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Evaluation of Risk Factors of Re-hospitalization in Imam Khomeini Hospital in Urmia

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Abstract: *Introduction and Objective: given the increasing demand for health services and resource limitations, effective management is required to prevent the loss of hospital resources and facilities and optimize their activities by using various management methods. Re-hospitalization of patients accounts for significant part of preventable costs in the health care system. Methodology: This descriptive-analytical research was conducted in the form of a retrospective cohort study on patients admitted to Imam Khomeini Hospital since fall 2011 to fall 2012, who were re-hospitalized one month after discharge. Results: out of all patients admitted during the one-year period, 5.6% (1560 patients), were re-hospitalized during ≤ 30 days. Among the hospitalized factors, incomplete treatment, treatment failure, hospital infection and complications of surgery had the greatest impact on the re-hospitalization of patients, and among the clinical factors, recurrence of disease, being affected by new disease, severe disease, mental disease, concomitant disease, the use of high-risk drugs, addiction to psychotropic drugs and opiates had the greatest impact on the re-hospitalization of patients, and among the factors related to the patient, the factor of age had the greatest impact on the re-hospitalization of patients. Conclusion: based on the research results, proper management of hospital resources, observing therapeutic protocols and safety standards in the hospital, paying special attention to vulnerable groups, using modern therapeutic methods and providing the necessary training to the medical staff and patients at the time of discharge can reduce the re-hospitalization of patients and lead to proper use of resources.*

Keywords: *Re-Hospitalization, Related Factors, Re-Hospitalization Causes*

INTRODUCTION

Hospital is the most important institution in providing health and medical services, focusing on diagnostic, therapeutic, health, educational and research facilities in order to provide desirable services for clients and provide comfort and safety to patients. It requires skilled manpower and equipment (Arab M EZ et al., 2010). Nowadays, the growing demand for health services and limited resources and the use of various specializations, high costs due to the lack of proper use of hospital resources and facilities, have increased the cost of health services (Tazhibi et al., 2011). Thus, intelligent management of healthcare services is necessary in order to avoid reworking and waste of facilities (Salazar, 2010).

Examining the status of the hospitals in Iran shows that most of them face with increased demand, patient congestion, patients' re-hospitalization, and dissatisfaction of most respondents with quality of service (Tazhibi et al., 2011). Re-hospitalization, which means hospitalization in the same therapeutic institution with the same diagnosis over a given period (Farshidi, 2004), accounts for a significant part of preventable costs (Jeff et al., 2003). Re-hospitalizations in non-treatment cases, which are in fact the correct form of re-admission, is a kind of waste of facilities because it is expected that patients to receive all necessary services for treatment at the first admission and discharge with full health (Jeff et al., 2003). However, re-hospitalization, in addition to being a major source of stress for the patient and his family, leads to gap between patients and caregivers, imposes high cost for the healthcare system and patients, and make patients more susceptible to complications caused by hospitalization. Thus, as re-hospitalization of patients may represent a group of quality-related weaknesses in hospitals, the rate of re-hospitalization has been considered as an indicator of the quality of hospital care in recent years (Lin, 2007). Re-hospitalization is a growing global problem and, and despite three decades of study and intervention, this issue has now become a public health and social problem. (Farshidi, 2004). Examining the reasons for re-admission of patients to hospitals is one of the most important issues of real use of hospital beds and the real use of hospital facilities (Khoshkalam, Zare Fazlollahi, 2007).

Given the negative economic, cultural, social and human negative effects of re-hospitalization of patients on government, society and families, the present study was conducted with the aim of identifying the risk factors for re-hospitalization of patients in Imam Khomeini Hospital in Urmia. We hope that the results of this study to provide guides for managers and staff of health care systems to resolve the problems of re-hospitalization of patients and improve the quality of health services.

Methodology

This descriptive-analytical research was conducted in the form of a retrospective cohort study on patients admitted to Imam Khomeini Hospital since fall 2011 to fall 2012, who had re-admission or re-hospitalization one month after discharge. The objective of this study was to determine the risk factors for re-hospitalization of these patients, including patient-related factors, hospital-related factors and clinical factors. This research population included all patients who had at least one history of hospitalization at Imam Khomeini Hospital between 2011.7.30 and 2012.7.30. This period is 30 days after the completion of the study so that the re-hospitalization of patients admitted at the end of the study to be calculated correctly.

Our research was conducted in two stages. First, we referred to the medical records unit of Imam Khomeini Hospital and studied all patients hospitalized during one year in terms of hospitalization descriptively. After calculating the frequency, in the second stage, in a cohort and retrospective study, we examined a total sample of 800 subjects in two groups (n=400 for re-hospitalized group and n=400 for non-hospitalized group). Exclusion criteria for both groups included"1- Patients hospitalized in different hospitals, 2- Patients who died or admitted to other treatment centers. 3- Patients who had incomplete medical records or their admission and discharge were done in the same day.

Results

Based on the results of this study, the total number of patients admitted to Imam Khomeini Hospital in Urmia from 2011.7.30 to 2012.7.30 was 29672. Out of total of them, 54.26% (1560 patients) were re-hospitalized at a time interval less than or equal to 30 days. In addition, according to Table 1, 59% (927 patients) of patients were male and 41% (633 patients) were female. In order to determine the rate of re-hospitalization of patients admitted at the end of the study period ≤60 days, the study period increased to 2012.8.30, for re-hospitalization of ≤90 days, it increased to 2012.9.30 and for re-hospitalization of ≤180 days, it increased to 2012.12.29.

Moreover, out of total number of female patients admitted to the center during a one-year period (12,708), almost 5% (n=633), and among male patients admitted during this period, almost 5.5% (n=927) were re-hospitalized during 30 days. The results of data analysis showed that the highest frequency of patients' re-hospitalization in the period of one year since fall of 2011 to fall 2012 was 304 cases in terms of type of disease included diseases related to general surgery with 304 cases (19.49%), urological surgeries with 226 cases (14.48%), and diseases related to eyes with 221 cases (14.71%). In addition, the lowest frequency related to surgical and thoracic surgery in a total of 6 cases (0.4%). Additionally, among all patients admitted to the hospital during a one-year study period, patients with blood-related diseases, thoracic surgery and urological surgery with 16%, 12.2% and 8.6%, respectively, had the highest rate of re-hospitalization.

In this study, factors related to re-hospitalization of patients in three groups of clinical factors, hospital factors and patient factors were examined. The results o showed a significant relationship between the clinical factors and groups (p=0.000). Moreover, results of the Chi-square test showed a significant difference among the groups in terms of some of the factors related to the patient, including age, non-adherence to food diet or drug diet, and low economic status. In some cases, such as low level of education and lack of access to facilities, no significant difference was found between the groups. It should be noted that examining the relationship between hospital factors and groups was not possible due to lack of attributing these factors to non-hospitalization group.

In examining the study group (hospitalization group) in terms of having hospital –related factors, the results of the study showed that among the patients in the study group, 43.75% (n=175) were re-hospitalized due to factors such as incomplete treatment, treatment failure, hospital infection and complications of surgery (first hospital factors). According to the results, it can be stated that these factors among the hospital factors had the most effect on the re-hospitalization. Moreover, 2.5% (n=10) were re-hospitalized due to inaccurate diagnosis (second hospital factor) and 19.5% (n=78) were re-hospitalized due to cancellation of surgery or early discharge (third hospital factors) (Table 2).

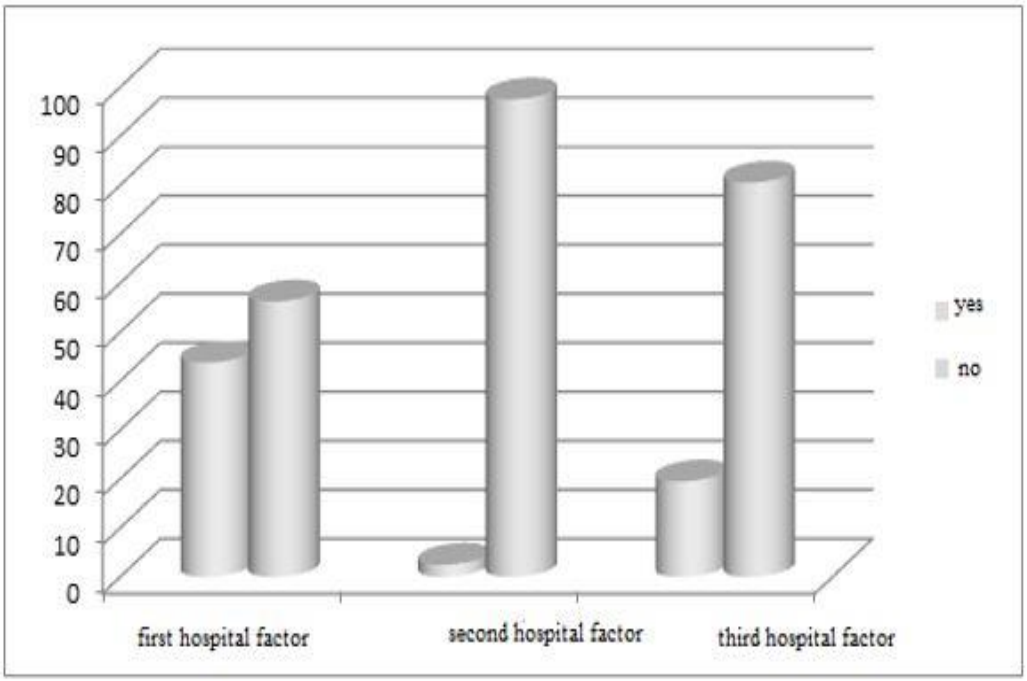

Chart 1: Relative frequency of re-hospitalized patients in terms of hospital factors

Table 1: absolute and relative frequency of re-hospitalized patients in terms of hospital factors

Hospital factors	yes		no		total	
	n	%	n	%	n	%
First factor 1	175	43/75	225	56/25	400	100
Second factor 2	10	2/5	390	97/5	400	100
Third factor 3	78	19/5	322	80/5	400	100

In addition, in examining the patients in the study group in terms of clinical factors, the results of the study showed that 69% (276 patients) of the study group had the factors such as recurrence of disease, being affected by new disease, severe disease, mental disease and concomitant disease and 68% (272 people) had two factors of taking high-risk drugs and addiction to psychotropic drugs and opioids. Among the clinical factors, they had the highest impact on the re-hospitalization of patients (Table 2).

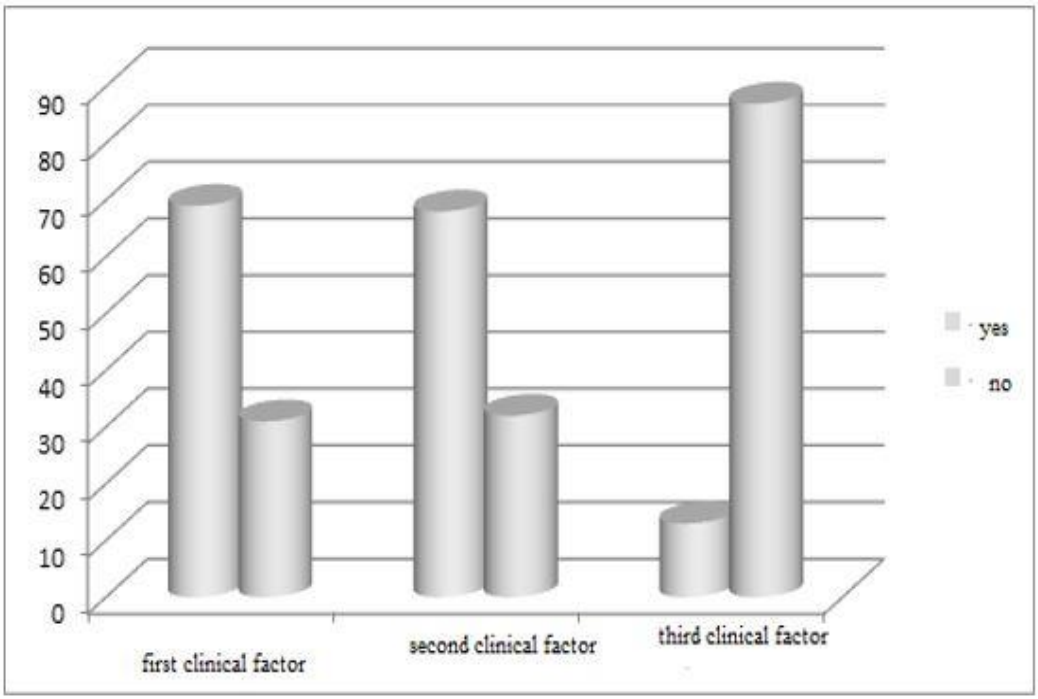

Chart 2: Relative frequency of re-hospitalized patients in terms of clinical factors

Table 2: absolute and relative frequency of re-hospitalized patients in terms of clinical factors

Clinical factors	yes		no		total	
	n	%	n	%	n	%
First factor 1	276	69	124	31	400	100
Second factor 3	272	68	128	32	400	100
Third factor 4	52	13	348	87	400	100

Discussion

Hospital re-admissions are worrisome because of their impact on the cost and quality of hospital care and imposing extra burden on patients and their families, and cost reduction for patients and hospital managers is one of high priorities. Hospital re-admission index can be used to measure the quality of patient care, for example, the low quality of healthcare in hospitalized patients can be related to an early unplanned re-hospitalization (Arab M EZ et al., 2010). Thus, the rate of re-hospitalization can determine the weaknesses in the healthcare process, occurring due to mix of different factors (Jeff et al., 2003). The results of this study

show that the rate of re-hospitalization in Iman Khomeini Hospital in time interval of less than or equal to 30 days during the one-year period is estimated to be 5.26%. In line with the results of this study, the results of the study conducted by Dorun Zamayer et al. (2006) to determine the rate of internal unit patients' re-hospitalization within 30 days after discharge showed that out of 2469 patients admitted to the internal medicine centers, 5% were re-hospitalized. Other studies have estimated the rate of re-hospitalization more than that of the present study, for example, the study conducted by Nazima Alaeddin et al. (2011) to identify the factors related to re-hospitalization of patients within 30 days, out of 10359 patients, 17% of them re-hospitalized. The results of the study conducted by Nayel Bashart et al. (2012) with the aim of determining the frequency and risk factors affecting the re-hospitalization of patients in the internal medicine, the frequency of re-hospitalization of these patients was found to be 12.2%. In addition, the results of the study conducted by Michel T Cassin et al. (2012) with the aim of determining the risk factors for re-hospitalization in general surgery patients during 30 days showed that among the 1442 patients, 11.3% of them were re-hospitalized. Given the varying rate of re-hospitalization in various studies despite decades of study and intervention, the problem of re-hospitalization is nowadays is considered as a great challenge throughout the world. Finally, it can be stated that to reduce the rate of admissions, providing after-discharge training to patients and their caregivers, informing patients about the complications of the disease and the importance of follow-up treatment, sensitization of the involved people to the readmission and enhancing the knowledge of the clinical staff and hospital managers can be helpful in solving the health problems and meeting the needs of patients and reducing the their re-hospitalization costs and it results in the proper use of human and material resources.

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