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Path Analysis Model of Nursing Staffs' Experiences of EPR Benefits

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Abstract: To assess the impact of Electronic Patient Record (EPR) on an organization, we can evaluate the perspectives of users about the effects of EPR on their activities. The aim of this study was to investigate the experience of nurses about the effects of EPR on their routine activities. This study was performed in affiliated hospitals of Semnan University of Medical Sciences in Semnan, Iran. A questionnaire was developed to measure background characteristics and attitudes of nurses toward EPR advantages. The study subjects have more experienced user-friendly and patient management of EPR. There were significant differences among mean scores of the nursing staffs' attitudes towards EPR benefits ($p<0.001$). Managers must consider the above mentioned items in their decisions while trying to computerize the tasks of nurses. Otherwise, they will face an inefficient information system and discontented nurses.

Key words: Electronic patient record, nurse, experiences, benefit, affiliated

INTRODUCTION

Electronic Patient Record (EPR) are currently used by many developed countries and some developing countries (Darbyshire, 2004; Farzaneh *et al*., 2011). EPR is a necessary information system for providing better health services in hospitals and it is increasingly needed for the delivery of health services (Dick and Steen, 1991). Although, some aspects such as hardware, software, human factors, cost of installation of hardware and the applications of software are of great importance, the significant role of human factors such as satisfaction and education cannot be overlooked. Rogers suggested a model to describe the features of an innovation from the perspective of the users (Gremy *et al*., 1999; Kahouei *et al*., 2014a, b). These features include the advantages of the invention, compatibility of the invention with existing values, the complexity of the invention, the testability of the invention and the evaluation of outcomes (Rogers, 1995; Kahouei *et al*., 2013a, b). Studies have shown that if users have a more positive perception of a new invention, they will also accept the invention more easily which in turn leads to better outcomes (Frantz, 2001; Kahouei *et al*., 2014a, b). Lee designed a process in which health care providers used EPR and found that few of them had volunteered to use the newly designed process. It seems that when an information system is used in a clinical environment, users choices will be limited (Lee, 2000). In medical environments, nurses are among the most important users of the EPR and use both the general applications as well as the managerial applications of the system (Mehdi *et al*., 2012). Nursing services are among the services that are strongly influenced by computers (Mahboobe *et al*., 2012). Since, computers are usually used in the health service delivery settings, there is an increasing focus on the effects of EPR on daily work of nurses (Mehdi *et al*., 2011). Many researchers have reported that a large part of nurses are not comfortable using this technology and they have not much experience required to utilize the system (Marasovic *et al*., 1996; Kahouei *et al*., 2011; Mozhgan *et al*., 2012). It has been observed that nurses are a group of health care providers which are resistant to the computerization of the systems (Timmons, 2003; Safavi *et al*., 2012). Nurses often complain about their workloads which may increase due to slow speed of the systems and the occurrence of problems while entering data (Clarke *et al*., 2001). Although, the process of entering data into EPR may seem logical to other users, nurses often consider this process to be inhumane, confusing and irrelevant to the situation of patients (Bongartz, 1988; Kahouei *et al*., 2013a, b). To achieve a

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better result while using this type of systems, it is necessary to improve the interaction between this category of users and the systems. To assess the impact of this change on an organization, we can evaluate the perspectives of this group of users about the effects of EPR on their activities. The aim of this study was to investigate the experience of nurses about the effects of EPR on their routine activities.

MATERIALS AND METHODS

This study was performed in affiliated hospitals of Semnan University of Medical Sciences in Semnan, Iran. The nursing staffs started the implementation of EPR. The 180 nurses received the questionnaire. A questionnaire was developed to measure background characteristics and attitudes of nurses toward EPR advantages. Questionnaire consists of two section. The first section included demographic data such as level of education, work experiences, frequency of use of an EPR and the participation in EPR designing and the second section included of 23 questions related advantages of EPR in area user friendly, patient management and efficiency. Also, the response about of impact of EPR upon ward activities were provided in three scales: more difficult (value 1), no change (value 2), easer (value 3). Thus, a mean score >2.5 represents a positive attitude while a mean score <2.5 represents a negative attitude. Cronbach's alpha for the overall score in our sample was 0.78. Data analysis was performed with Version 11.5 of the SPSS statistical program. The respondents were informed that they had the freedom to respond or refuse to be a part of the study. All the participating nurses were assured that their responses would be kept confidential.

RESULTS AND DISCUSSION

The findings showed that 42% of the study subjects have experienced EPR advantages. There were significant relationships between the nursing staffs' attitudes and their characteristics ($p<0.001$) (Table 1). The study subjects have more experienced user-friendly and patient management of EPR. There were significant differences among mean scores of the nursing staffs' attitudes towards EPR benefits ($p<0.001$) (Fig. 1). The findings showed that user-friendly of EPR has more impacted on nursing staffs' perception (Fig. 2).

The results of this study showed that some of the nurses realized the benefits of EPR. The results showed that there was a significant relationship between nurses' experiences and attitudes. The results indicated that experienced nurses could better understand the potential benefits of using EPR including its user friendly interface, efficiency and its capability for patient management.

Results indicated a significant relationship between nurses' attitudes and their education level. Results of other studies have also shown that nurses with higher education had a more positive attitude towards using computers (Mohammad, 2005; Kahouei *et al*., 2015a, b). The results showed a significant relationship between attitudes and the use of computers in the workplace. Other studies also have shown that nurses who use the computer more had much better understanding of computers impact on their activities such nurses were more able to evaluate the advantages and disadvantages of using computers. The findings show that nurses who participated in the development and promotion of EPR were more satisfied with the impact of computers on nursing activities. Overall, if nurses become more involved in the promotion of information systems and their suggestions be taken into consideration, they will be more eager to utilize the information system (Clarke *et al*., 2001). Gugerty *et al*. (2000)'s study in the United States showed that 60% of the studied nurses had a better feeling toward information system because their views had been taken into consideration. The results showed that some nurses did not understand the user friendly interface of EPR. This view might be due to the fact that copies of patients' information are available in the records and in the computer as well. Because of the legal issues in our country such copies must be saved. They are kept as well because in Iran the digital information are not considered as legal documents. This increases the workload of nurses. As shown by the results of other

Table 1: Demographic characteristics

		Have nursing staffs experienced EPR advantages		
Characteristics	Groups	No = 65 (58)**	Yes = 47 (42)**	p-values
Work experiences (year)		8.92±5.18*	19.04±5.23	<0.001
Frequency of computer usage (daily)		11.24±3.61	13.26±1.29	<0.001
The participation in EPR designing	No	6 (9.2)	33 (70.2)	<0.001
	Yes	59 (90.8)	14 (29.8)	<0.001
Education	Diploma	26 (40)	0	<0.001
	Bachelor degree	39 (60)	45 (95.7)	<0.001
	Master degree	0	2 (4.3)	<0.001

*Mean±SD, **N (%)

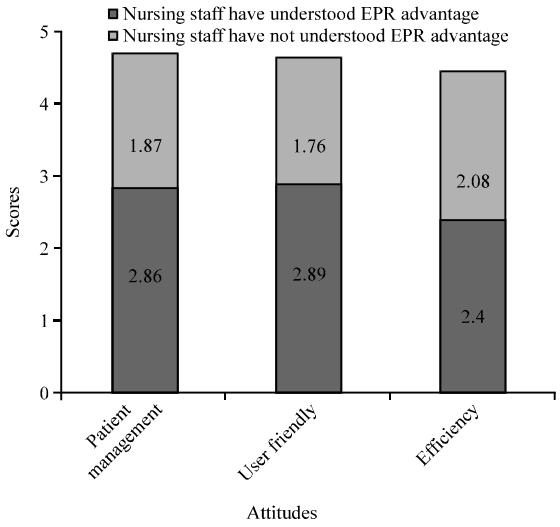

Fig. 1: Mean scores of nursing staffs' attitudes towards EPR benefits

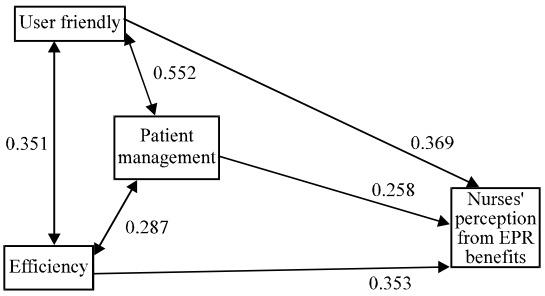

Fig. 2: Path analysis model

studies, nurses claim that the use of these systems increases their workload (Azar *et al*., 2006; Likourezos *et al*., 2004). Consequently, after a while nurses will become disinterested to access patient information through this system and therefore, they do not understand its effectiveness. Use of wireless and portable computers makes it easier for nurses to access patients' information. The results showed that some nurses understood the impact of EPR on patient management. If nurses become responsible for the EPR and carry out their duties fully, they will better understand the benefits of this information system (Anderson, 1997).

CONCLUSION

The results showed that the benefits of EPR in terms of patient management, user friendliness and efficiency had a significant impact on the perception of nurses. However, there are many factors that affect the commitment of nurses to information systems such as workload, number of employees, complexity of services, compatibility of the system with the user, flexibility of the software designed for employees, quality and quantity of data entered into the computer, methods of entering the data into the system, etc. (Likourezos *et al*., 2004). So, managers must consider the abovementioned items in their decisions while trying to computerize the tasks of nurses. Otherwise, they will face an inefficient information system and discontented nurses. These problems increase the costs and reduce the quality of services. In addition, an information system that is not acceptable for nurses will turn into a weak system that will frustrate nurses as a result, nurses will reject the new technology (Ives *et al*., 1983). Consequently, they either do not use the system or use it inefficiently and wrongly.

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