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*Original Article*

## Epidemiology of psychiatric disorders: The situation of Mashhad city during 2010-2016

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### **Abstract**

**Introduction:** Psychiatric disorders are gaining top rank in causing the burden of diseases. Certainly understanding the risk factors and their trends can help prevent and control them. This study aimed to investigate the epidemiologic characteristics of psychiatric disorders leading to hospitalization in Mashhad city.

**Materials and Methods:** This cross-sectional study was carried out at the Ibn-e-Sina Psychiatric Hospital in Mashhad, Iran, from March, 21<sup>th</sup>, 2010 to March 19<sup>th</sup>, 2016. All of the recorded data for admitted patients during this period have been included. SPSS software version 16 was used for data analysis.

**Results:** In this study, 43770 hospital admissions had occurred which was reduced to 4333 cases after aggregating readmissions. The mean age was  $42.2 \pm 12.5$  years, and the highest prevalence rate was observed in the age group of 50-59 years (352 in 100000 of the population). Most admitted patients were male (75%, 3234), married (60%, 2523) and unemployed (71%, 2740). The most common admission cause was mood disorders in both genders (51% of females and 37% of males,  $P < 0.001$ ). The prevalence of psychiatric disorders leading to hospitalization was declining during the study period.

**Conclusion:** The decreasing level of the psychiatric hospitalization can imply the proper functioning of the health system. The continuation of existing activities, focusing on mood disorders (as the most common cause of admission) and designing targeted interventions for high-risk groups (married unemployed men) can increase their effectiveness.

**Keywords:** Epidemiology, Hospitalization, Psychiatric disorders

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## Introduction

A mental disorder is a kind of disease in that patients suffer from emotional problems, and their mental states are unusual. The rate of mental disorders is growing in the world (1). According to the statistics from the World Health Organization (WHO), at least 52 million people suffer from severe mental illness and about 150 million from the mild form around the world (2). The mental disorder includes various modes such as stress, depression, bipolar disorder, and obsession, and the prevalence rate of each one is different in various countries.

For example, the prevalence of unipolar disorders in the United States and Iran is 5-10% and 3.1%, respectively. The prevalence rate of major depressive disorder is 4.1% in Iran which is almost the same as the global average, while it is 8.3% in Ukraine. Overall, the prevalence of mental disorders in Iran has been estimated to be 11.9% to 23.8% in various articles (3,4). However, in a study that was done in Khuzestan Province, the prevalence rate was 28.7% which can be a warning to the authorities (5). Comparing the prevalence rate of mental disorders may not be so accurate due to the wide range in different regions. One of the causes of this vast range is different measurement methods (6). Depression and anxiety are common psychiatric disorders (4).

These disorders are strong risk factors for death due to heart disease, stroke, and cancer (7). Studies show the prevalence of mental disorders increases with aging. These levels of abnormalities are higher among married people who are divorced or widowed and unemployed individuals (4). The female-male ratio for mental disorders is 1.5:2.7. Although some studies have not supported this finding (1).

The second rank of disability-adjusted life years (regardless of age and gender) is related to mental disorders in Iran, and interestingly, Khorasan-Razavi province follows the same pattern (8,9), but a comprehensive study that examines this trend and disorders was not found. Since recognizing the main factors, as well as changes in subtypes of disorders, can certainly help health policymakers in making sound decisions, the present study aimed to evaluate the psychiatric epidemiological diseases in the city of Mashhad.

## Materials and Methods

This cross-sectional study was carried out at the Ibn-e-Sina Psychiatric Hospital in Mashhad, Iran, from March 21th, 2010, to March 19th, 2016 (from the beginning of 1389 up to the end of 1394 in the Persian calendar). Mashhad is the second largest city and the second most populated city in Iran after Tehran. This hospital is the only educational, research, and therapeutic academic center of psychiatry in the city.

All of the recorded data for admitted patients during the study period have been included. Demographic data, including age, sex, marital status, occupation, date of admission and discharge, and final diagnosis, were extracted from patients' records. The final diagnosis was based on the International Classification of Diseases, 10th edition. The calculation of the prevalence rates was based on the population data derived from the national census of 2011.

Due to ethical considerations, the names of patients were not entered into the database, and the required analyses (e.g., removal of duplicates and re-admission) were performed using the file number. The researchers adhered to the ethical principles set out in the Helsinki Statement at all steps of performing this research. This study has been approved by the Ethics Committee of Mashhad University of Medical Sciences (IR.MUMS.REC.1395.77).

SPSS software version 16 was used for data analysis. Descriptive analysis of variables was performed using frequency and percentage or mean and standard deviation, and inferential analysis was performed using the Chi-square test. All tests were two-tailed with a significance level of  $P < 0.05$ .

## Results

In the 6-year study period, 43770 hospital admissions had occurred. This was reduced to 4333 cases after aggregating re-admissions. The mean age of admitted patients was  $42.2 \pm 12.5$  years (range: 5 to 91). Most admissions (29%) were in the age group of 30-39 years and then (25%) in the age group of 40-49 years. However, the highest prevalence rate was observed in the age group of 50-59 years (352 in 100000 of the population) and then in the group of 40-49 years (199 in 100000 of the population). Although most

cases were in the age group of 39-39 and 40-49 years in both genders, the difference between

other age groups in the two genders was statistically significant ( $P=0.001$ ) (Table 1).

**Table 1.** Frequency and prevalence rate of psychiatric disorders leading to hospitalization in different age groups in Mashhad, 2010-2016

		Male (n=3234)	Female (n=1099)	Total	ASPR* ( $\times 10^5$ )
Age group	0-9	26(0.8)**	16(1.5)	42	7.5
	10-19	23(0.7)	11(1.0)	34	6.5
	20-29	448(13.9)	146(13.3)	594	78.5
	30-39	940(29.0)	336(30.5)	1276	234.4
	40-49	856(26.5)	251(22.9)	1107	299.5
	50-59	700(21.7)	214(19.5)	914	351.9
	60<	241(7.4)	125(11.4)	366	161.7

\*ASPR: Age Specific Prevalence Rate \*\*Frequency (Percentage)

Most admitted patients were male (75%, 3234), married (60%, 2523) and unemployed (71%, 2740). Although the percentage of married men (60%) was close to women (58%), this difference

was statistically significant ( $P<0.001$ ). Regarding job status, unemployment was more reported in men (2431, 83%) and housekeeping in women (564, 59%) ( $P<0.001$ ) (Table 2).

**Table 2.** The frequency of marital status and occupation based on gender in admitted patients of psychiatric hospital of Mashhad, 2010-2016

		Male (n=3234)	Female (n=1099)	Total	P
Marital status	Single	1176(37.5)*	382(36.1)	1558	<0.001
	Married	1900(60.5)	623(58.7)	2523	
	Widow/Divorced	65(2.1)	55(5.2)	120	
Occupation	Unemployed	2431(83.8)	342(36.1)	2740	<0.001
	Employee	68(2.4)	10(1.1)	78	
	Worker	63(2.2)	7(0.7)	70	
	Self-employed	316(10.9)	10(1.1)	326	
	Student	21(0.7)	13(1.4)	34	
	Housekeeper	0(0)	564(59.7)	581	

\*Frequency (Percentage)

The most common admission causes were mood disorders (41%, 1769) and schizophrenia, schizotypal and delusional disorders (27%,

1179). Mood disorders were the final diagnosis in 51% of females and 37% of males, which was statistically significant ( $P<0.001$ ) (Table 3).

**Table 3.** Frequency and prevalence rate of psychiatric disorders leading to hospitalization based on The International Classification of Diseases

ICD-10 Category	Male (n=3234)	Female (n=1099)	Total	Prevalence ( $\times 10^5$ )
Organic, including symptomatic, mental disorders	43(1.3)	12(1.2)	56	1.7
Mental and behavioural disorders due to psychoactive substance use	132(4.1)	17(1.5)	149	4.6
Schizophrenia, schizotypal and delusional disorders	882(27.3)	296(26.9)	1179	36.4
Mood [affective] disorders	1211(37.4)	558(50.8)	1769	54.6
Neurotic, stress-related and somatoform disorders	322(10.0)	39(3.5)	361	11.1
Behavioral syndromes associated with physiological disturbances and physical factors	3(0.1)	10(0.9)	13	0.4
Disorders of adult personality and behaviour	129(4.0)	39(3.5)	168	5.2
Mental retardation	51(1.6)	25(2.3)	76	2.3
Disorders of psychological development	3(0.1)	1(0.1)	4	0.1
Behavioral and emotional disorders with onset usually occurring in childhood and adolescence	78(2.4)	15(1.4)	93	2.9
Other issues rather than mental	379(11.7)	86(7.8)	465	14.3

Forty-one percent of the unemployed and 45% of the employed cases were admitted due to mood disorders. The second rank in unemployed individuals was dedicated to schizophrenic

(29%), while neurotic, stress-related, and somatoform disorders (21%) had the second highest rank in employed cases ( $P < 0.001$ ) (Table 4).

**Table 4.** Frequency of psychiatric disorders leading to hospitalization according to the International Classification of Diseases based on employment status

ICD-10 Category	Unemployed (n=3361)	Employed (n=474)	Total	P
Organic, including symptomatic, mental disorders	45(1.3)	2(0.4)	47	0.001
Mental and behavioural disorders due to psychoactive substance use	125(3.7)	15(3.2)	140	
Schizophrenia, schizotypal and delusional disorders	966(28.7)	83(17.5)	1049	
Mood [affective] disorders	1364(40.6)	215(45.4)	1579	
Neurotic, stress-related and somatoform disorders	210(6.2)	102(21.5)	312	
Behavioral syndromes associated with physiological disturbances and physical factors	11(0.3)	1(0.2)	12	
Disorders of adult personality and behaviour	142(4.2)	4(0.8)	146	
Mental retardation	68(2.0)	3(0.6)	71	
Disorders of psychological development	3(0.1)	0(0)	3	
Behavioral and emotional disorders with onset usually occurring in childhood and adolescence	82(2.4)	3(0.6)	85	
Other issues rather than mental	345(10.3)	46(9.7)	391	

The highest prevalence rate of mental disorders leading to hospitalization was in 2010 (126.2 and 41.9 in 100000 persons in males and females, respectively), and the least of them was in 2016 (7.6 and 2.5 per 1000000 persons in males and females, respectively).

## Discussion

The present study aimed to determine the prevalence of mental disorders leading to hospitalization in the city of Mashhad. In our study, the ratio of hospitalization in males compared to females was 3:1, while in other studies, the ratio of females was higher (10-13). The ratio of married to single individuals was 1.6:1, which was higher than the findings of Noorbala et al. (12). A higher rate of mental disorders in unmarried than married people can be explained by different reasons, including the pressure of economic conditions, childcare and the family management. The present study showed that the rate of mental disorder in female widows was higher than in divorced males (5.2% vs. 2.1%), which complies with the study of Ahmadvand et al. (14). This difference can be explained by the higher dependence on their wives in women compared to men. However, the prevalence rate of mental disorders leading to hospitalization was lower in widow/divorced individuals compared to single or married

persons, which is in contrast with Kazemi and Dastjerdi's study (15).

Unemployed individuals were more prevalent than employed ones in males. Self-employed had the highest rate among employed males (10%), while this rate was less than 2.5% for employees and workers. The difference between the self-employed and employees can be caused by a lack of stability in the working status of the self-employed and a lack of a clear vision for the future. Noorbala et al. reported a ratio of 1.8:1 for psychiatric disorders in unemployed compared to employed individuals (12). In females, the highest prevalence rate was observed in housewives (60%) and unemployed (36%). This high rate of mental disorders between unemployed persons or housewives represents the important role of a job (as a method for money making) and also the kind of job in the prevention of mental disorders. Several studies indicate higher mental health in people who have a job compared to people who are unemployed. As a result, unemployment can be considered a predisposing factor for various mental disorders, poisonings, alcohol consumption, and even suicide (16-19). The most prevalent mental disorder of unemployed individuals was mood and mood disorders, followed by schizophrenia (15). In the present study, mental disorders were low in students. This finding is congruent with

previously reported studies (4). It can be explained by the economic dependence of students on their families. However, Chegini et al. reported that mental disorders were two times higher in educated individuals compared to illiterates (20). Another report shows that the prevalence of mental disorders was estimated to be 51% among students of a city in Hormozgan province (21). The rate of mental disorders increases by increasing age until middle-aged. Then, this rate declines and reaches its minimum value for the elderly. A possible explanation for the increasing pattern might be psychological stresses due to the upbringing of children and their independence, and the declining trend in the elderly can be caused by various reasons such as the protection and respect of family members and their diminished role in the upbringing and financial support. In a study which was performed by Foroughan et al. in 2005 in Tehran, the rate of mental disorders in the elderly was 30% (22). So, the range of 8%-30% can be considered an acceptable range for mental disorders of the elderly in Iran. A document offered by the Special Committee of the Senate of the United States reported that the rate of mental disorders in the elderly was 15-25% (22). The most prevalent disorder in admitted patients was mood disorders which were higher than in other studies (14,20,23). Steel et al. reported a much lower rate (5.4%). This significant difference is interesting (24). Because of the multifaceted nature of the psyche (bio-psycho-

social-spiritual), these differences are not unacceptable even in a single country. Also, the use of different measurement tools (checklists, questionnaires, clinical judgment) can be another source of this dispute. Since the mild psychiatric disorders that do not lead to hospitalization are not included in the current study, the prevalence rates are underestimated in the public community. However, using data from the central academic Psychiatric Center of Mashhad is the strength of this study. Standard questionnaires are used to measure psychiatric disorders among populations in cross-sectional studies. On the other hand, clinical judgment and interviews are essential in psychiatric studies. Psychiatric disorders that are analyzed in this study are based on the final diagnosis of patients' which is derived from a full evaluation during the hospitalization period. It should be noted that this is the first time that such results have been reported in Mashhad.

### Conclusion

The decreasing level of psychiatric disorders that lead to hospitalization can imply the proper functioning of the health system. The continuation of existing activities, focusing on mood disorders (as the most common cause of admission), and designing targeted interventions for high-risk groups (married, unemployed men) can increase their effectiveness.

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