

## Prevalence of Mood Disorders in Iran

Mohammad-Reza Mohammadi<sup>1,2</sup>, MD  
 Ahmad Ghanizadeh<sup>3</sup>, MD  
 Harutiun Davidian<sup>4</sup>, MD  
 Ahmad Ali Noorbala<sup>5</sup>, MD  
 Hossein Malekafzali<sup>6</sup>, MD  
 Hamid Reza Naghavi<sup>7</sup>, MD  
 Hamid Reza Pouretemad<sup>8</sup>, PhD  
 S. Abbas Bagheri Yazdi<sup>9</sup>, MSc  
 Mehdi Rahgozar<sup>9</sup>, MSc  
 Javad Alaghebandrad<sup>9</sup>, MD  
 Homayoun Amini<sup>9</sup>, MD  
 Emran Mohammad Razzaghi<sup>9</sup>, MD  
 Bita Mesgarpour<sup>9</sup>, PharmD  
 Mohammad Mohammadi<sup>9</sup>, MD  
 S. Nasir Ghaemi<sup>9</sup>, MD, PhD

1 Psychiatry and Psychology Research Center, Roozbeh Hospital, Tehran University of Medical Sciences, Tehran, Iran

2 National Research Center for Medical Sciences of Iran

3 Department of Psychiatry, Hafez Hospital, Shiraz University of Medical Sciences, Shiraz, Iran

4 Department of Biostatistics and Epidemiology, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran

5 Department of Psychology, Shahid Beheshti University, Tehran, Iran

6 Mental Health Office, Ministry of Health and Medical Education, Tehran, Iran

7 Department of statistics and Computer, Social Welfare and Rehabilitation University, Tehran, Iran

8 Iranian National Center for Addiction Studies, Tehran University of Medical Sciences, Tehran, Iran

9 Department of Psychiatry and Behavioral Sciences, Rollins school of Public Health, Emory University School of Medicine, Atlanta, USA

**Corresponding author:**

Mohammad-Reza Mohammadi, Psychiatry and Psychology Research Center, Tehran University of Medical Sciences Roozbeh Hospital, South Kargar Avenue, 1333 7959 14, Tehran, Iran  
 Email: mohamadn@sina.tums.ac.ir  
 Tel: +98-21-5541 2222 or +98-21-5541 3540  
 Fax: +98-21-5541 9113 or +98-21-5542 1959

**Objective:** To study the prevalence and demographic characteristics of mood disorders among Iranian adults.

**Method:** In this cross-sectional population-based epidemiological study (age  $\geq$  18) in Iran, 25180 individuals were selected through a randomized cluster sampling method for a diagnosis using the Schedule for Affective Disorders and Schizophrenia (SADS). They were then interviewed at home by 250 trained clinical psychologists.

**Results:** The estimated lifetime prevalence of Major Depressive Disorder (MDD) and Minor Depressive Disorder (mDD) were 3.1% and 0.3% respectively. Also, the estimated lifetime prevalence of Bipolar Mood disorder (BMD) type I and type II were 0.1% and 0.7% respectively. The current prevalence of MDD, mDD, BMD-I, and BMD-II were 1.8%, 0.2%, 0.04%, and 0.3% respectively. Mood disorders were associated with female gender, lower education, being married, being middle-aged, living in cities, and not being a homemaker.

**Conclusion:** The prevalence of mood disorders was lower among Iranian adults than reported in Western studies, and a number of demographic associations differed from those reported in Western studies. Important cultural differences in the nature or manifestation of depression are implied by these results.

**Keywords:**

*Bipolar disorder, Iran, Major Depressive Disorder, Mood disorders, Prevalence*

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Although mood disorders are serious psychiatric conditions requiring clinical intervention, knowledge of the epidemiology of mood disorders in Iran has been limited. For many years, data on mood disorders among Iranians were collected from small non-representative samples (1, 2&3). As a result, these data could not be generalized to community-based population in Iran. Also, many of these studies focused on mood symptoms rather than mood disorders. Therefore, as mood symptoms only loosely correspond to clinical mood disorders, findings from these studies were of limited use for understanding the epidemiology of specific mood disorders (4).

This study was conducted to determine the prevalence of mood disorders in Iran, as well as their associated demographic factors. This is the first such study in Iran using a sample representative of the total Iranian adult population.

**Material and Methods**

This is a cross-sectional population-based epidemiological study on Iranian adults, designed to estimate the lifetime and current prevalence of mood disorders and their demographic related correlates.

Overall, 25,180 Iranian residents, aged 18 years and over from urban and rural areas, were selected by a clustered random sampling method. According to the statistics provided by the health system in 1999, Iran had a population of 63,042,188, with 64.5% of this population residing in urban areas, and 35.5% inhabiting rural areas. Out of 12,398,235 families residing in Iran, 7795 families were selected by a randomized cluster sampling of which 1559 clusters of 5 families were studied. The choice of cluster size was based on the daily performance capacity of the data collection group. The statistical framework was based on the household lists available from the department of health in the provinces. Out of 1559 clustered, 997 clusters (63%) were in urban and 582 (37%) were from rural areas. Out of 27698 individuals, 25180 (91%) completed the diagnostic interview.

The Schedule for Affective Disorders and Schizophrenia (SADS) (5) was used to diagnose mood disorders based on DSM-IV criteria (6). The reliability and validity of SADS has been previously reported (3, 7). SADS was translated to Farsi and subsequently back-translated into English by two bilingual psychiatrists. After the confirmation of translation, the interview was ready for pilot study.

**Table1. Lifetime and current prevalence of major depressive disorder (MDD) and minor depressive disorder (mDD) in Iran by the age groups**

Age Group	group <sup>†</sup>	Lifetime MDD				Current MDD				Lifetime mDD				Current mDD			
		%	Odds ratio	95%CI <sup>†</sup>		%	Odds ratio	95%CI <sup>††</sup>		%	Odds ratio	95%CI <sup>††</sup>		%	Odds ratio	95%CI <sup>††</sup>	
				Lower	Upper			Lower	Upper			Lower	Upper			Lower	Upper
18-25	M	1.4				1				0.1				0.1			
	F	2.0	0.70	0.50	1.00	1.5	0.71	0.47	1.07	0.1	0.97	0.28	3.38	0.1	0.97	0.19	4.852
	T	1.7				1.3				0.1				0.1			
26-40	M	1.6				1.3				0.2				0.1			
	F	5.3	0.29	0.22	0.39	4	0.30	0.22	0.42	0.5	0.35	0.15	0.83	0.3	0.32	0.10	1.005
	T	3.5				2.7				0.4				0.2			
41-55	M	1.9				1.5				0.2				0.2			
	F	7.1	0.24	0.18	0.33	5.8	0.24	0.17	0.34	0.6	0.36	0.14	0.92	0.4	0.43	0.15	1.229
	T	4.6				3.7				0.4				0.3			
56-65	M	1.7				1.0				0.0				0.0			
	F	4.2	0.39	0.22	0.70	3.2	0.32	0.16	0.65	0.6	-	-	-	0.5	-	-	-
	T	2.8				2.0				0.3				0.2			
+65	M	1.9				1.4				0.3				0.3			
	F	4.7	0.39	0.21	0.70	3.3	0.41	0.20	0.81	0.1	2.22	0.23	21.39	0.0	-	-	-
	T	3.1				2.2				0.2				0.2			
Statistical analysis	M	$\chi^2=2.21, df=4, P=0.69$				$\chi^2=5.05, df=4, P=0.28$				$\chi^2=3.82, df=4, P=0.43$				$\chi^2=5.93, df=4, P=0.20$			
	F	$\chi^2=105.53, df=4, P<0.001$				$\chi^2=60.69, df=4, P<0.001$				$\chi^2=12.69, df=4, P=0.01$				$\chi^2=11.32, df=4, P=0.02$			
	T	$\chi^2=93.23, df=4, P<0.01$				$\chi^2=55.60, df=4, P<0.001$				$\chi^2=12.45, df=4, P=0.01$				$\chi^2=10.37, df=4, P=0.03$			

† M= male, F= female, T=total, †† Analyses in total sample

To assess the validity of the content of questions, the test interview was examined, revised and reassessed by a number of psychiatric authorities, for construct and predictive validity in interviews of 200 clinically diagnosed psychiatric patients at Roozbeh hospital (Tehran). The Cohen Kappa coefficient for mood disorder for test-retest reliability was 0.88. Kappa coefficient for obsessive compulsive disorder (OCD), anxiety disorders and psychotic disorders were 0.87, 0.79 and 0.91 respectively. Several demographic variables including age, gender, marital status, occupation, educational level and residency in urban or rural areas were examined as correlated factors of mood disorders.

The interviewers comprised 250 clinical psychologists who had completed a rigorous program of training to administer the SADS reliably. Interviews were conducted at the residences of the selected subjects.

This study was approved by the ethics committee of Roozbeh Hospital and the National Ethics Committee and was conducted in accordance with institutional requirements for the protection of human subjects. Informed consent was obtained from each respondent individual prior to the interview.

The  $\chi^2$  tests were used to examine the association of mood disorders with the mentioned factors in each group, with results sub-grouped by gender.

### Results

Out of 25180 subjects, 50.3% were male and 49.7% female, with a mean age of 37.2 years (SD=16.6). Also, 62.7% lived in cities and 37.3% in rural areas. In addition, 29.1% were single, 67.45% married, 0.4% divorced or separated, 2.5% widowed, and 0.55% undetermined. The response rate was 91 percent.

The lifetime prevalence of the types of mood disorders were as follows: major depressive disorder, MDD, (3.1%), minor depressive disorder, mDD, (0.3%), bipolar mood disorder type I, BMD-I, (0.1%) and bipolar mood disorder type, BMD-II, (0.7%). The current prevalence was: MDD (1.8 %), mDD (0.2%), BMD-I (0.04%), and BMD-II (0.3%). The associations of lifetime and current prevalence of MDD and mDD rates by age groups are shown in Table 1.

The lifetime prevalence of BMD-I and BMD-II was not associated with sex or age, but with lifetime MDD or mDD (4.6% versus 1.6% and 0.4% versus 0.2% respectively). Current MDD and mDD (2.7% versus 1% and 0.3% versus 0.1%; respectively) were more frequent among female than male subjects. Lifetime prevalence of MDD (but not other mood disorders) was associated with the educational level, with higher levels among the illiterate (4%), compared to those with high-school and lower education (2.9%), and those with college or higher education (2.1%) ( $\chi^2=26.72, df=2, P<0.01$ ). The association between lifetime MDD and educational level was limited to females only ( $\chi^2=45.65, df=2, P=0.001$ ).

The rate of lifetime prevalence of MDD among females with lower educational level was higher than in those with higher educational levels. Same pattern was seen with the current MDD (but not other mood disorders) associated with the educational level, higher levels among the illiterate (3.0%), compared to those with high school and lesser education (1.6%), and those with college or higher education (0.6%) ( $\chi^2=75.22, df=2, P<0.01$ ). Occupational status was not associated with lifetime or current prevalence of BMD-I and BMD-II.

The lifetime and current prevalence of MDD and mDD

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**Table2. Lifetime and current prevalence of major depressive disorder (MDD) and minor depressive disorder (mDD) in Iran by occupational status**

Occupation	group†	Lifetime MDD			Current MDD			Lifetime mDD			Current mDD		
		%	Odds ratio	95%CI†† Lower Upper	%	Odds ratio	95%CI†† Lower Upper	%	Odds ratio	95%CI†† Lower Upper	%	Odds ratio	95%CI†† Lower Upper
Employed	M	1.5			1.1			0.2			0.1		
	F	3.4	0.45	0.32 .63	2.8	0.39	0.27 0.58	0.2	0.96	0.22 4.24	0.2	0.71	0.15 3.20
	T	1.8			1.3			0.2			0.1		
Students	M	1.5			1.3			0.2			0.2		
	F	1.8	0.83	0.39 1.75	1.4	0.90	0.39 2.06	0.1	1.66	0.15 18.42	0.1	1.668	0.15 18.42
	T	1.6			1.3			0.2			0.2		
Retired	M	2.4			2.2			0.2			0.2		
	F	7.1	0.31	0.13 .755	4	0.55	0.19 1.57	0.8	0.21	0.01 3.45	0.0	-	- -
	T	3.2			2.5			0.3			0.1		
Homemaker	M	-			-			0.2			-		
	F	5.1	-	- -	4	-	- -	0.4	-	- -	0.3	-	- -
	T	5.1			4			0.5			0.3		
Unemployed	M	2.2			1.5			0.2			0.1		
	F	2.5	0.87	0.47 1.60	1.3	1.17	0.52 2.62	0.4	0.58	0.11 2.90	0.0	-	- -
	T	2.3			1.4			0.3			0.1		
Statistical analysis††	M	$\chi^2=5.37, df=3, P=0.16$			$\chi^2=10.39, df=3, P=0.01$			$\chi^2=0.701, df=3, P=0.873$			$\chi^2=1.37, df=3, P=0.79$		
	F	$\chi^2=33.242, df=4, P<0.001$			$\chi^2=26.89, df=4, P<0.001$			$\chi^2=4.238, df=4, p=0.0.375$			$\chi^2=3.960, df=4, P=0.411$		
	T	$\chi^2=210.38, df=4, P<0.01$			$\chi^2=132.86, df=4, P<0.0001$			$\chi^2=18.06, df=4, P<0.001$			$\chi^2=13.77, df=4, P=0.008$		

† M= male, F= female, T=total, †† Analyses in total sample

**Table3. Lifetime and current prevalence of major depressive disorder (MDD) and minor depressive disorder (mDD) in Iran by residential area**

Residential area	group†	Lifetime MDD			Current MDD			Lifetime mDD			Current mDD		
		%	Odds ratio	95%CI†† Lower Upper	%	Odds ratio	95%CI†† Lower Upper	%	Odds ratio	95%CI†† Lower Upper	%	Odds ratio	95%CI†† Lower Upper
Urban	M	1.8			0.9			0.2			0.3		
	F	4.9			2.4			0.5			0.1		
	T	3.2	1.17	1.01 1.37	1.6	0.75	0.62 0.91	0.3	1.96	1.14 3.38	0.2	1.83	0.95 3.52
Rural	M	1.4			1.1			0.1			0.1		
	F	4.2			3.1			0.2			0.1		
	T	2.8			2.1			0.2			0.1		
Statistical analysis††	M	$\chi^2=3.60 df=1, P=0.05$			$\chi^2=1.62 df=1, P=0.20$			$\chi^2=1.58 df=1, P=0.2$			$\chi^2=3.58 df=1 P=0.05$		
	F	$\chi^2=3.11, df=1, P=0.07$			$\chi^2=5.52 df=1, P=0.01$			$\chi^2=5.10 df=1, P=0.02$			$\chi^2=0.69 df=1, P=0.40$		
	T	$\chi^2=4.62 df=1, P=0.03$			$\chi^2=8.69 df=1, P<0.001$			$\chi^2=6.17 df=1 P=0.0$			$\chi^2=3.46 df=1 P=0.06$		

† M= male, F= female, T=total, †† Analyses in total sample

rates by types of occupation are shown in table 2 and the lifetime and current prevalence of MDD and mDD by urban and rural living are shown in Table 3. BMD-I, but not BMD-II, was associated with residential area. Marital status was associated with MDD, but not with other mood disorders (Table 4).

### Discussion

In the first large representative study of community-diagnosed mood disorders in Iran, we found that the overall levels of mood disorders are lower in Iran as compared to the West. Also, unipolar depressive

disorders are more associated with demographic risk factors (e.g. female gender, lower educational levels, urban residence, and lower occupational status) than bipolar disorders.

Our results are in conflict with Western studies in a number of features, many of which may reflect cultural differences.

The similarities and differences are important in better understanding the nature of depression across cultures. We will first highlight these similarities and differences and then describe possible explanations for them.

**Table 4. Lifetime and current prevalence of major depressive disorder (MDD) and minor depressive disorder (mDD) in Iran by marital status**

Marital status	group†	Lifetime MDD			Current MDD			Lifetime mDD			Current mDD		
		%	Odds ratio	95%CI†† Lower Upper	%	Odds ratio	95%CI†† Lower Upper	%	Odds ratio	95%CI†† Lower Upper	%	Odds ratio	95%CI†† Lower Upper
Single	M	1.4			1			0.1			0.1		
	F	2.0	0.69	0.48 0.99	1.4	0.76	0.49 1.16	0.2	0.74	0.24 2.31	0.1	0.74	0.15 3.69
	T	1.7			1.2			0.2			0.1		
Married	M	1.7			1.3			0.2			0.1		
	F	5.3	0.31	0.26 0.38	4.2	0.30	0.24 0.37	0.5	0.39	0.21 0.70	0.3	0.46	0.23 0.91
	T	3.5			2.8			0.3			0.2		
Divorced or separated	M	5.7			5.7			0.0			0.0		
	F	15.1	0.34	0.07 1.59	14	0.37	0.07 1.76	1.2	-	- -	0.0	-	- -
	T	12.4			11.6			0.8			0.0		
Widow	M	2.7			2.7			0.0			0.0		
	F	6.5	0.39	0.09 1.683	4.1	0.65	0.15 2.84	0.4	-	- -	0.4	-	- -
	T	6.1			3.9			0.5			0.5		
Statistical analysis††	M	$\chi^2=6.03, df=3, P=0.11$			$\chi^2=12.82, df=3, P<0.001$			$\chi^2=0.426, df=3, P=0.93$			$\chi^2=1.39, df=3, P=0.708$		
	F	$\chi^2=84.02, df=3, P<0.0001$			$\chi^2=37.96, df=3, P<0.0001$			$\chi^2=5.58, df=3, P=0.134$			$\chi^2=4.593, df=3, P=0.204$		
	T	$\chi^2=115.90, df=3, P<0.0001$			$\chi^2=62.96, df=3, P<0.0001$			$\chi^2=6.05, df=3, P=0.109$			$\chi^2=7.466, df=3, P=0.058$		

† M= male, F= female, T=total, †† Analyses in total sample

**Comparing Iran with the West**

The prevalence of unipolar depression in the US has tended to be in the 5-10% range (8,9), whereas we have found a lower prevalence of 3.1% in Iran in our study. Our observation of a 0.1% BMD-I prevalence is 8 fold smaller than the American ECA rate of 0.8% (10) and 16 fold less than the American National Comorbidity Survey (NCS) rate of 1.6% (8).

In Iran, MDD was most frequent among the middle aged (41-55 years) whereas in the US, MDD has been found to be most common in young adults (8,10). We found no association between age and BMD in contrast to many Western studies who showed associations of BMD with younger age (11).

Considering gender, unipolar depression was more common among females, as in numerous Western studies (12-14); and BMD was not associated with gender, which also corresponds to Western studies (12,13).

Regarding marital status, MDD was more common in Iran among married females, in contrast to numerous Western studies which have found lower rates among married persons for both MDD and BMD(13,15-17).

In our study, lower educational status was associated with MDD, but not BMD. However, in the US, lower educational status has been associated with both MDD and BMD (8, 11&18).

Regarding residence, as with many Western studies (8, 11&19), MDD and BMD-I were more common in urban than rural areas.

Considering occupational status, current and lifetime MDD was more common among homemakers. Employment was associated with a higher risk of MDD in Iran which was contrary to the situation in the West where unemployment has been positively associated with MDD.

In summary, similarities to Western studies are that mood disorders in Iran are more likely to occur in women, are seen more in urban rather than rural

settings, and are associated with lower educational status. Contrasts are that mood disorders, particularly bipolar disorder type I, appear to be less common in Iran; also, mood disorders are more common in middle-aged persons, and married females. The clinical picture of the Western depressed individual is a young unemployed single female who lives in the city and has little education. In Iran, the picture is of a middle-aged married employed female who lives in the city and has little education.

These are rather important differences, which arise two questions: firstly, are these “real” differences, or only accidental ones; and, secondly, whether there are differences in the illnesses, or differences in the manifestations of the illness.

To answer the first question, it should be noted that low rates of mood disorders in Iran are not unlike low rates reported in other non-Western countries. For instance, another study in an Asian country, Taiwan, also reported an even lower lifetime prevalence of MDD of 1.5% (9). There has been a great deal of cross-cultural work that suggests that depressive syndromes present in non-Western countries are associated with much more predominant somatic, rather than intrapsychic symptoms (20). In fact, it has been suggested that the view of depression as a predominantly psychological, rather than somatic illness involves a prejudgment that the Western presentation of depression is the “real” one (21). It is notable that even in the West; it is thought by some that depressive illnesses were presented in the past as primarily somatic syndromes, such as what used to be called neurasthenia (22). These observations suggest that depressive illnesses may be inherently somatic in manifestation in non-Western nations or ethnicities. Thus, the current depression criteria, which are primarily psychologically based, might be insufficient to accurately assess depressive syndromes in countries like Iran. The apparently low rates seen in

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Iran may reflect this lack of ability to detect somatically-oriented depression.

It may also be that cultures like Iran and China tend to normalize depression. Perhaps the population standard for what would be considered a clinically significant amount of psychological depression is lower in the West than in Asia.

In response to the second question, it should be stated that differences in the manifestations of depression could possibly be due to social and cultural influences. Iran is a unique country, culturally, religiously, and politically. Urban living has dramatically increased in Iran in the last few decades in a massively disorganized manner, such that large cities have been facing serious problems such as overpopulation and high rates of unemployment. The usual factors thought to be related to the stresses of urban life and predispositions to mental illness are likely to be higher in the Iranian cities.

Iran has also been through the social upheaval of a revolution and a decade long war with Iraq. One might expect higher rates of depression due to these events, however, another possibility is that the Iranian populace has developed coping mechanisms that have allowed it to adapt to these social stresses.

Perhaps the most intriguing observation in this study is the high prevalence of depression among married individuals as well as middle aged people in Iran, as opposed to singles and younger adults in the West. The two associations may also be linked. It is noteworthy that we found very low rates of divorce in Iran (0.4%) versus over 50% in the West. Two possibilities exist among others in this regard. The first is that one simply cannot address the issue in Iran because so few individuals are divorced. The second possibility is that although marital conflict is quite common in Iran - as is readily observable both through clinical experience and in public media (TV and radio discussions of marital life) - depressed married individuals would nevertheless keep their marital bond for the risk of becoming stigmatized. The same situation does not necessarily apply to Western individuals with the same depressive disorders. A third possibility is that unhappy marriages, given the stigma of divorce, are more tolerated in Iran and lead to more depression. The association of depression with older age groups in Iran than that of the West is harder to understand; although it is notable that Iran has a much younger society than Western nations, with perhaps greater social and economic responsibilities correspondingly placed on middle-aged individuals.

### Limitations

Methodological factors may also impact these results. The use of lay interviewers in large epidemiological studies has raised the question of validity of the diagnoses obtained with evidence for both overestimation and underestimation of diagnoses. In this study, interviewers were clinical psychologists, who were trained to use SADS. This has probably led

to more clinically expert evaluations. However, misdiagnoses are likely, especially due to the very low prevalence of bipolar disorder type I, suggesting that mania may not have been diagnosed accurately. It is well known that about one-half of individuals with mania deny having manic symptoms, and thus interviews based on self-report, such as this one, might lead to an under diagnosis of bipolar disorders.

Moreover, as with any epidemiological study, perhaps the most important limitation of the present study was that diagnoses were based on lifetime recall of symptoms, introducing the possibility of recall bias. In Iranian culture in particular, symptoms that are considered to have medical causes today might not have had this same meaning in the past. In addition,, lack of insight into manic symptoms is a major limitation of diagnosis of BMD based on self-report.

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