The value is negative due to a negative average covariance among items. This violates reliability mel assumptions.

As presented on table 9,10 there is a strong significant relationship between the perceived usefulness, perceived ease of use and Self-Efficacy of the use of EMR .P-value = 0.000, NH4 and NH5are rejected.

Table: 9 PU and SE correlations

Correlations		
Factors		SE
PU	r-value	0.208**
	p-value	0.000
	N	1428
PU: Perceived usefulness; SE: Self-Efficacy		

Table: 10 PEOU and SE correlations

Correlations		
Factors		SE
PEOU	r-value	12.404**
	p-value	0.000
	N	1428
PEOU: Perceived ease of use; SE: Self-Efficacy		

As presented on table 11, 12 there is a strong significant relationship between the perceived ease of use, perceived usefulness and Perceived Behavioural Control of the use of EMR .P-value = 0.000, NH6 and NH7are rejected.

Table: 11 PEOU and PBC correlations

Correlations		
Factors		PBC
PEOU	r-value	0.721**
	p-value	0.000
	N	1428
PEOU: Perceived ease of use; PBC :Perceived Behavioural Control		

Table: 12 PU and PBC correlations

Correlations		
Factors		PBC
PU	r-value	0.694**
	p-value	0.000
	N	1428
PU: Perceived usefulness; PBC :Perceived Behavioural Control		

As presented on table 13,14 there is a strong significant relationship between perceived usefulness, perceived ease of use and Sufficient Training of the use of EMR .P-value = 0.000, NH8 is rejected.

Table: 13 PU and ST correlations

Correlations		
Factors		ST
PU	r-value	0.549**
	p-value	0.000
	N	1428
PU: Perceived usefulness; ST : Sufficient Training		

Table: 14 PEOU and ST correlations

Correlations		
Factors		ST
PEOU	r-value	0.670**
	p-value	0.000
	N	1428
PEOU: Perceived ease of use; ST : Sufficient Training		

As presented on table 15, there is a strong significant relationship between general information and attitude towards the use of EMR .P-value = 0.000, NH9 is rejected.

Table: 15 GI and ATU correlations

Correlations		
Factors		ATU
GI	r-value	0.083**
	p-value	0.000
	N	1428
GI: General information ; ATU: Attitude towards Using		

7 Conclusions

The findings show that there is a significant relation between ages, gender, nationality and the level of the qualification, and the knowledge or attitude towards EMR, although there is a significant relationship between gender, nationality, the level of the qualification and the nurses' work experience to use EMR. Most of the views asked for better qualifications in the area of EMR and health information systems in general. These statements need to be considered in the national processes of change towards e-health. Other barriers or concerns in relation to EMRs were linked to technical, financial and workload issues. The results from this study will helped other study investigating the perceptions of EMR and barrier to its uptake in both male and female nurses at all stages in their careers.

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