

## **A Comparison Study of Electronic Health Records in Quality Performance of Services in Health Centers**

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### **Abstract**

**Introduction:** With progress of science, the use of new technologies has increased in all service centers such as health centers. One of the most important applications of technology in these centers is electronic health records (EHR) which can be effective in improving the performance of health services. Therefore, the purpose of this study was a comparison study of electronic health records in quality performance of services in health centers.

**Methods:** This study was an comparative-analytical study and practical. The statistical population of service recipients was about 320,000 people of Najafabad city who were divided into different groups including: infants, children, adolescents, youth, middle-aged and elderly and pregnant mothers. The statistical sample size was 532 people. Sampling was done by convenient method. Research tools was Standard checklist of the Ministry of Health which were determined based on the interview with health experts to evaluate the quality performance of service delivery. people who referred to the centers in 2016 - 18 the Standard checklist of the Ministry of Health filled for them and then for same group people the Standard checklist of the Ministry of Health was compared in 2013-15 (the same checklists was compared for the same group people in both methods include the paper and the electronic health record. For example in paper method one check list for an infant was compared with one check list for an infant in electronic method). It should be noted that the standard checklists of the Ministry of Health were available in 2013 - 15 (paper registration). Data were analyzed using t-test.

**Results:** Comparison of paper and electronic services showed that with the implementation of electronic health records, has reduced the quality performance of the services provided.

### **Introduction**

Multiplicity and diversity of health care providers; The problem of aggregation and retrieval of health information [1] created the need of electronic services in the health care, and after the initial stages and providing the necessary infrastructure, the electronic health record program replaced with registration of documents in the health system [2]. with the increasing growth of science and technology in the health around the world, as well as many problems in documenting the information of service recipients, such as missing information, lack of timely access to information of service recipients and their health records, The impossibility of accessing patients' information in different geographical areas and considering the high volume of referrals, the necessity of replacing electronic systems instead of paper

systems in the health, is necessary. Therefore, the application of technology in health care in the form of EHR is the most important and necessary issue to improve the performance of health care. Research has shown that HSR not only is a way to integrate information and represent the status of service recipients and a dynamic source of health care, but it can also lead to access to information and clinical records, e-learning and comprehensive management, and ultimately upgrading [3].

In the study of Baumann, *et al.* The service registration time in the implementation of electronic health records Was reviewed and the results showed that if employees are informed with the system, Work improved and service time reduced [4]. In Chia-An study, the effect of e-health records on the output of teamwork in hospitals and reported that over time and the changes that have taken place in the structure of e-health records, theoretical frameworks and evaluation of more comprehensive studies And has become more systematic and has more favorable effects on its implementation. However, there are still reports of lack of in-depth understanding of technology and clinical work, which is mainly based on technology design, development and deployment of health information systems [5]. Also Hayrinen, *et al.* showed in their research that electronic health records have improved the efficiency of documentation and exchange of information. This study showed that the electronic health record has facilitated the exchange of information related to the medical records of individuals and also information related to the use of various medical equipment for patients [6]. Perry, *et al.* study the registration of information by electronic and paper methods in the general emergency department of the German hospital of Berman and showed that the time of registration of documents in electronic registration increased [7] Colleti and Andrade in their research showed that the participants believed in increasing the performance of services after the electronic health record and electronic security is more secure than paper registration of services and in the descriptive part of the service, from the perspective of most users, the use of electronic health record is satisfactory [8]. Kruse, *et al.* In their research, showed that the use of electronic health records in the provision of health services increases productivity, performance and data management, increases the possibility of effective monitoring and the possibility of preventive care [9]. Dera-khshani and Vahedi showed that the hospital information system has improved in terms of content, but the implementation of electronic health records in terms of time (reduction of service time) and in terms of form has not been effective [10]. Natagh and Rezaeirad in their research showed that the hospital information system increases productivity and reduces medical errors and costs [11] and also in the research of Fakhrzadeh, *et al.* were mentioned that the effectiveness of electronic execution are saving time and money, improve patient care, Facilitating the process of diagnosis and treatment and increasing the accuracy and speed of completing patients' files [3].

Based on the studies, due to the integration of health services abroad and its lack of separation from hospital services, the role of electronic health records in providing services in the field of health has not been addressed. The difference between the two areas of health is that in the field of health, the main goal is primary and secondary prevention, so the person is not yet exposed to the disease or is unaware of it and does not feel the need to receive services, and this is entirely with services. The treatment department that a person visits with a real need to receive services is different. Therefore, the indicators and dimensions that assess the performance of services in this area will be different. In fact, e-health in the health services sector is a fledgling issue that provides integrated health care by providing comprehensive, reliable, relevant, accessible and timely information for primary and secondary prevention; Therefore, it is very important to pay attention to the factors that increase the productivity of health services.

According to the principles and the most important goal of health service centers, to increase the productivity of health services paying attention to the performance of services, increases the productivity of health services and thus more effective prevention of diseases and also being a pilot of Najafabad city in the implementation of many programs of the ministry, including the electronic health record program; The purpose of this study is a comparison study of electronic health records in quality performance of services in health centers.

### Method

This study was an comparative-analytical study and practical. The statistical population of service recipients was about 320,000 people of Najafabad city who were divided into different groups including: infants, children, adolescents, youth, middle-aged and elderly and

pregnant mothers. The statistical sample size was 532 people. Sampling was done by convenient method. people who referred to the centers in 2016 - 18 the Standard checklist of the Ministry of Health filled for them and then for same group people the Standard checklist of the Ministry of Health was compar in 2013 - 15 (the same checklists was compaired for the same group people in both methods include the paper and the electronic health record. For example in paper method one check list for an infant was compaired with one check list for an infant in electronic method). It should be noted that the standard checklists of the Ministry of Health were available in 2013 - 15 (paper registration).

Research tools was Standard checklist of the Ministry of Health wich were determined based on the interview with health experts to evaluate the quality performance of service delivery. The data included the evaluation of services in terms of quality performance of services such as planning and organization, information recording, service provider performance, and service satisfaction wich was collected by Standard checklist of the Ministry of Health. The spatial scope of this research was the health centers of Najafabad city. The time period for extracting information in paper registration was from 2013 to 2015 and from October 2016 to October 2018 for extracting information from the health system (electronic registration).

After collecting the checklists; Data were analyzed using Spss software (version 23). To analyze the data according to the central limit theorem that for high sample size the sample distribution tends towards the normal distribution; Therefore, t-test were used. In order to comply with ethical considerations, the data were analyzed anonymously and in groups, and confidentiality was considered during the study.

**Findings**

Table 1 show the results of the Independent t test for measuring the difference in service performance results in both paper and electronic registration methods.

T Statistics	P-Value	Mean difference	Average Performance of services in the electronic registration method	Average Performance of services in the paper registration method
-7.96	<0.05	-3.61	79.15	82.76

**Table 1:** Independent t test results to compare paper and electronic recording methods.

As can be seen in table 1, P-value is less than 0.05, so the mean difference of quality performance in the two methods of paper and electronic registration was significantly different. The average difference of this index shows that in the electronic method, the performance has decreased.

**Discuss**

The results of this study showed the implementation of electronic health records has reduced the performance of services. This findings was similar to the findings of Baumann., *et al.* [4], Perry., *et al.* [7] and Nattag and Rezai-Rad [11]. However, the results of the study did not agree with the findings of Chao [5], Häyriinen., *et al.* [6], Colleti Junior., *et al.* [8], Kruse., *et al.* [9], Derakhshani and Vahedi [10] and Fakhrzad., *et al.* [3]. for Interpretation these findings, it can be said that the biggest concern of the Ministry of Health and the provincial authorities in the first year of performance of electronic records was the excessive time consuming registration of electronic services, which was quite evident in the interim evaluations. On the other hand, in the performance of any new program, performance reduction is inevitable. However, after 2 years the performance of the electronic health record, in addition to continuous training during the course, health service providers still need more training.

The present study has some limitations that can be said that at the time of the study, only 2 years had passed since the performance of the electronic health record and this period was not enough to achieve many performance indicators.

### Conclusion

The results showed that the implementation of electronic health records has reduced the performance of services. so officials must provide solutions for increasing the performance of services and empower health staff in providing electronic services.

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