Universal Journal of Pharmaceutical Research
www.ujpronline.com

Available online at *www.ujpronline.com*
Universal Journal of Pharmaceutical Research
An International Peer Reviewed Journal
ISSN: 2831-5235 (Print); 2456-8058 (Electronic)

RESEARCH ARTICLE

THE IMPACT OF HOSPITAL INFORMATION SYSTEM ON THE WORKING PROCESS OF IMAM JA'FAR SADIQ HOSPITAL, ALBORZ PROVINCE-2016

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Article Info:

Article History:
Received: 9 December 2017
Reviewed: 16 January 2018
Accepted: 25 February 2018
Published: 15 March 2018

Cite this article:

Vahdat S, Hessam S, Dadashi J. The impact of hospital information system on the working process of Imam Ja'far Sadiq hospital, Alborz province- 2016. Universal Journal of Pharmaceutical Research 2018; 3(1): 7-11.
http://doi.org/10.22270/ujpr.v3i1.R2

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Abstract

Objectives: This research has been done on the impact of the hospital information system on the staffing of Imam Jafar Sadiq Hospital in Alborz in 2016. The research method is applied and in terms of data collection method, descriptive-survey method. The statistical population consisted of all employees of contractual, design and contract personnel working in Imam Jafar Sadiq Hospital.
Methods: In this study, 384 people were selected using Cochran's formula, which were selected by available sampling method. The validity of the researcher-made questionnaire and their reliability were confirmed by Cronbach's alpha with a coefficient of above 0.7. In the descriptive statistics section, mean, standard deviation, frequency and percentage of frequency were used. In the inferential statistics, the inclination and elongation were used to determine the normality of the data.
Results: The results of one-sample T-test and Friedman indicate that the hospital information system improves the work process of the staff members of Imam Jafar Sadiq Hospital.
Conclusion: Hospital information system has the greatest impact on hospital support and administration and has had the least impact on hospital performance. It should be noted that the results are consistent with most studies performed.
Keywords: Hospital Information System, Imam Ja'far Sadiq Hospital, working Process, Staffing.

INTRODUCTION

Hospitals as one of the most important social organizations have a major role to play in improving the health status of the country and providing health care services that must receive the correct medical information for their efficient administration and to provide educational, research and the development of medical and paramedical sciences, improving the quality of treatment, optimizing the managerial aspects of health care centers, reducing the costs of monitoring centers, classifying and deducing information so that information can be provided to all decision-makers in an appropriate and appropriate manner[1-5]. Hospitals, especially their principals and managers. Therefore, the performance of a complex organization such as a hospital requires access to information that is now collected by the hospital information system[6-11]. Information provided by the system Audit activities: such as scheduling and scheduling, a list of actions to be undertaken in the near future on Hospital Information (HIS) generally includes:

1. Workload statistics: such as admission, bed occupancy, and number of surgeries and length of stay.
2. Tasks and actions in special cases.
3. The status of employed personnel: such as the load or volume of work of the personnel employed their competence and suitability, patient satisfaction.
4. Financial performance: income and expenses, the amount of liquidity available, actual distribution of funds[6].

The system is also designed to automate hospital affairs, such as reporting test results, entering physician orders, prescribing drugs, controlling drug stores, central warehouses, nutrition units, and so on. Hospitalized Hospital Software (HIS) is an alternative to manually roaming in the hospital[7,8,9].The system mechanizes hospital activities from admission to patient clearance, effective communication between departments, as well as faster and more accurate extraction of statistical and managerial reports. The amount of information that is produced in hospitals and transferred from one part to

another is worth attention. Managing this heterogeneous information is a complex task. Therefore, information and communication technology can be very useful and effective in this regard[12]. On the other hand, in hospitals, the source of all management activities, especially in health care, has information comprehensive, relevant and timely. In the health sector, the use of efficient information systems to increase the efficiency, effectiveness and quality of services as well as customer satisfaction is indispensable.

A study on the impact of information systems on employees' work processes has resulted in a variety of outcomes, so that some studies have assessed the changes in the pattern of work resulting from the implementation of an information system, but most studies on changes in the time of documentation have focused. Poissant *et al.,* examined the impact of electronic records of clinical records on the time of documentation of nurses and doctors, and reported that reducing the time of documentation is a deceptive and misleading goal[11]. Study results in order to gain a deeper understanding of the experiences of nurses and midwives in the use of the clinical information system, nurses and midwives with good clinical information systems showed great tendency toward using this system. On the contrary, there were people who had experienced disparities and failures in the use of clinical information systems quoted by Khawi *et al.,* In Italy, found that 60 percent of nurses were beneficial in assessing the acceptance of doctors and nurses from the hospital information system[9]. The system was comfortable and 44 percent comfortable and easy to use. 88% of nurses were satisfied with increasing the efficiency of daily activities by the hospital information system. The results of a study done in American automated hospitals showed that management information, financial and clinical information systems in all hospitals have led to cost reductions[4]. The results of a study conducted in educational hospitals in Mashhad showed that 53.2% of the staff was satisfied with the quality of the information system of the hospital information system[8]. In Iran, hospital information systems are at an early stage, and despite the significant advances made in recent years, due to changes, more and more financial and technical investment is needed to meet the expectations and needs of organizations and their users. Therefore, in this research, the researcher is trying to assess the impact of the hospital information system on the staffing of Imam Jafar Sadiq Hospital staff. However, the hospital information management system is a set of related components that should provide clinical, managerial, and technical information in order to support planning, decision making, coordination and control of hospital services, collecting, processing, storing and Logical considerations of society have made demand for quality services a major goal for any hospital[2]. In order to respond to such a need for modernization in the community and medical spheres of the country, hospital information systems need to integrate and provide basic goals such as improving the quality of data, reducing the exchange time, increasing the level of satisfaction, and increasing the quality of services and, finally, reducing costs before trend[13-16]. Although the most basic goal of information systems in the health sector is helping management to achieve its ultimate goal of promoting community health, but increasing the accuracy and ease and speed of access to clinical data in the field of treatment in hospital information systems is of particular importance[15]. Therefore, comprehensive hospital information system, while providing easy access to data and information, should be effective in realizing the desired outcomes and organizational outputs such as performance and process[9]. On the other hand, considering the importance of performance and process in public hospitals of the country, and the increasing use of hospital information systems, on the other hand, this study evaluated the impact of hospital information system as a modern decision support tool in complex organizations such as the hospital The most important output of the organization is the performance and process of work. Therefore, the researcher in this article is to assess the impact of the hospital information system on the staffing of the employees of Imam Jafar Sadiq Hospital. In order to achieve this goal, the following questions have been asked:

- How does the establishment of a hospital information system affect patients' satisfaction?
- How is the establishment of a hospital information system on hospital nursing services?
- How does the establishment of the hospital information system affect hospital support and office affairs?
- How does the establishment of hospital information system affect access to medical information in patients?
- How does the establishment of hospital information system affect the status of information exchange between hospital units?
- How does the establishment of a hospital information system affect hospital financial performance?

METHODS

The present research is a descriptive-survey data collection method. The statistical population of this research is all employees of contractual, design and contract personnel working in Imam Jafar Sadeg Hospital. In this study, due to the difficulty of selecting the sample, the available and non-random sampling method was used. Given that the size of the community is unknown, the following formula is used to estimate sample size[13,14]. In this case, the error rate, or d, was considered equal to 0.05. As you can see, the sample size is 384 people. In this paper, a researcher-made questionnaire was used. The questionnaire consisted of 7 general questions and 23 specific questions about the effect of hospital information system on the Likert scale (lowest score of 1, highest score of 5), which was completed by hospital staff. The questionnaire is a five-point scale (fully agree, agree, moderate, opposite,

totally opposite), each of which has 5 to 1 points respectively. The validity of the researcher-made questionnaire was verified and their reliability was confirmed by Cronbach's alpha with a coefficient greater than 0.7. In the descriptive statistics section, mean, standard deviation, frequency and frequency were used. In the inferential statistics, the inclination and elongation were used to determine the normality of the data. Then, the results were analyzed using one-sample t-test and Friedman test[15].

Table 1: Average, standard deviation, minimum and maximum results of main research.

Variables	Minimum	Maximum	Mean	Standard deviation
Nursing services	3.60	4.80	4.24	0.266
Supporting and administrative matters	1.89	3.22	2.58	0.284
Access to medical information for patients	2.00	5.00	3.42	0.617
Information exchange between hospital units	2.67	4.67	3.61	0.400
Hospital financial performance	3.25	5.00	4.24	0.322

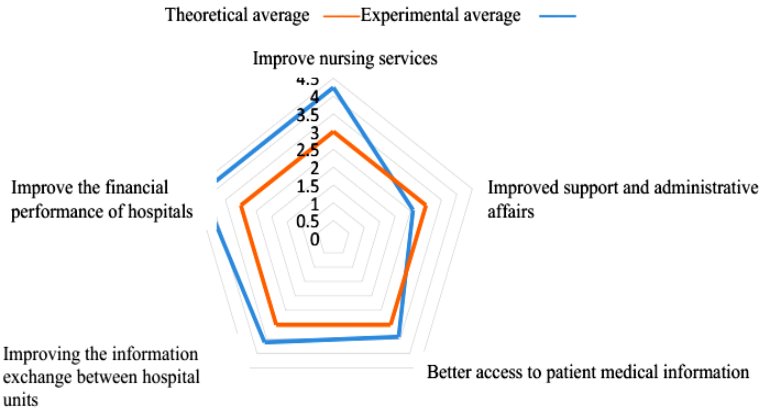

Figure 1: Radar chart to compare experimental and theoretical mean.

RESULTS AND DISCUSSION

In this section, the descriptive findings of the research variables are presented first. The variables studied included the impact of the hospital information system on nursing, support and administrative services, access to medical information of patients, the status of information exchange between hospital units and hospital financial performance. In the following, the mean and standard deviation of the variables of the research are presented in the sample. As it is seen in Table 1, the mean of nursing services (4.24) is higher than other variables, and the average of support issues (2.58) is lower than other variables. Regarding the normal data, we can use the parametric tests to examine the research hypotheses instead of nonparametric tests. To analyze the paper questions, a single-sample T test was used which is acceptable in the results of this test in Table 2: As shown in Table 2, in this test, the average of 3 was considered as the theoretical average and the average of respondents' responses as an experimental mean. The results showed that the average of the respondents' knowledge about the impact of establishment of the hospital information system on all treatment processes in Emam Jafar Sadegh Hospital (52.2) was higher than theoretical average (3)[16].

A single sample t test also shows that there is a significant difference between the theoretical mean (i.e., 3) and the experimental mean (i.e. the scores obtained from the questionnaire). Therefore, it can be said with 95% confidence that the establishment of the hospital information system improves the hospital's hospital services, improves the hospital's hospital nursing service, better access to medical information for hospital patients, improves the information exchange between hospital units and improves performance[17]. The financial staff of Imam Jafar Hospital is honest. In the following, the radar chart is used to compare the mean of the impact of the establishment of the hospital information system on improving the work process of the staff. Radar chart to compare experimental and theoretical mean he following is used in Table 3 to prioritize the effect of establishment of the hospital information system on improving the working process of the staff working in Imam Jafar Sadeg Hospital. Friedman test is used regarding the ranked average; the impact of the establishment of the hospital information system on the improvement of the work process of employees is as follows:

1. The Impact of Establishment of Hospital Information System on Improvement of Supporting and Administrative Problems.

2. Effect of establishment of hospital information system on better access to medical information of patients.
3. Effect of establishment of hospital information system on improving the status of information exchange between units.
4. The Impact of Establishment of Hospital Information System on Improving Nursing Services.
5. Effect of establishment of hospital information system on improving hospital financial performance.

Based on the Friedman test and the significance level of Chi-square in Table 4, the prioritization of the impact of the establishment of the hospital information system on the improvement of the employees' work process is statistically significant (Chi-square = 1063.576 and sig = 0.000)[17].

Table 2: Single-sample T test to analyze the paper questions.

Variables	t value	Degrees of freedom	Sig	Difference of meanings	Experimental average	Theoretical average
	91.36	383	000	1.238	4.23	
	29.18	383	000	-422	2.57	
The impact of establishment of hospital information system. Access to medical information of hospital patients	13.18	383	000	415	3.41	
The impact of establishment of hospital information system on the situation of information exchange between hospital units	29.88	383	000	610	3.61	3
The impact of establishing a hospital information system on hospital financial performance	75.34	383	000	1.23	4.23	

Table 3: Rated average impact of establishment of hospital information system on improving work process of hospital staff.

Variables	Average ranked
The impact of establishment of hospital information system on improving nursing services	4.17
The impact of establishment of hospital Information system on improvement of supporting and administrative problems	1.16
The effect of establishing a hospital information system on better access to medical information for patients	2.46
Impact of establishment of hospital information system on improving the status of information exchange between units	2.90
The impact of establishment of hospital information system on improving hospital financial performance	4.31

As stated above, the hospital information system is comprehensive software to integrate patient information for the purpose of sending and exchanging comprehensive patient information between departments and other treatment centers in order to accelerate the patient's care and treatment process, improve quality and reduce costs.

Table 4: Friedman test the impact of establishing a hospital information system on improving the work process of employees.

Significance level	Degrees of freedom	Number	Chi Square
000	4	384	1063.576

This includes maintenance, care, diagnosis, counseling, and treatment, while considering the transfer of medical data and educational issues. As shown in the single-sample t-test, the hospital's information system has affected the work process, and this has had a positive impact and improved process performance. Therefore, the hospital's information system improves support and administration issues, has improved access to medical information for patients, improved information exchange between units, improved nursing services, and improved hospital financial performance. Also, the greatest impact of hospital information system on supporting and administrative affairs and the least impact on hospital financial performance. But researches that are consistent with the results of this hypothesis are Amiri *et al.*,[1], Poissant and colleagues[11], Ching-Sheng *et al.*,[5], Azizi *et al.*,[3] Borzekowski *et al.*,[4] Staggers *et al.*, [14]. But research that does not conform to the results of this hypothesis is Kahwi and his colleagues[9].

CONCLUSIONS

It is suggested that a hospital information system be developed to improve the information exchange between units for the improvement of the information exchange between units in order to improve nursing, support and office services, in order to improve the financial performance of other hospitals. It is also suggested to other researchers that a comparative study between public and private hospitals should address the impact of the hospital information system on the

staffing process and the factors affecting the process of hospital staff.

ACKNOWLEDGEMENTS

The authors extend their thanks and appreciation to the Islamic Azad University, Tehran, Iran to provide necessary facilities for this work.

AUTHOR'S CONTRIBUTION

Vahdat S: writing original draft, conceptualization, methodology, investigation. **Hessam S:** Writing, review, and editing, supervision. **Dadashi J:** writing, review, and editing. All authors revised the article and approved the final version.

DATA AVAILABILITY

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

CONFLICT OF INTEREST

No conflict of interest associated with this work.

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