

# Depression symptoms in rural women: sociodemographic, economic, behavioral, and reproductive factors

Sintomas de depressão em mulheres rurais: fatores sociodemográficos, econômicos, comportamentais e reprodutivos

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## Descritores

Saúde mental; Transtorno depressivo;  
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## Abstract

**Objective:** To identify depression symptoms and the influence of sociodemographic, economic, behavioral, and reproductive health variables on the score of depression symptoms in women of childbearing age living in the rural area of the municipality of Uberaba, state of Minas Gerais.

**Methods:** Observational, cross-sectional study with 280 women. Beck's Depression Inventory was used. Student's t-test and Pearson correlation were used in the bivariate analysis. Multiple linear regression was used for multivariate analysis.

**Results:** A total of 18.2% of the participants was classified as presenting depression symptoms. The mean score was 8.3 points. Women that reported a "poor" relationship with their partner presented the highest scores of depression symptoms, and the number of children was a predictor of these symptoms.

**Conclusion:** Most participants presented no depression symptoms. Behavioral and reproductive factors were associated with depression symptoms among rural women.

## Resumo

**Objetivo:** Identificar os sintomas de depressão e a influência de variáveis sociodemográficas, econômicas, comportamentais e de saúde reprodutiva sobre o escore dos sintomas de depressão em mulheres em idade fértil, residentes na área rural do município de Uberaba-MG.

**Métodos:** Estudo observacional e transversal com 280 mulheres. Foi utilizado o *Inventário de Depressão de Beck*. Na análise bivariada, foram usados o Teste *t-Student* e correlação de *Pearson*. Para a análise multivariada, a regressão linear múltipla.

**Resultados:** Entre as participantes, 18,2% foram classificadas com sintomas de depressão. O escore médio foi de 8,3 pontos. As mulheres que tinham convivência "ruim" com o companheiro apresentaram maior escore dos sintomas de depressão e o número de filhos foi preditor desses sintomas.

**Conclusão:** A maioria das participantes não apresentou sintomas de depressão. Fatores comportamentais e reprodutivos estiveram associados com os sintomas de depressão entre as mulheres rurais.

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## Introduction

The World Health Organization estimates that 350 million people live with depression worldwide.

<sup>(1)</sup> Depression affects more women than men, and it is more significant in populations living in conditions of poverty and structural deprivations.<sup>(2)</sup> Women present vulnerability to symptoms of anxiety and depression, particularly associated with the reproductive period.<sup>(3)</sup> The etiology of depression throughout the reproductive life period is due to several factors, including social, psychological, and biological aspects.<sup>(4)</sup> Some factors that may contribute to this problem are related to rural area and the exposure of women from these areas to certain circumstances, conditions, and behaviors that may make them more vulnerable to depression.<sup>(5)</sup>

International studies with rural women evidenced the prevalence of depression in this population. A study conducted in Malaysia evidenced it in 9.2% of the participants.<sup>(6)</sup> In another study conducted with rural women from Lithuania, 47.3% presented low level of depression and 27% presented high or very high levels.<sup>(7)</sup> Similar results were verified with Latin rural women, in which half the participants presented potential for depression.<sup>(8)</sup> Differently from previous findings, in research conducted in rural communities of Honduras the prevalence of major depression was relatively low (2.7%).<sup>(9)</sup> However, in a study with middle-aged women (between 40 and 60 years) living in rural areas the prevalence varied according to the place of study, that is, 86.7% in Punjab, India<sup>(10)</sup> and 11.4% in China.<sup>(11)</sup>

Studies suggest that multiple factors are associated with the levels of depression among rural women, including: increased age, low educational level,<sup>(7)</sup> divorce,<sup>(7,8)</sup> physical violence,<sup>(9)</sup> reduced social network, little social support,<sup>(7)</sup> regular relationship with family members,<sup>(9)</sup> stress, and suicidal tendencies.<sup>(7)</sup> The identification of these factors may support the understanding of the reasons that contribute to depressive symptoms in the rural population. There are stressors that are specific to the rural environment, such as isolation, reduced social contact, limited access to health

services and health professionals, distance, poor roads, transport-related expenses, declining agricultural economy, irregular income, and financial and educational disadvantages.<sup>(5)</sup>

In addition to rural labor, these women often do the household work, a fact that may worsen their physical, temporal, and mental conditions with the execution of multiple activities.<sup>(12)</sup>

In view of this, it is important to early detect, diagnose and treat, and to provide timely care to mental disorders in primary health care in order to reduce the negative impact caused on the social and work development of the affected individual.<sup>(9)</sup>

The rural population presents specificities that should be considered: cultural context, socioeconomic factors, and difficult access to healthcare services, particularly specialized mental and reproductive healthcare services. Therefore it is essential to value the health of the rural population considering their different life and work conditions, especially in relation to depression, characterized as one of the main mental diseases that affect women.

The rural context should be further studied to change this scenario so that the difficulties inherent to the rural area undergo changes by means of effective public policies respecting their culture and needs, and quality support from health services and professionals that often represent their main/only option of access.

In relation to women, a gap was evidenced in relation to their mental health. There are few studies addressing depression symptoms, particularly among rural women.

The identification of social, economic, behavioral, and reproductive health factors is essential as they may contribute and influence depression symptoms, impacting women's quality of life and that of their family members.

This study aimed to contribute to the implementation of actions focused on mental health care for rural women.

The aforementioned facts evidence the need for national research identifying depression symptoms in women living in rural areas, and the influence of certain factors.

Therefore the objectives of the present study were to identify depression symptoms and the influence of sociodemographic, economic, behavioral, and reproductive health variables on the score of depression symptoms in women of childbearing age living in the rural area of the municipality of Uberaba, state of Minas Gerais (MG).

## Methods

This observational study, with a cross-sectional design, was conducted with women of childbearing age living in the rural area covered by the Santa Rosa Family Health Strategy (FHS) in the municipality of Uberaba, state of Minas Gerais. Four FHS teams are responsible for the rural area of this municipality.

Initially, all the rural FHS teams of the municipality were contacted. The Santa Rosa FHS rural team was selected for data collection field. Based on the list of women living in the rural area of the municipality the options of choice of the mentioned team were: higher number of women of childbearing age (15 to 49 years) and full staff of community health workers (CHWs), covering visits in the whole area and with all the women selected to participate in the study.

Inclusion criteria were women living in the rural area covered by the Santa Rosa FHS of the municipality of Uberaba - MG for over a year; aged between 15 and 49 years, with orientation in space, time, and person, and no cognitive alterations.

A pilot study was conducted with five women that were excluded from the analysis. The instruments required some adjustments, which were performed in order to enable better adequacy.

Data collection was developed at the home of the participants between October 2014 and May 2015. During the visits, a previously available list with the name of the women that would be included in the study, by area of coverage of each CHW, was used as a reference. All the visits were conducted with the CHWs as they were familiar

with both the region and the women. The interviews were conducted by only one researcher in a private place, without the presence of the CHW or any other individual in order to ensure confidentiality and privacy.

Although the data collection instruments could be self-administered, interviews were conducted in order to avoid any possibilities of difficulties related to reading or interpreting the questions, as this could affect the answers.

At first, there were 345 women in the list provided by the FHS that met the inclusion criteria; of these, five participated in the pilot study. A total of 122 participants were excluded for different reasons (moving out of the rural area, were not found at home after three attempts of the interviewer, death, out of age, refusal, and cognitive decline); 62 women that were not in the initial list were included as they met the inclusion criteria at that moment. In the end, a total of 280 women participated in the study.

Four instruments were used for data collection: sociodemographic, economic, behavioral, and reproductive health characterization instruments, and Beck's Depression Inventory - BDI.

The first three instruments were designed based on the literature and on national and international scientific research. They were submitted to content evaluation and validation by three experts in the area.

The fourth instrument, BDI, is an instrument used to measure depression symptoms worldwide. It consists of 21 questions. Its items refer to sadness, pessimism, feelings of failure, dissatisfaction, feelings of guilty, feelings of punishment, self-deprecation, self-accusations, suicidal thoughts, crying crises, irritability, social isolation, indecision, body image distortion, inhibition to work, sleep disorders, fatigue, loss of appetite, loss of weight, somatic concern, and low libido. Each question contains four items whose scores range from zero to three points, allowing a total of 63 points. The following cut-off points were considered: lower than 15 are considered normal or without indication of depression; between 16 and 19 are indicative of dysphoria or

mild depression; scores between 20 and 29 are indicative of moderate depression, and above 30 are indicative of severe depression.<sup>(13)</sup>

The total score of the participants in the BDI was also considered in the present study. This instrument is publicly accessible, self-applicable, and has already been tested and validated to the Portuguese language. It is used in research with similar objectives.

The sociodemographic, economic, behavioral, and reproductive health variables investigated were: age, educational level, skin color, marital status, paid occupation, personal income, value of the personal income, family income, physical activities, recreational activities, smoking, chronic disease, relationship with the partner, number of people living in the house, pregnancy, live children, occurrence of miscarriage/abortion, and age of the woman in her first pregnancy.

The predictive variables used in the multiple linear regression were: age (classified quantitatively), educational level (classified quantitatively), personal income (classified into two categories: “yes”; “no”), relationship with the partner (classified into two categories: “good”; “poor”), and number of live children (classified quantitatively).

There was no separation of women with a previous diagnosis of depression.

Internal consistency of the answers to the BDI instrument was measured by the Cronbach's alpha coefficient.

Data were entered in the software EXCEL® with the use of the double entry validation technique. Statistical analysis was conducted using the software Statistical Package for the Social Sciences (SPSS) version 20.0.

In the univariate analysis, the qualitative variables were presented in the form of distribution of absolute (n) and relative (%) frequencies; for the quantitative variables: mean and median values (central tendency values), standard deviations (sd), and maximum and minimum values (variation measures).

Student's t-test and Pearson correlation were used in the bivariate analysis. Multiple linear regression was used for the multivariate analysis.

The inclusion of predictor variables in the multiple linear regression analysis considered the national and international literature pertinent to the outcome depression symptoms.

Confidence interval (CI) of 95.0% and a level of significance  $\alpha$  of 5% were considered for all the tests.

The project was submitted to the Research Ethics Committee of the Ribeirão Preto College of Nursing at the University of São Paulo - EERP-USP, and approved under CAAE 21860113.2.0000.5393.

The interviews were conducted once participants had signed two copies of the free and informed consent form. In the case of minors, authorization was requested both to the adolescent and to their legal guardian, who formalized the authorization by signing the consent form.

## Results

A total of 280 women aged between 15 and 49 years (mean age of 33.6 years,  $sd=9.8$ ) participated in the study. Most of them considered themselves as white-skinned (72.1%) and were married or living under common-law marriage (83.6%). Regarding education, the mean value was seven years of formal education ( $sd=3.3$ ) and the median was 7.0, ranging from 0 to 15 years. Most participants had between five and eight years of formal education (36.4%).

Most of them had no paid job, considered as housewives (55.7%), and without personal monthly income (45.4%). Prevalence of income from informal activities (21.8%) was observed among those presenting personal income. The predominant personal income value was one minimum wage (51.0%), and the family income ranged between one and two minimum wages (37.2%).

In relation to behavioral variables, most participants reported not practicing physical activities (80.7%), had recreational activities (54.3%), were not smokers (78.2%), had no chronic disease (73.9%), and reported having a “good” re-

relationship with their partner (91.9%). In relation to the number of people living in the house, 65.3% of the interviewees reported living with two to four people. The mean number of people living in the same house was 4.1 (sd=1.5), with a median of 4.0 individuals. The number of individuals living in the same house ranged from one to ten.

Regarding the variables related to reproductive health, most women had already become pregnant (91.0%) and reported no miscarriages/abortions (82.8%). The mean number of pregnancies was 2.8 (sd=1.7). In relation to the occurrence of miscarriages/abortions, the mean value was 1.5 (sd=0.8). The mean value for live children was 2.5 (sd=1.43) per woman. In relation to the women's age in their first pregnancy, the mean value was 19.4 (sd=4.5), with a median of 19.0 years. The age of the first pregnancy ranged between 13 and 40 years.

In relation to the depression symptoms, internal consistency measured by the Cronbach's alpha coefficient in the BDI was 0.93.

In the BDI, the mean score of the interviewees was 8.3 (sd=9.5) points with a median of 5.0 points, ranging between 0 and 45.

Among the participants, 18.2% presented depression symptoms according to the BDI; 5.0% were classified with symptoms of mild depression, 8.2% moderate depression, and 5.0% with symptoms of severe depression. Most participants (81.8%) were classified with no depression symptoms.

In the bivariate analysis, the women who reported not performing physical activities ( $p=0.02$ ), having chronic disease ( $p<0,001$ ), having a "poor" relationship with the partner ( $p<0.001$ ) and having children ( $p=0.03$ ) obtained the highest scores for depression symptoms (Table 1).

The correlation indicated that the higher the number of individuals living in the house ( $p=0.01$ ), the higher the number of live children ( $p<0.001$ ), the lower educational level ( $p=0.005$ ), and the lower the woman's age in the first pregnancy ( $p=0.007$ ), the higher the score of depression symptoms (Table 2).

**Table 1.** Comparison of sociodemographic, economic, behavioral, and reproductive health variables and the score of depression symptoms in rural women

Variables	Depression symptoms		p-value*
	Mean	Standard deviation	
Lives with a partner			0.11
Yes	8.6	10.0	
No	6.8	6.4	
Paid job			0.46
Yes	7.8	9.8	
No	8.7	9.3	
Personal income			0.58
Yes	8.6	9.8	
No	8.0	9.2	
Personal monthly income value			0.59
Less than one minimum wage	9.2	8.9	
One or more minimum wages	8.3	10.4	
Physical activity			0.02
Yes	5.9	7.8	
No	8.9	9.8	
Recreational activity			0.08
Yes	7.4	9.8	
No	9.4	9.2	
Smoking habit			0.06
Yes	10.6	10.7	
No	7.7	9.1	
Chronic disease			<0.001
Yes	12.5	11.5	
No	6.9	8.3	
Relationship with partner			<0.001
Good	7.6	9.2	
Poor	20.6	11.7	
Children			0.03
Yes	8.8	9.8	
No	5.8	7.3	
Miscarriage/Abortion			0.18
Yes	10.6	11.7	
No	8.4	9.3	

\*p-value for Student's t-test

**Table 2.** Correlation of sociodemographic, economic, behavioral, and reproductive health variables and the score of depression symptoms in rural women

Variables	Depression symptoms	p-value*
	r	
Age	0.04	0.54
Educational level	-0.17	0.005
Length of relationship	-0.03	0.66
Number of individuals living in the same house	0.15	0.01
Number of live children	0.22	<0.001
Women's age in the first pregnancy	-0.17	0.007

\*p-value of Pearson



Table 3 presents the results of the multiple linear regression analysis. The participants that reported having a “poor” relationship with their partners presented higher scores of depression symptoms (Beta=0.34;  $p<0.001$ ), even after adjustment for the other variables previously recognized in the scientific literature.

In addition to relationship with their partners, the variable number of children ( $p=0.01$ ) was a statistically significant predictor of the score of depression symptoms. Therefore, the higher the number of children the higher the score of depression symptoms.

**Table 3.** Relationship between sociodemographic, economic, behavioral, and reproductive health variables and the score of depression symptoms in rural women in a multiple linear regression model

Variables	Depression symptoms Beta	p-value*
Age**	-0.06	0.41
Educational level**	-0.08	0.24
Personal income (yes=0; no=1)	-0.01	0.83
Relationship with the partner (good=0; poor=1)	0.34	< 0.001
Number of live children**	0.18	0.01

\*p-value for the least square test; \*\*quantitative variable

## Discussion

Data from a study conducted in a rural community of Minas Gerais with a group of pregnant women and a control group of women (aged between 18 and 35 years) found mean scores in the scale of depression of 8.05 and 2.58 points, respectively.<sup>(14)</sup> This is considered a low score in comparison with the mean value for the women of the control group. The mean value among the pregnant women corresponded to the mean value found in the present study; however it is important to mention the period of pregnancy of these women, taking into account the gestational age.

A knowledge gap was observed in relation to national studies related to depression symptoms through the BDI with rural women.

However, internationally a study with African American women living in rural communities

found a mean score of 8.71 points in the BDI.<sup>(15)</sup> This result is consistent with the results found in the present study.

In Poland, an investigation with rural populations observed a mean BDI value of 9.6 points among the women<sup>(16)</sup>. In Mexico the rural women presented a mean score of 10.6 points,<sup>(17)</sup> and in Greece 10.4 points.<sup>(18)</sup>

Findings of international studies show that the mean score of depression symptoms was equal or higher than the results identified in the present study.

In the study with African American women, 81.1% presented scores within the minimum interval of the BDI and 10.2% presented mild depression symptoms.<sup>(15)</sup> These results corroborate the present research.

However, in a study conducted with rural women in Lithuania, 47.3% presented low level of depression, 25.7% moderate, and 27% high to very high level.<sup>(7)</sup> In the rural area of Kenya a predominance of rural women with depression was also observed<sup>(19)</sup>. These data are higher than the results found in the present study.

The results evidenced that a “poor” relationship with the partner is the main independent predictor of symptoms of depression in rural women. In view of the findings the number of children was also characterized as a predictor of the scores of the participants in the BDI.

A study conducted in Bangladesh with pregnant women depression was significantly associated with age and educational level, and similarly to the present study, with a poor relationship with their husband.<sup>(20)</sup> It is important to note that specifically in this mentioned study the instrument used was not the BDI, but the comparison in relation to the variable relationship with the partner is important. A review study shows that marital dissatisfaction and contention are strongly related to symptoms of depression in women.<sup>(21)</sup> This fact may be aggravated by the social, economic, behavioral, and health difficulties faced by rural women. Exposure to certain circumstances, conditions, and behaviors may expose them to higher risks of depression.<sup>(5)</sup>

An investigation with the rural population (men and women) in Haiti found that the educational level was significantly associated with the BDI score among women.<sup>(22)</sup> This fact is confirmed in a study with the rural population in Lithuania that observed that women presenting older age and lower educational level presented a significant association with depression symptoms<sup>(7)</sup> (data not identified in the present study).

The result of a study developed with patients of the Rural Health Centre of Kofinou identified that educational level is an important factor related to mental disorders. The higher the educational level the lower the presence of symptoms of anxiety, depression, and emotional distress.<sup>(23)</sup>

In a study conducted with women living in a rural area of China the authors evidenced that the participants presenting symptoms of depression had low socioeconomic level, were unemployed, older, and with low educational level.<sup>(24)</sup>

Women living in rural areas and with a low educational level presented less inclination (in comparison with those living in urban areas) to seek care in face of a mental disorder, as they have limited access to health services, mainly specialized ones, such as mental disorder-related services.<sup>(25)</sup> The prevalence of mental disorders seems to be widely comparable in rural and urban areas, however there are differences between these two environments that may have different impacts and outcomes on the health of women. In general, living in a rural area limits access to health services and stigmatizes the public health within a cultural context.<sup>(26)</sup> Therefore, the interaction among environmental, social, cultural, economic, and individual issues evidences the singularity of this population.

It is important to mention the fact that due to the characteristics of the participants (rural women) and the chosen instrument (BDI), few studies were found in the national and international literature.

In view of the existing gap in studies related to the theme, it is essential to mention the importance of further studies to deepen these issues and bring new information and subsidies for health professionals.

The number of losses (mainly due to change of address), the fact that the research was conducted in only one rural area, and its cross-sectional design (which limits the interpretations on causality) are pointed out as limitations of this study.

## Conclusion

The results revealed that most participants of the study presented no symptoms of depression. The absence of a good relationship with the partner was found to be associated with a higher score of these symptoms, and the number of children was a predictor of the BDI score. However, sociodemographic, economic, behavioral, and reproductive health factors may affect the mental health of rural women, especially those related to depression symptoms, as evidenced in the present study.

## Collaborations

Parreira BDM and Gomes-Sponholz F participated in the conception of the project, collection, analysis, and interpretation of data, writing of the article, and approval of the final version of the manuscript. Goulart BF, Ruiz MT and Silva SR collaborated in the writing of the article, critical review of its intellectual content, and approval of the final version of the manuscript.

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