

## Economic factors influencing mental health using multiple regression model in Ilam province of Iran

Meysam Behzadifar<sup>1</sup>, Masoud Behzadifar<sup>2</sup>, Ali Sayehmiri<sup>3</sup>, Maryam Behzadifar<sup>4</sup>  
Mandana Sarokhani<sup>5</sup>, Kourosh Sayehmiri<sup>\*6</sup>

Received: 1 February 2015

Accepted: 4 July 2015

Published: 15 November 2015

### Abstract

**Background:** Mental disorder is one of the most important diseases of which is predicted to increase from 10.5% to 15% until 2020. This study aimed to determine economic factors influencing mental health using multiple regression models in Ilam province in 2013.

**Methods:** In this cross sectional study, 903 families from different cities of Ilam were selected using multistage cluster sampling. The families were selected from each city separately and each head of family was interviewed. The instruments for data collection included general and economic questionnaires and the General Health Questionnaire (GHQ). The data were analyzed using SPSS software version 21, Eviews, t-test, ANOVA, Pearson's correlation coefficient, single and multiple linear regressions.

**Results:** The mean  $\pm$  SD mental health score in this study was  $28.5 \pm 12.10$ . The mental health increased for 4.26 units per each unit of life satisfaction increase, decreased for 4.09 units per each unit of gender growth, increased for 2.94 units per each unit of increase in economic status and had a significant correlation with all the three components ( $p < 0.001$ ).

**Conclusion:** In order to improve people's mental health, it is recommended that healthcare officials may more attention to this matter through implementation of programs such as life skills' training, stress resistance skills training, and helping individuals to be able to adapt themselves to their life environment.

**Keywords:** General health, Economic factors, Ilam.

*Cite this article as:* Behzadifar M, Behzadifar M, Sayehmiri A, Behzadifar M, Sarokhani M, Sayehmiri K. Economic factors influencing mental health using multiple regression model in Ilam province of Iran. *Med J Islam Repub Iran* 2015 (15 November). Vol. 29:292.

### Introduction

Mental health has a wide criteria-based range such as ideological, cultural, traditional, economic and geographical conditions (1). The WHO defines mental health as the "ability to have harmonious relationships with others, change and reform the social and individual environment, resolve contradictions and personal tendencies logically, fairly and properly". Therefore, mental health refers to the possibility for individual and social development of men-

tal healthiness through the prevention of mental disorders, appropriate treatment and rehabilitation (2). Overall, mental health plays key roles in ensuring the efficacy of every society (3,4).

Mental disorder is one of the most important and significant diseases of which is predicted to increase its portion of the total percentage of diseases for 50% from 10.5% to 15% until 2020 (5). According to studies in Europe and America, between 9% to 16% of females and 5% to 12% of males

<sup>1</sup>. MSc, Department of Epidemiology, Faculty of health, Ilam University of Medical Sciences, Ilam, Iran. m\_behzadifar67@yahoo.com

<sup>2</sup>. MSc, School of Health, Shahid Sadoughi University of Medical Sciences, Yazd, Iran. masoudbehzadifar@gmail.com

<sup>3</sup>. PhD, Department of Economic, Ilam University, Ilam, Iran.

<sup>4</sup>. MSc, Nutritional Health Research Center, Lorestan University of Medical Sciences, Khorramabad, Iran. maryambehzadifar@gmail.com

<sup>5</sup>. MSc, Prevention of Psychosocial injuries, Research Center, Ilam University of Medical Sciences, Ilam, Iran.

<sup>6</sup>. (**Corresponding author**) Associate Professor of Biostatistic, Department of Social Medicine, Faculty of Medicine, & Prevention of Psychosocial injuries, Research Center, Ilam University of Medical Sciences, Ilam, Iran. sayehmiri@razi.tums.ac.ir

have a potential depressive disorder during their lifetime and about 4.5% to 9.3% of females and 2.3% to 3.2% of males suffer from related disorders in a period of time throughout their lives (6). Dibaj's study on the mental health conditions of the students indicated that 31.6% of the students were suspected of mental disorders (7). According to the study conducted in England on the socioeconomic conditions and prevalent mental disorders using the General Health Questionnaire (GHQ), it was found that economic problems have a relationship with prevalent mental disorders in both males and females (8).

Mental diseases impose a wide range of costs on family members, employers, and the whole society (9). According to the WHO, mental disorders account for 3-4% of gross domestic product (GDP) of countries annually (10). Today, 450 million people in the world are suffering from mental or behavioral disorders (1). According to recent studies in Iran, 21% of the whole population (25.9% of females and 14.6% of males) are also suffering from certain types of mental disorders (11). Poverty, wrong immigration, and living on the fringes of cities are the main factors underlying serious mental health problems and are unfortunately rising in developing countries. Despite having lots of the problems mentioned, the population living on the fringes of cities receive minimum attention in terms of mental health policies (12). Mental inequality can be ascribed to two types of factors: A) flexible and modifiable factors (avoidable inequality), B) inflexible and non-modifiable factors (unavoidable inequality). Socioeconomic conditions, gender, education, social involvement level, occupation, housing quality and ownership can be cited as modifiable factors; and age, gender, nationality and race can be cited as non-modifiable factors. Avoidable inequality is not only a kind of inequality, but also a kind of injustice, as it is human-made and is removable through existing knowledge. If the cause of mental health inequality in a society is discovered, essential policies and

strategies will be determined. Therefore, more efficient measures will be taken to improve justice concerning mental health in that society (13).

While physical health is highly regarded in hospitals and health centers, the dependence of physical health on mental health is neglected. The prevalence of mental disorders increased the need for mental healthcare services, and relative deprivation of the people living in villages and small cities from these services emphasize the significance of this study. It is clear that resolving such problems demands the identification of individual and socioeconomic factors. As a result, necessary actions should be taken in order to prevent mental disorders and have healthier generations in the future. Therefore, this study was conducted in Ilam in 2013 to investigate the economic factors influencing mental health using the multiple regression models.

### Methods

In this cross sectional study, 903 families from different cities of Ilam were selected using multistage cluster sampling. The families were selected from each city separately and each head of family was interviewed. The families' general and economic status was determined using a researcher-made questionnaire consisting of demographic questions (i.e. job status, income, and living expense) which was designed and rated based on Likert scale. The standard General Health Questionnaire (GHQ) was used to determine the participants' general health. This questionnaire is a test with multiple and self-executing nature designed to investigate non-mental disorders found among the existing social states over the month before. In this study, a short questionnaire including 28 questions was used. This questionnaire consisted of 4 subtests. Questions 1-7 were designed to measure physical signs, 8-14 to measure anxiety and sleeplessness, 15-21 to measure social dysfunction, and 22-28 to measure depression. The questions were multiple items and there were two scoring methods. The first

method was the Traditional Baymedal method in which the choices are measured based on 0-0, 1-1 and the individual's score ranges from 0 to 28. In the second method, the answers were measured based on Likert (0, 1, 2, 3) in which the individual's score ranges from 0 to 84. The cut-off point obtained for this questionnaire in several studies in Iran is between 21 and 23 (14). In this study, the cut-off point of 23 was used. As a result, the total score between 0 and 23 was considered as desired mental health, and the total number of 24 and above as inappropriate mental health. The reliability of this questionnaire has been proven in different studies (15-18). The Cronbach's alpha was used to determine the reliability of the test which was 0.93 for all the questions.

The data were analyzed using SPSS software version 21, Eviews, t-test, ANOVA test, Pearson's correlation coefficient, single and multiple linear regressions.

## Results

In this study, 903 people from Ilam were investigated with a mean  $\pm$  SD age of 32.7  $\pm$  9.45 years (range of 17-78 years). The mental health mean  $\pm$  SD score for the participants under investigation was 28.5 $\pm$ 12.10; it was 26.5 $\pm$ 11.82 for males and 29.8 $\pm$ 12.18 for females. Gender had a statistically significant relationship with mental health ( $p < 0.001$ ) and 4 subtests mental health (physical symptoms ( $p < 0.001$ ), anxiety and social dysfunction ( $p = 0.034$ ), and Depression ( $p = 0.015$ ), Table 1).

The highest mental health mean scores belonged to the age group older than 50 (31.3), those cost less than 500 thousand Tomans per month (31.66), those who were unemployed (30.20), those who were under diploma (32.23). According to the Analysis of Variance (ANOVA), mental health had a significant relationship with monthly expenses ( $p = 0.046$ ), job status ( $p < 0.001$ ), and

Table 1. Mean and total score of mental health in subjects by sex

Variable	Male		Female		p
	Mean	SD	Mean	SD	
Physical symptoms	6.15	3.73	7.46	3.78	* $< 0.001$
Anxiety	8.57	4.4	9.21	4.47	*0.034
Social dysfunction	8.37	3.45	8.84	3.08	*0.034
Depression	3.53	4.47	4.31	4.85	*0.015
Mental health	26.64	11.82	29.84	12.18	* $< 0.001$

\* Significant using T-test

Table 2. Descriptive statistics of mental health based on the demographic and economic variables

Variable	Mental health			
		Mean	SD	p
Age (year)	Less than 25	29.43	13.05	0.242
	25-29	29.03	11.6	
	30-34	27.24	11.29	
	35-39	27.68	12.06	
	40- 44	26.69	11.39	
	45-49	29.52	11.41	
Cost (thousands of Tomans**)	More than 50	31.3	14.11	*0.046
	Less than 500	31.66	14.12	
	500-750	27.94	11.24	
	750-1million	26.45	12.72	
Job	More than 1 million	25.45	13.52	* $< 0.001$
	Unemployed	30.20	11.88	
	Employed	26.49	11.98	
	Retired	29.45	12.53	
Education	Under Diploma	32.23	14.39	*0.021
	Diploma	28.17	11.42	
	Associate Degree	27.67	10.16	
	Bachelor	28.18	12.36	
	Masters and more	27.2	12.39	

\*Tested by ANOVA

\*\*The currency of the country the Iran

Table 3. Correlation between income, mental health and subtests mental health

	Income	Physical symptoms	Anxiety	Social dysfunction	Depression	Mental health
Income	1					
Physical symptoms	-0.06	1				
Anxiety	-0.06	**0.61	1			
Social dysfunction	*-0.1	**0.29	**0.08	1		
Depression	-0.08	**0.47	**0.57	**0.23	1	
Mental health	*0.1	**0.8	**0.8	**0.48	**0.81	1

\* Significant at a level of less than 0.05

\*\* Significant at a level of less than 0.01

Table 4. Multiple regression results between mental healths with economic situation, gender, life satisfaction

		B	SD	p
Univariate model	Life Satisfaction	4.26	0.37	<0.001
Multiple Models	Economic situation	2.94	0.45	<0.001
	Sex	-4.09	0.81	<0.001

Table 5. Multiple regression results between mental healths with subtests mental health

	B	SE	p
Physical symptoms	1.04	0.002	<0.001
Anxiety	1.01	0.002	<0.001
Social dysfunction	0.99	0.002	<0.001
Depression	1.02	0.001	<0.001

education ( $p=0.021$ ) (Table 2).

The findings of this study indicated that monthly income had a negative correlation with physical signs ( $R=-0.06$ ,  $p=0.212$ ), anxiety ( $R=-0.06$ ,  $p=0.197$ ), social dysfunction ( $R=-0.1$ ,  $p=0.027$ ), and depression ( $R=-0.08$ ,  $p=0.070$ ), and a direct correlation with mental health ( $R=0.1$ ,  $p=0.039$ ), while it only had a statistically significant relationship with social dysfunction ( $p=0.027$ ) and mental health ( $p=0.039$ ) (Table 3).

Six variables were entered into the Multiple Regression Model in order to find the variable which was more related to mental health than the others. After eliminating the confounding variables, life satisfaction component was tested. Based on the obtained amount of Adjusted Coefficient of Determination ( $R^2$  adjusted) from this model, 12% of mental health changes were related to life satisfaction and there was a statistically significant relationship between the two variables ( $p<0.001$ ) (Table 4).

In the second multiple regression model, the relationship between mental health and economic status and gender was investigated. Based on the obtained amount of  $R^2$  adjusted from the model, 8% of mental health changes were related to economic

status and 6% were related to gender. There was also a significant statistical relationship between mental health and both components ( $p<0.001$ ) (Table 4).

In the third multiple regression model, the relationship between mental health and 4 subtests of mental health was investigated. There was a significant statistical relationship between mental health and all the 4 subtests ( $p<0.001$ ) (Table 5).

## Discussion

Attention to physical, mental, social, and cultural health status in a society and forming the basis for the fulfillment of a healthy and dynamic lifestyle guarantees the healthiness of that society for the future. Prevention of affective disorders, anxiety and depression is most required in achieving such an invaluable goal (19). The mean score for mental health of the participants under investigation was  $28.48\pm 12.1$ ; it was  $26.46\pm 11.82$  for males and  $29.84\pm 12.18$  for females. Gender had a statistically significant relationship with mental health and 4 subtests of mental health. The findings of the studies by Saberian et al (20) and Manzoori et al (21) also indicated that males were healthier than females in terms of mental health. This can be due to societal

structures and social roles of males in a society. Since the society provided males with more power and opportunity than females, they enjoyed a sense of efficacy that may lead to higher mental healthiness.

The results of this study indicated that monthly income had a negative correlation with physical signs, anxiety, social dysfunction and depression, and a direct correlation with mental health, while it only had a significant relationship with social dysfunction ( $p < 0.05$ ) and mental health ( $p < 0.05$ ). In the studies by Love & et al (22), and Sadeghi et al in Iran (23), there was also a positive and significant correlation between income and mental health in a way that families with high income had better mental health. It seems that low income deprives some people of using healthcare services. This may evidently affect peoples' mental health.

In the present study, there was a significant statistical relationship between mental health and life satisfaction based on simple regression. For each unit of increase in life satisfaction, mental health would increase for 4.26 units. In the study by Mohammadbeigi et al (24), there was a significant relationship between mental health status and life satisfaction in a way that for each unit of increase in life satisfaction, mental health would increase for 2.58 units. Life satisfaction was a supporting factor against mental disorder symptoms in the present study. Such a fact was also obtained in the study conducted by Bairam et al (25) in Turkey.

In the present study, mental health had a significant relationship with economic status and gender based on multiple regression ( $p < 0.05$ ) in a way that the mental health would decrease for 4.09 units for each unit of increase in the gender, and it would increase for 2.94 units for each unit of increase in the economic status. In a study by Mohammadbeigi et al (24), the possibility of mental disorder affliction in females was 3.96 times more than males. Such results were also seen in similar studies in Turkey (26), Nigeria (27), and Iran (28). It seems

that gender is one of the most effective factors in mental disorder affliction, as the results of regression analysis emphasized this point indicating that female gender increases the chance of affliction. The aim of empirical explanation of this finding in scientific texts is to emphasize the existence of growing depression and stress factors in females. Also, it is indicated from the findings of the studies by Ghasemi et al (29) that there was a significant relationship between mental health and economic factors in the participants under investigation in a way that individuals with weak economic status gained the highest score in mental health. Such results were obtained from several other similar studies (30,31). Living with weak economic status has negative effects on families' health and welfare. The fixed income-health tilt is proven in the whole world, i.e. peoples' health is affected by decreases in socioeconomic conditions.

### Conclusion

Given the fact that the participants of the present study had a high general health mean score and their health status was almost worrying, it is recommended that healthcare officials pay more careful attention to this issue than ever through the implementation of programs such as life skills training, stress resistance skills training, and helping individuals to be able to adapt themselves to their life environment in order to promote mental health.

### Acknowledgements

We wish to sincerely thank the Center for Prevention Mental-social Damages of Ilam province, Research and Technology Deputy of Ilam University of Medical Sciences, and all the heads of families whose full cooperation we enjoyed during this study.

### References

1. Yehia F, El Jardali F. Applying knowledge translation tools to inform policy: the case of mental health in Lebanon. *Health Res Policy Syst* 2015; 13: 40-29.



2. Mohtashami J, Noghani F, Shahsavand E. *Mental Health*. Tehran: Salemi publishing; 2009.
3. Araste M. Study of mental health status and its related factor among high school teachers in cities of Sanandaj and Bijar. *J Kurd Uni Medi Sciences* 2008; 12: 53-62.
4. Saki K, Kikhavandi S. Mental health status of students Ilam medical sciences. *J Medical Sci, Ilam* 2002; 10: 15-1.
5. Olfson M. National trends in the outpatient treatment of depression. *WJAMA* 2002; 287: 203.
6. Shariati M, Yunesian M, Vash JH. Mental health of medical students: a cross-sectional study in Tehran. *Psychol Rep* 2007; 100: 346-54.
7. Dibajnia P, Bakhtiary M. Students' mental health status of shahid Beheshti University of Medical Sciences, School of Rehabilitation. *Ard J Med Sci, Ilam* 2002; 1: 31-27.
8. Laaksonen E, Martikainen P, Lahelma E, Lallukka T, Rahkonen O, Head J, Marmot M. Socioeconomic circumstances and common mental disorders among Finnish and British public sector employees: evidence from the Helsinki Health Study and the Whitehall II Study. *Int J Epidemiol* 2007; 36: 776-86.
9. World Health Organization, The global burden of disease: 2004 update, World Health Organization Publication, Geneva, Switzerland, 2008.
10. World Health Organization, Promoting mental health: concepts, emerging evidence, practice, Summary report, Department of Mental Health and Substance Abuse in collaboration with the Victorian Health Promotion Foundation (Vic Health) and the University of Melbourne, World health organization Publication, Geneva, Switzerland, 2006.
11. Noorbala AA, Bagheri Yazdi SA, Yasamy MT. Mental health survey of the adult population in the Islamic Republic of Iran. *Brit J psychiatry* 2007; 184(13): 70-3.
12. Margitics F. Predisposing factors and subclinical depression among healthy college students. *Psychiatr Hung* 2005; 20(5): 211-23.
13. Blaxter M. *Health*. 2nd ed. Britain: Polity Press; 2004. pp. 23-27
14. Abasi A. Evaluation of student mental health Yasuj university of medical sciences. *Medic and purification* 2001; 43(5): 38-4.
15. Noorbala AA, Bagheri yazdi SA, Mohammad K. The validation of general health questionnaire - 28 as a psychiatric screening tool. *Hakim J* 2009; 11(7): 47-53.
16. Goldberg DP, Hillier V. A scale version of general health questionnaire. *Psycho Med* 1979; 9(6): 131-45.
17. Hasheminazari SS, Khosravi G, Faghihzadeh S, Etemadzadeh SH. A survey of mental health among fire department employees by GHQ-28 questionnaire in 2005, Tehran- Iran. *Hakim J* 2007; 10(2): 56-64.
18. Halvani GH, Morovati MA, Baghiani MH. Determining the general health status of workers of Kuushk main. *Koomesh* 2007; 8(6): 261-7.
19. Karami S, Pirasteh A. Assessment of mental health among Zanjan University of medical sciences. *ZUMS* 2006; 9(3): 66-72.
20. Saberian M, Haji Agajai S, Ghorbani R. Study of the mental status of the elderly and its relationship with leisure time activities. *Asrar* 2009; 10(4): 12-9.
21. Mansouri L, Babak A, Merasi MR. The depression status of the elderly and its related factors in Isfahan in 2007. *Salmand* 2010; 4(14): 27-33.
22. Love C, David RJ, Rankin KM, Collins JW. Exploring Weathering: Effects of Lifelong Economic Environment and Maternal Age on Low Birth Weight, Small for Gestational Age, and Preterm Birth in African-American and White Women. *Amer J Epidemiol* 2010 172(2): 127-34.
23. Sadeghi R, Zarei M, Akbari H, Khan beygi M. Mental health status and its related factors in women referred to health centers. *Health and Care J* 2005; 13(4): 41-50
24. Mohammad Beigi A, Mohammad Salehi N, Ghamari F, Salehi B. Depression symptoms prevalence, general health status and its risk factors in dormitory students of Arak universities 2008. *Arak Med Uni J* 2009; 12(3): 116-23.
25. Bayram N, Bilgel N. The prevalence and socio-demographic correlations of depression, anxiety and stress among a group of university students. *Soc Psychiatry Psychiatr Epidemiol* 2008; 43(4): 667-72.
26. Ozdmir H, Rezaki M. General Health Questionnaire-12 for the detection of depression. *Turk Psikiyatri Derg* 2007; 18(1): 13-21.
27. Adewuya AO, Ola BA, Olutayo OA, Mapayi BM, Oginni OO. Depression amongst Nigerian university students, prevalence and socio-demographic correlates. *Soc Psychiatry Psychiatr Epidemiol* 2006; 41(6): 674-8.
28. Ahmadi J, Pridmore S, Fallahzadeh M. Neurotic scores in a sample of medical students. *Ger J Psychiatry* 2004; 7(1): 51-5.
29. Ghasemi E, Mohammad Aliha J, Bastani F, Samiei N, Haghani H. General health status in women with coronary artery disease. *Koomesh* 2013; 14(4): 474-82.
30. Shibeshi WA, Young-Xu Y, Blatt CM. Anxiety worsens prognosis in patients with coronary artery disease. *J Am Coll Cardiol* 2007; 49(8): 2021-7.
31. Brummett BH, Babyak MA, Mark DB, Clapp-Channing NE, Siegler IC, Barefoot JC. Prospective study of perceived stress in cardiac patients. *Ann Behav Med* 2004; 27(9): 22-30.