



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, 21st, 2010 to March 19th, 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 ± 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

Mental disorder is a kind of disease that patients suffer from emotional problems and their mental states are unusual. The rate of mental disorder is growing in the world (1). According to the statistics from the World Health Organization (WHO), at least 52 million of people suffer from severe mental illness and about 150 million from the mild form around the world (2).

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 among the psychiatric disorders (4). These disorders are strong

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risk factors for death due to heart disease, stroke and cancer (7). Studies show the prevalence of mental disorders increases with ageing. 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).

As 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 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 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 centre 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 of 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 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 readmissions. The mean age of admitted patients was 42.2 ± 12.5 years (range: 5 to 91). Most admissions (29%) were in 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 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

Age group	Male (n=3234)	Female (n=1099)	Total	ASPR* ($\times 10^5$)
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(704)	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 being married in 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). As Figure 1 shows, the rate of hospitalization has been declining during the study period.

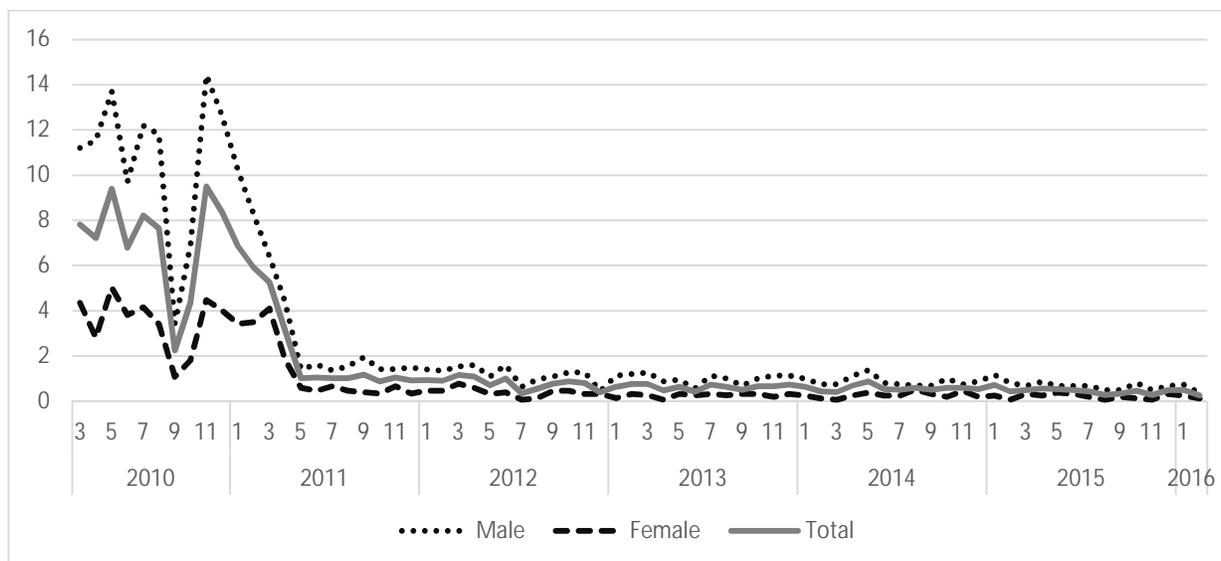


Figure 1. The prevalence of mental disorders leading to hospitalization in a 6-year period in Mashhad

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 hospitalization in male compared to female 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 divorced male (5.2% vs. 2.1%) that 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 singles 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% in employees and workers. The difference between the self-employed and employees can be caused by a lack of stability in working status of the self-employed and lack of a clear vision for the future. Noorbala et al. reported a ratio of 1.8:1 of 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 job (as a method for money making) and also the kind of job in the prevention of mental disorders. Several studies indicate a higher mental health in people who have a job compared to people who are unemployed. As a result, unemployment can be considered as 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 to family. 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 in elderly. A possible explanation for the increasing pattern might be psychological stresses due to 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 upbringing and financial support. In a study which was performed by Foroughan et al. in 2005 in Tehran, the rate of mental disorders of the elderly was 30% (22). So, the range of 8%-30% can be considered as an acceptable range for mental disorders of the

elderly in Iran. A document that offered by the Special Committee of the Senate of the United States reported that the rate of mental disorders of elderly was 15-25% (22).

The most prevalent disorders in admitted patients was mood disorders which was higher than other studies (14,20,23). Steel et al. reported a much lower rate (5.4%) that 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 into the current study, the prevalence rates are underestimated for public community. However, using data from the central academic Psychiatric Center of Mashhad is the strength for this study. Standard questionnaires

are used to measure psychiatric disorders among populations in cross-sectional studies. On the other hand, clinical judgment and interview are essential in psychiatric studies. Psychiatric disorders that are analysed in this study are based on the final diagnosis of patients' which is derivatives from a full evaluation during the hospitalization period. It should be noted that this is the first time that such results are reported in Mashhad.

Conclusion

The decreasing level of the 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.

References

1. Maracy M, Berekatani M, Hosseini RS, Hassannejad R. [Relationship between psychological disorder and epidemiological characteristics inpatients in Noor hospital, Isfahan, Iran]. *Health system research* 2011; 7(2): 217-27. (Persian)
2. Rieson M, Miri M, Dastjerdi R, Sharifzadeh G. [Prevalence of mental disorders in Birjand-2010]. *Journal of Birjand University of Medical Sciences* 2012; 19(1): 81-7. (Persian)
3. Pouretemad HR, Naghavi HR, Malekafzali H, Noorbala AA, Davidian H, Ghanizadeh A, et al. Prevalence of mood disorders in Iran. *Iran J Psychiatry* 2006; 1(2): 59-64.
4. Noorbala A, Yazdi SB, Yasamy M, Mohammad K. Mental health survey of the adult population in Iran. *Br J Psychiatry* 2004; 184(1): 70-3.
5. Davasaz Irani R, Keikhaei B, Pakseresht S, Bagheri Yazdi SA. [The prevalence of mental disorders among people aged 15 years and over in rural areas of Khuzestan Province in 2004]. *Quarterly journal of Kerman University of Medical Sciences* 2006; 13(2): 81. (Persian)
6. Yousefi-Nooraie R, Mohammadi MR, Salesian N, Amin-Esmaeeli M, Mansouri N, Mesgarpour B, et al. Prevalence of psychiatric disorders in Iran: A systematic review. *Iran J Psychiatry* 2007; 2(4): 137-50.
7. Gordon H. The 'suicide' bomber: Is it a psychiatric phenomenon? *Psychiatrist* 2002; 26(8): 285-7.
8. Naghavi M, Abolhassani F, Pourmalek F, Lakeh MM, Jafari N, Vaseghi S, et al. The burden of disease and injury in Iran 2003. *Population health metrics* 2009; 7(1): 9.
9. Naghavi M, Abolhassani F, Pourmalek F, Jafari N, Moradi Lakeh M, Eshrati B, et al. [The burden of disease and injury in Iran in the year 2003]. *Iranian journal of epidemiology* 2008; 4(1): 1-19. (Persian)
10. Rosca P, Bauer A, Grinshpoon A, Khawaled R. Re-hospitalizations among psychiatric patients whose first admission was involuntary: a 10-year follow-up. *Isr J Psychiatry Relat Sci* 2006; 43(1): 57.
11. Thompson EE, Neighbors HW, Munday C, Trierweiler S. Length of stay, referral to aftercare, and rehospitalization among psychiatric inpatients. *Psychiatr Serv* 2003; 54(9): 1271-6.
12. Noorbala AA, Bagheri Yazdi SA, Yasamy MT, Mohammad K. Mental health survey of the adult population in Iran. *Br J Psychiatry* 2004; 184: 70-3.
13. Alizade Z, Rejali M, Feizi A, Afshar H, Hassanzade Kashtali A, Adibi P. Investigation of psychological disorders profile (anxiety, depression and psychological distress) in adult population of Isfahan province. *Journal of health chimes* 2016; 3(4): 42-8.
14. Ahmadvand A, Sepehrmanesh Z, Ghoreishi FS, Afshinmajd S. Prevalence of psychiatric disorders in the general population of Kashan, Iran. *Arch Iran Med* 2012; 15(4): 205-9.
15. Kazemi B, Dastjerdi R. [Epidemiological of mental disorders in teenagers of 15 and higher in rural areas of Birjand city in 2011]. *Modern care journal* 2014; 11(1): 37-43. (Persian)
16. Khadem Rezaiyan M, Jarahi L, Moharreri F, Afshari R, Motamedalshariati S, Okhravi N, et al. [Epidemiology of suicide attempts in Khorasan Razavi Province, 2014-2015]. *Iranian journal of epidemiology* 2017; 13(2): 128-35. (Persian)

17. Khadem-Rezaiyan M, Afshari R. Alcohol intoxication: An emerging public health problem. *Asia Pac J Med Toxicol* 2017; 6: 1-5.
18. Khadem Rezaiyan M, Afshari R. Epidemiology of poisoning in northeast of Iran (2004-2013). *Int J Med Toxicol Forens Med* 2017; 7(1): 54-8.
19. Khadem-Rezaiyan M, Afshari R. Carbon monoxide poisoning in northeast of Iran. *J Forens Leg Med* 2016; 41: 1-4.
20. Chegini S, Nikpour B, Bagheri Yazdi A. [Epidemiology of mental disorders in Qom, 2000]. *Journal of Babul University of Medical Sciences* 2002; 4(3): 44-50. (Persian)
21. Mousavi Bazaz S M, Madani A, Zarei F, Abbasi khaddar E. [Prevalence of psychological disorders and its social determinants among high school students in Bashagard, Iran, 2014]. *Journal of preventive medicine* 2015; 2(3): 40-46. (Persian)
22. Foroughan M, Ghaem Magham Farahani Z, Akbari Kamrani AA. [Diagnostic distribution of mental disorders in geriatric outpatients Tehran 2002]. *Salmand* 2007; 1(2): 106-111. (Persian)
23. Mohammadi MR, Rahgozar M, Bagheri Yazdi A, Naghavi HR, Pour Etemad HR, Amini H, et al . [Epidemiological study of psychiatric disorders in Tehran province]. *Iranian journal of psychiatry and clinical sciences* 2003; 9(2): 4-13. (Persian)
24. Steel Z, Marnane C, Iranpour C, Chey T, Jackson JW, Patel V, et al. The global prevalence of common mental disorders: A systematic review and meta-analysis 1980-2013. *Int J Epidemiol* 2014; 43(2): 476-93.