



## Risk Factors of Depression among Women Living in Rural Areas of Iranshahr, Iran

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### Abstract

**Background:** Depression is one of the most common mental problems which is not limited to a certain location or time, afflicting various social and age groups. This study aimed to examine factors affecting depression among women in rural areas.

**Methods:** This study was conducted on an Iranian population residing in rural areas of Iranshahr. The research population comprised all women in rural areas of Iranshahr. Using systematic random sampling, about 6% of the 666 covered villages were selected. Using Goldberg's standard questionnaire, the data on blood glucose, physical activity, height, weight, and blood pressure were collected using interviews and measurement and analyzed via correlation test and chi-squared test.

**Results:** In this study, a correlation existed between depression factors and blood pressure, physical activity, blood glucose, economic and family problems of female householders ( $P$ value<0.05).

**Conclusions:** One of the best solutions for preventing depression in women in rural areas is strengthening their economic status. By predicting depression, the emergence of many physical diseases and disorders such as hypertension and high blood glucose can be prevented beyond expectations.

**Keywords:** Rural women, Risk factors, Depression, Iranshahr.

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## Introduction

Risk factors of non-communicable diseases (NCDs) are increasing in developing countries due to expansive urbanization, a change in diet, and demographic transition.<sup>1,2</sup> Moreover, these diseases are increasing in rural areas of developing countries.<sup>3</sup> Due to the increased mortality caused by NCDs, especially in developing countries, the world health organization (WHO) introduced these diseases as the health priority of developing countries more than two decades ago. In the 2002 report of this organization, 60% of mortality and 43% of the global burden of diseases were related to NCDs. Low- and middle-income countries had 79% of mortality and 85% of these diseases.<sup>4</sup> Behaviors related to unhealthy lifestyle are important risk factors for NCDs.<sup>5</sup> According to many scientists, 60% of physical diseases are mostly due to mental tension, with numerous complications for different body organs, including the decrease of natural lifetime.<sup>6</sup> Depression is among the most prevalent mental problems which is not limited to a certain time or place and inflicts people from different social and age groups.<sup>7</sup> Worldwide, 150 million people suffer from depression.<sup>8</sup> Depression can be prevented, and primary healthcare can significantly prevent mental disorders.<sup>9</sup>

However, living in rural areas limits one's access to healthcare services.<sup>10</sup>

The condition of women in any society indicates the level of progress in that society. Women constitute half the population of any society, playing a key role in realization of social health as the axis of families.<sup>11,12</sup> Rural women play a major role in life. They have different responsibilities and knowledge compared to men. They contribute to agriculture and animal husbandry.<sup>13</sup> Women perform a major part of household chores without any remuneration.<sup>14</sup> It seems that rural women are more vulnerable. This vulnerability includes poverty, violence, economic exploitation, and deprivation of education. Elderly women or those with lower levels of education, as well as unmarried women or those with low incomes are more at risk.<sup>15</sup> The prevalence of depression is higher in rural than urban regions<sup>6</sup>, and rural women run a higher risk of depression due to their special conditions.<sup>16</sup> Their special conditions such as premenstrual syndrome (PMS) and postpartum depression can affect this.<sup>17</sup> Still, the prevalence of depression differs with age, sex, and social group.<sup>3,18</sup> According to Fengsu et al. (2015), rural women in China face considerable symptoms of depression. Among these women, those with a higher level of social support were less depressed.<sup>19</sup>

Risk factors of NCDs increase with age.<sup>3,18</sup> According to Huldson et al., (2008), there is no bidirectional causal relationship between age and depression. According to this study, rural women of all ages may develop depression or may not be depressed at all.<sup>20</sup> Factors such as race, education, income level, poverty, marital status, smoking, and body mass index (BMI) affect depression.<sup>21</sup> A study in Norway by Bjellandi et al. (2008) showed a significant relationship between depression and level of education. This means that the level of depression and anxiety decreases as the level of education increases.<sup>22</sup> In addition, rural women with a lower education level are usually unwilling to visit psychological clinics or specialists, and this exacerbates the problem.<sup>23</sup> Numerous studies have reported a significant relationship between unemployment and marriage with depression.<sup>24,25</sup> In the study by Francisco Rubio et al. (2013) in the US, a significant relationship was reported between blood pressure and depression.<sup>26</sup> Moreover, the study by Badescu et al. (2016) indicated that a relationship exists between diabetes and the prevalence of depression.<sup>27</sup> According to Gangwisch (2015), diets with a high concentration of sugar may be a risk factor for depression in menopausal women.<sup>28</sup> The study by de Wit et al. (2009) in the Netherlands showed a significant relationship between depression and a high BMI.<sup>29</sup> Dinas et al. (2011)

concluded that exercise and physical activity have positive effects on depression symptoms, effects which are comparable with those of anti-depressants.<sup>30</sup>

In general, factors with a significant relationship with depression in rural women are: Illiteracy, retirement, having chronic diseases, and dissatisfaction with daily activities.<sup>31</sup> Depression is considerably increased among rural women in Iran due to various reasons. Because of the dearth of research on this topic in the studied region, the present study examined the factors affecting depression in rural women.

## Materials and Methods

This study was cross-sectional one. Factors affecting the health of rural women residing in villages of Iranshahr were examined from 2017 to 2018. Only volunteers participated in this study. Results are reported anonymously. Informed written consent was obtained from participants. They were ensured that their data would remain confidential and used only for the sake of research and to offer better solutions. They were also informed of the voluntary nature of participation and withdrawal from the study.

The studied region was Iranshahr in Sistan and Baluchestan Province, Iran.<sup>32</sup> This region is 20131 hectares in the area with a population of 254314 based on the last census in 2016. The research population comprised rural women residing in villages of Iranshahr. In this study, a multistage cluster sampling method was employed. From among 666 villages of Iranshahr, 40 were selected via systematic random sampling. Per any coefficient estimated in the regression model, a sample of at least 10 and preferably 20 would be required. Therefore, of each village, 20 people and, in total, 800 people were studied.<sup>33</sup>

The health status of the participant was assessed based on their reports (self-report) on symptoms and diseases by completing a checklist in a face-to-face manner.<sup>34</sup> The symptoms of women were divided into three groups using interviews and questions:

Those who have no symptoms of risk or disease are healthy; those with 1-3 symptoms and diseases are at-risk, and those with 3 or more symptoms or diseases are high-risk.<sup>35-37</sup> Moreover, the cause of mortality in women of reproductive age and pregnant women were obtained from the health centers and clinics of the region.

On the incidence of depression, important risk factors including blood pressure, BMI (especially overweight and obesity), lack of physical exercise, and blood glucose were examined as follows.<sup>36</sup>

Blood pressure (diastolic and systolic) was recorded using a standard digital sphygmometer while sitting, three times per day with an interval of at least 5 min, and the mean of the

second and third times was reported. Participants had been resting for at least 15 min before the measurement.<sup>5,38</sup>

People with systolic pressure of equal to or above 140 mmHg and diastolic blood pressure of equal to or above 90 mmHg and those who expressed that they take antihypertensive drugs were regarded as those with high blood pressure. Finally, those with high blood pressure were divided into three groups:

People with a high blood pressure in measurement but did not receive medication in the past 2 weeks, those with high blood pressure in measurement who received medication in the past 2 weeks, and those with normal blood pressure who had received medication in the past two weeks.<sup>5</sup>

Health was specified in terms of weight and height.<sup>39</sup> Height was considered as the value closest to 0.1 cm, and weight as the closest value to 1 kg. BMI was calculated by dividing weight (kg) by height squared (m<sup>2</sup>).<sup>1</sup> The classification of BMI based on WHO guidelines are as follows: Low weight: less than or equal to 18.4; normal: 18.5-24.9; overweight: 25-29.9; and obese: >30.<sup>40</sup>

The type and level of physical activity are determined based on the global physical activity questionnaire (GPAQ).<sup>39</sup> In this questionnaire, repetition (number of days) and duration (per min or hours) of occupation activities, leisure, and recreational and sports activities were recorded. The level of physical activity was estimated using the metabolic equivalent of task (MET) index. In this index, the number of minutes of physical activity per week was used, and the intensity of physical activities was classified into four groups: Inactive: <40; low activity: 40-600; moderate activity: 600-1200; high activity >1200.<sup>41,42</sup>

Goldberg depression questionnaire was used to examine depression. Each statement on the questionnaire is scored on a five-point Likert scale from very high (5), high (4), moderate (3), low (2), very low (1), and not at all (0). The level of depression was judged based on the sum of scores (Table 1).

When the sum of scores is less than 21, the person must be referred to mental health specialists for more careful examination and determination of the level of treatment required.<sup>43,44</sup>

Data were analyzed using SPSS<sup>25</sup>. The relationship between two qualitative variables was assessed using a chi-squared test (relationship between depression and employment, marriage, blood pressure, blood glucose, and BMI). Spearman test was used because the variables were ordinal or quantitative variables with non-normal distribution. In this test, the relationship between variables was examined (relationship between depression and age, number of children, education, quality of residence, and economic and family problems).

**Table 1. Interpretation of the results of Goldberg depression questionnaire**

Interpretation	Score	Row
Healthy	0 - 9	1
Chance of progress of depression	10 - 17	2
Borderline depression	18 - 21	3
Mild to moderate depression	22 - 35	4
Moderate to severe depression	36 - 53	5
Severe depression	54 and above	6

## Results

Results of the Goldberg depression questionnaire completed using interviews with 800 rural women in Iranshahr are given in table 2. 421 women (52.6%) were healthy in terms of depression, while seven (0.9%) had severe depression.

Results of examining the relationship between depression and demographic characteristics of 800 rural women in Iranshahr are presented in table 3. Based on these findings, no significant relationship exists between depression and age, the number of children, and level of education based on Spearman's test. Results of this study using the chi-squared test showed that a significant relationship exists between depression and employment and marriage of rural women, with more married and employed women having depression.

Results of examining the relationship between depression and the health status of rural women in Iranshahr are presented in table 4. The Chi-squared test showed no significant

relationship between depression and BMI; therefore, BMI did not affect depression in rural women.

Results showed that there is a significant relationship between depression and blood pressure, blood glucose, and physical activity in rural women based on Spearman's test and chi-squared test. Rural women with depression develop hypertension more, and those with little physical activity are more depressed.

Results of examining the relationship between depression and the economic status of 800 rural women in Iranshahr are presented in table 4.4. Results of the Goldberg depression questionnaire (Table 5) showed that a significant relationship exists between depression and the quality of the building, economic and family problems in female householders. Economic and family problems cause depression in rural women, and those having a residence with good quality have lower levels of depression.

**Table 2. Descriptive statistics of the prevalence of depression in rural women in Iranshahr**

Depression	Frequency	Percentage of frequency
Healthy	421	52.6
Chance of depression	145	18.1
Borderline depression	51	6.40
Mild to moderate depression	115	14.40
Mild to severe depression	61	7.60
Severe depression	7	0.90

**Table 3. Relationship between depression and demographic characteristics of rural women in Iranshahr**

Variable	Type of test	Test value	Df	Pvalue
Age	Spearman correlation coefficient	-0.014	-	0.688
Employment	Chi-squared test	0.040	15	25.82
Marriage	Chi-squared test	0.023	15	27.73
Number of children	Spearman correlation coefficient	-0.019	-	0.588
Education	Spearman correlation coefficient	-0.045	-	0.207

**Table 4. Relationship between depression and health status of rural women in Iranshahr**

Variable	Type of test	Test value	Df	Pvalue
Blood pressure	Chi-squared test	20.421	10	0.26
Blood glucose	Chi-squared test	138.22	10	0.000
BMI	Chi-squared test	4.216	5	0.516
Physical activity	Spearman correlation coefficient	0.085	-	0.017

**Table 5. Relationship between depression and economic status of rural women in Iranshahr**

Variable	Type of test	Test value	Pvalue
Quality of residence	Spearman correlation coefficient	0.101	0.004
Economic problems of female householders	Spearman correlation coefficient	0.096	0.006
Family problems of female householders	Spearman correlation coefficient	-0.131	0.000

## Discussion

Women constitute half the population of any society, playing a key role, especially in rural communities. The maintenance of their mental and, consequently, physical health can greatly help social health. The WHO introduced NCDs as the health priority of developing countries more than two decades ago. Accordingly, the present study determines factors

affecting the incidence of depression in rural women in Iranshahr in Southeast Iran. Results revealed that 47.4 % of the studied population, i.e. rural women in Iranshahr, have varying degrees of depression which constitutes a considerable percentage.

Based on the results, various factors including the quality of the building, economic and family problems affect the incidence of depression in female householders. This can

demonstrate the importance of economic poverty in depression. Therefore, one of the best solutions for preventing depression in women in rural areas is strengthening their economic status. By predicting depression, the emergence of many physical diseases and disorders such as hypertension and high blood glucose can be prevented beyond expectations.

Amaron et al. estimated the prevalence of depression to be 7.3% in rural areas and 4.2 in urban areas of Nigeria, and showed that the level of depression is higher in rural areas.<sup>6</sup>

Results of this study were similar to those of other studies in terms of lack of relationship between depression and age. For instance, according to Huddleston-Casas et al. (2008), no causal relationship exists between age and depression in the US, and rural women of all ages may be depressed or not depressed at all.<sup>20</sup>

Results of the study by Ridmark et al. (2006) in Sweden demonstrated that those with a low income, higher occupational stress, and without job benefits such as insurance and remuneration are more at risk of depression. The authors noted lack of financial support and job security as contributing to the prevalence of depression in female householders.<sup>45</sup> Findings of other studies also showed the relationship between marital status and depression, with single people running the risk of depression more than married people. For instance, the study by Papadopoulos et al. (2005) in Greece showed that 27% and 12% of single people have mild-to-moderate and moderate-to-severe depression, respectively.<sup>46</sup> However, the results of other studies indicate a lack of a relationship between depression and marital status, including those by Zhang et al. (2008) in China and Montazeri et al. (2013) in Iran.<sup>47</sup> The difference in the results of these studies and the present study may be the different effects of genetic, social, and environmental factors.<sup>48</sup>

Results of the study by Wen et al. (2010) showed that depression in nulliparous women and those who had no problem having a baby was significantly related to the number of children. The difference between this and the present study is having difficulty getting pregnant and women's concern for having a baby, a problem which was absent in our study.<sup>49</sup>

Bjelland et al. (2008) reported that a significant relationship exists between depression and the level of education, with a reduction in depression and anxiety as the level of education is increased. The difference between this and the present study may be due to ethnic and regional differences.<sup>22</sup> Bauldry et al. (2015) concluded that those who have gone to universities have more depression. They attributed this to the problems they encountered during their studies.<sup>50</sup>

Findings reported by Samavat et al. (2002) showed that a significant relationship exists between depression and residence status. Women who still do not possess a good residence have higher financial needs and require more support compared to others, and as these expectations and supports were not met, they found their needs unanswered and depression was increased in them.<sup>51</sup> This result is in line with that of the present study.

Wang (2001) studied the relationship between depression and economic status in Taiwan, reporting a significant relationship between severe depressions and not having an optimal economic status, which is in line with the present study.<sup>52</sup>

According to Sander et al. (2006), a significant relationship exists between family problems and risk factors such as the prevalence of anxiety and depression, in line with the present study.<sup>53</sup>

On the lack of a relationship between depression and BMI, similar results were reported by other studies, including the study by Roberts et al. (2003)<sup>54</sup> from 1994 to 1999 (five years) in California. They concluded that depression is associated with the risk of increased depression. However, at the end of this five-year period, they realized that depression is not associated with increased obesity. They finally recommended that further studies need to determine the relationship between depression and obesity.<sup>54</sup> The study by Lacoursiere et al. (2006)<sup>55</sup> and de Wit et al. (2009) showed no significant relationship between BMI and anxiety and depression.<sup>29</sup>

Findings of the study by Rubio-Guerra et al. in Mexico<sup>26</sup> and Licht et al. (2009) showed that a significant relationship exists between blood pressure and depression,<sup>56</sup> which is consistent with the results of the present study.

On the relationship between depression and blood glucose, results reported here were similar to those of other studies, including that by Gangwisch et al. (2015)<sup>15</sup> and Badesku et al. (2015),<sup>27</sup> examining the relationship between depression and high glycemic index diet, showing that these diets can be a risk factor for depression in menopausal women. They also stated that a relationship exists between diabetes and the prevalence of depression, and in those with diabetes a higher rate of depression is reported compared to healthy people.

Studies on the relationship between depression and physical activity such as Diass et al. (2011),<sup>30</sup> and Song et al. (2006)<sup>57</sup> showed that physical activity reduces depression which are inconsistent with our results.

Based on the study, one of the best solutions for preventing depression in women in rural areas is strengthening their economic status. By predicting depression, the emergence of many physical diseases and disorders such as hypertension and high blood glucose can be prevented beyond expectations.

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## Conflict of Interest

The authors declare that they have no conflict of interest.

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