

*Original Article****Investigating the Factors Affecting the Length of Stay of Patients Admitted To Psychiatry Hospital at North of Iran***Pezhman Hadinezhad<sup>1</sup> **Javad Setareh**\*<sup>2</sup> Mahmood Moosazadeh<sup>3</sup>

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***Abstract***

***Background and Purpose:*** Length of stay is one of the most useful indicators, which can be used for aims, such as managing hospital, determining quality of control and available resources of the hospital. Concerning the high prevalence of psychiatric disorders in the community, studying the factors affecting the length of stay of these patients in psychiatric hospitals seemed to be useful and significant.

***Materials and methods:*** The present research was a cross-sectional study. The sample consisted of 152 patients with psychiatric disorders hospitalized in the Psychiatry Hospital of Mazandaran University of Medical Sciences. The final diagnosis of psychiatric disorder based on the DSM-V criteria and the length of stay at the end was recorded. The collected data were then analyzed by SPSS Software ver. 16

***Results:*** Length of stay was significantly higher in men than women ( $p < 0.001$ ). In terms of diagnosis, the maximum duration of hospitalization was related to psychotic disorders ( $p = 0.001$ ), and the length of stay increased significantly 0.21 day for each time of hospitalization. ( $p = 0.008$ )

***Conclusion:*** The length of stay in men with psychotic disorders and more frequent hospitalization was found to be higher than others. Hence, it seemed necessary to consider plans about these patients.

***Key words:*** Length of stay; Psychiatric patient; Psychotic disorder

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## **1. Introduction**

Healthcare is one of the absolutely essential needs in every society, and paying attention to it conduces to labor productivity. Therefore, allocation of adequate resources and optimal utilization of these resources is most important (1). Whatever goes on, demand for hospital services is increasing (2). One of the ways governments have noticed to manage this increasing demand is to survey and analyze the use of hospital services (3). Length of stay is one of the most useful hospital indicators that can be used for such purposes as hospital care management, quality control, efficiency determination, and utilization of available hospital resources (4). Furthermore, length of stay in the hospital can be used as an indicator of productivity; hence reducing the length of hospital stay can increase the quality of patient care and reduce the number of hospital beds (5). Hospitals are severely constrained by shortage of beds and resources for patient care (6), and most are under pressure due to insufficient financial resources (7). Also, various challenges, such as increasing the number of patients and lack of other resources including inpatient beds and nursing staff, increase working stress and costs in different parts of a hospital (8). Hence, it could be said that the length of stay is a major factor in the cost of hospitals (9, 10). Furthermore, the length of stay is an important indicator of hospital care delivery (11). Therefore, reducing the length of stay is a major purpose for health programs (12, 13). Long-term hospitalization of psychiatric patients will of course make it difficult to gain work experience and know about adaptation to life in the community, and social learning, as well as cognitive skills to manage their lives, independently (14). According to

some studies, about 95% of the costs of psychotic patients is related to the cost of staying in hospitals (15). Long-term psychiatric hospitalization results in additional costs for patients and their families (16). On the other hand, psychiatric patients are always at risk of not receiving appropriate medical services, which in turn, increases the risk of a variety of physical complications, especially cardiovascular disease, which is one of the most common causes of death in psychiatric patients (17). Therefore, it can be concluded that the main burden of psychiatric patients is directly related to the length of stay in hospitals, which may also lead to more problems for patient's family, hospitals staff, as well as insurance companies. Due to the lack of resources and appropriate space for psychiatric patients and the disproportionate number of beds with inpatient services, it is important to consider the length of stay with these issues. Given the relatively high prevalence of psychiatric disorders at community level, as well as the chronic and destructive nature of this disease, it seems useful to investigate the factors affecting the length of hospital stay in psychiatric hospitals. One of the important studies in this regard in Iran showed that patients with comorbidity of anxiety and substance use had more length of stay in hospitals than other psychiatric patients (18). Hence, considering the importance of length of stay at hospitals and prevalence of psychiatric disorders and burden of this types of illnesses for health system, the present study attempted to evaluate the length of stay of psychiatric patients at a target hospital.

## 2. Materials and Methods

This cross-sectional study was performed at Psychiatry Hospital of Mazandaran University of Medical Sciences. Sample consisted of 152 patients with psychiatric disorders hospitalized in the psychiatry Hospital of Mazandaran University of Medical Sciences. Patients' length of stay and final psychiatric disorder diagnosis were recorded according to DSM-V criteria.

Sample size was determined with 95% confidence (alpha error of 0.05) and accuracy of 0.08 using the following formula:

$$N = \frac{Z^2 * P(1-P)}{d^2}$$

The collected data were analyzed by SPSS Software Ver. 16, in terms of descriptive

statistics, such as mean, standard deviation, percentage of frequency, and Fisher's exact test for qualitative variables. Multivariate statistical tests were also used to eliminate the blocking effect. By the way, the significance level was determined to be less than 0.05 of the judgment criteria.

Inclusion criteria: All patients admitted to psychiatry hospital due to psychiatric disorders.

Exclusion criteria: People who were less than 18 years old, and those who did not consent to the study were excluded.

The present study was approved by the Ethics Committee of the Institute of Psychiatry and Behavioral Sciences, Mazandaran University of Medical Sciences, IR.MAZUMS.REC.1396.2129.

## 3. Results:

**Table1.** Demographic characteristics of the study population

variable		count	percent
Sex	Male	90	59.2
	Female	62	40.8
Age	<30	30	19.7
	30-39	48	31.6
	40-49	47	30.9
	>=50	27	17.8
Marriage	Married	70	46.1
	Single	64	42.1
	Divorced	18	11.8
Cigarette smoke	Yes	64	42.1
	No	88	57.9
Job	Unemployed	81	53.3
	Housewife	45	29.6
	Others	26	17.1
Education level	Un educated	26	17.1
	Less than diploma	74	48.7
	Diploma and higher	52	34.2
Type of disorder	Psychotic disorder	80	52.6
	Substance use disorder	9	5.9
	Mood disorder	51	33.6
	Others	12	7.9

The length of stay among housewives was significantly shorter than the other groups, which was statistically significant ( $p=0.007$ ). However, there was found no significant difference between the groups in terms of education, marital status, smoking, and age of patients. In terms of psychiatric diagnosis, the highest length of hospitalization was related to psychotic disorders, which was significantly different from other groups. ( $p=0.001$ ) Based on the results of multivariate linear regression test, after adjusting for sex, marital status, smoking, occupation,

education, age group, and type of psychiatric disorders, the length of stay increased significantly 0.21 day for each time of hospitalization ( $p=0.008$ ).

According to the results of multivariate linear regression test, the predictors of length of stay came after adjusting for the effects of the variables suspected of confounding, smoking, hospitalization, and type of psychiatric disorders. The variables entered into the Model (Table 2) also predicted 16% of the changes were related to the length of hospital stay.

**Table 2.** Multivariate Linear Regression Test Results

Variables		Unstandardized Coefficients	standardized Coefficients	P-value
<b>Gender (Ref=male)</b>		-8.95	-0.26	0.069
<b>Type of Disease (Ref=psychotic disorder)</b>	Substance	-2.82	-0.40	0.625
	Mood	-7.38	-0.20	0.017
	Other	-13.29	-0.21	0.010
<b>Marriage (Ref= single)</b>	Married	-5.03	-0.14	0.142
	Divorced	1.14	0.02	0.807
<b>Education (Ref= Illiterates)</b>	Less than diploma	1.92	0.05	0.639
	Diploma and above	2.89	0.08	0.490
<b>Job (ref= unemployed)</b>	Housewife	-0.49	-0.01	0.919
	Others	1.28	0.02	0.727
<b>Age (Ref= 30&gt;)</b>	30-39	-2.51	-0.06	0.518
	40-49	4.90	0.13	0.255
	50<	1.63	0.03	0.747
<b>Smoke cigarette (Ref= Smokers)</b>		-7.49	-0.21	0.024

**Table 3.** (Nonparametric correlations) spearman

		Length of stay	Weight gain	age	hospitalization	
<b>Spearman's rho</b>	Length of stay	Correlation Coefficient	1.000	0.269**	-0.065	0.184*
		P value	.	0.001	0.428	0.023
	Weight gain	Correlation Coefficient	0.269**	1.000	-0.009	-0.024
		P value	0.001	.	0.910	0.765
	Age	Correlation Coefficient	-0.065	-0.009	1.000	0.001
		P value	0.428	0.910	.	0.993
	Hospitalization	Correlation Coefficient	0.184*	-0.024	0.001	1.000
		P value	0.023	0.765	0.993	.

According to the results of Table 3, higher durations of length of stay can lead to more weight gain in psychiatric patients, which was also statistically significant ( $p=0.001$ ).

#### 4. Discussion:

Based on our study, the length of stay among housewives was significantly shorter than the other groups, which was statistically significant. There was no significant difference between groups in terms of education, marital status, smoking, and age of patients. In terms of psychiatric diagnosis, the highest length of hospitalization was related to psychotic disorders, which was significantly different from other groups.

Increasing the patient population in contrast to the shortage of hospital resources and increasing health services costs led both managers and patients to seek ways to reduce the length of stay. The length of stay index, which is widely used in hospitals today, indicates hospital performance. Therefore, it can be used as one of the criteria for surveying and analyzing the performance of any hospital (20).

In psychiatric patients, in addition to cost problems, the length of stay is more important because of the increased risk of cardiovascular disease which can be caused by the lifestyle of these patients including lazy and social isolation, more cigarette smoking and drug use, in addition to some psychiatric medications which may trigger these diseases. More duration of length of stay with effect on weight gain of psychiatric patients could also increase the risk of cardiovascular disease. Therefore, the length of stay among psychiatric patients should be considered as a major problem.

Based on the findings in the current study, no significant differences were found between the groups in terms of education, marital status, and cigarette smoking, as well as the age of patients. But in terms of gender, the length of stay among women was shorter than men, and among housewives, it was also shorter. In addition to the patients with psychotic disorder occupying more than half of the hospital beds, their length of stay was significantly longer than other patients, given the heavy burden of hospital costs.

The results of this study were found to be in contrast with the study of Hosseinnataj et al., in which longer length of stay was found in women, and the ones with the diagnosis of substance use disorders, comorbid anxiety, and substance use with other diagnoses (18). However, the findings of this study were documented to be similar to Tavallaei et al. in Tehran, in which the duration of hospitalization in psychotic patients was longer than other diseases (19).

Similar studies, on the other hand, have shown a shorter hospital stay in people with a diagnosis of adjustment disorder (21). And studies have also suggested that comorbidity of anxiety is associated with longer rates length of stay regardless of diagnosis (22, 23).

In the present study, the average time of hospitalization was 2.93, and the minimum time and maximum time of hospitalization were 1 and 16, respectively. Also, the average day of hospital stay was 4.1 days, and the minimum and maximum were 5 and 121 days, respectively. In the the study of Tavallaei et al., more than half of the patients were hospitalized between 5 and 15 days, with approximately 20% staying longer than 15 days (19). Contrary to the study of Hosseinnataj and colleagues, in this

study, the diagnosis of substance use was associated with shorter length of stay (18). The frequency of admission to these studies has not yet been evaluated, and the present study based on the results of multivariate linear regression test, after adjusting for the effects of gender, marital status, smoking, occupation, education, age group, and type of psychiatric disorder showed that for each time hospitalization, there was 0.21 of a day increase in the length of stay.

These statistics can be particularly interesting in chronic patients, the majority of whom are psychotic patients, and need more attention to be paid to strategies to reduce hospitalizations, such as focus on patient compliance of psycho-pharmacological treatment, and a greater focus on psycho-education and family based education, social skill training, and other non-pharmacological treatments.

The length of stay of patients was significantly correlated with gender, diagnosis of psychiatric disorder, and times of hospitalizations, which consisted of men with psychotic disorder with multiple hospitalizations. Provision needs to be made for these patients, and the ways of preventing recurrence and hospitalization of these patients should be taken more seriously.

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