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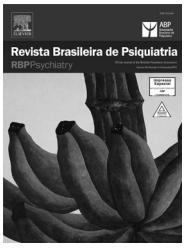

ORIGINAL ARTICLE

# Sociodemographic and personal factors related to depressive symptomatology in the Mexican population aged 12 to 65

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**DESCRIPTORS:**
Depressive Symptomatology; Sociodemographic and Personal Factors; Survey.

**Abstract**
*Objective:* To describe the prevalence of depressive symptoms in the Mexican population, aged 12 to 65 years, by identifying the main related socio-demographic and personal factors. *Methods*: Data are drawn from the National Survey on Addictions 2008 (ENA 2008), a random, probabilistic, multistage study. A randomly selected sub-sample of 22,962 persons answered the section on depressive symptomatology, measured with the Center for Epidemiologic Studies Depression Scale (CES-D). *Results*: The total prevalence for depressive symptomatology was 5.1%; the prevalence was 7.5% for women and 2.5% for men. For women, more evidence of depressive symptoms was seen in the central region, whereas for men, symptoms were homogeneous across the country. Factors related to the presence of depressive symptoms include being divorced (in women) or widowed (in men), having lower educational attainment, perceiving one's place of residence as unsafe, displaying alcohol abuse or dependence, being a regular drug consumer (in men) and having been sexually abused (males and females). *Conclusions*: The regional distribution of depressive symptomatology in women indicates the need for region-specific prevention programs that take into account the different social problems that affect women's emotional well-being. More research is also needed to support the early identification and intervention of men suffering from depression.

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**DESCRITORES:**
Sintomatologia depressiva;
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Questionário.

**Fatores sociodemográficos e pessoais relacionados à sintomatologia depressiva na população mexicana entre 12 e 65 anos**

**Resumo**
*Objetivo:* Conhecer a prevalência de sintomas depressivos a nível nacional na população de 12 a 65 anos e identificar os principais fatores sociodemográficos e pessoais associados. *Método*: Os dados foram obtidos da Pesquisa Nacional de Adições (ENA 2008), um estudo aleatório e probabilístico. Uma sub-amostra de 22.962 indivíduos responderam a seção de sintomas depressivos medida com a Escala de Depressão do Centro de Estudos Epidemiológicos (CES-D). *Resultados*: A prevalência de sintomas depressivos foi de 5,2%; 7,5% em mulheres e 2,5% em homens. Entre as mulheres, os sintomas se apresentaram mais na região central do país e, entre os homens, a distribuição geográfica foi homogênea. Os fatores que se associaram aos sintomas depressivos foram estar divorciado (mulheres) ou viúvo (homens), ter nível educacional inferior, sentir sua residência como um local não seguro, apresentar dependência de álcool, ser usuário regular de drogas (homens) e abuso sexual. *Conclusões*: A distribuição regional de sintomatologia depresiva em mulheres indica a necessidade regional de orientação para prevenção, levando em conta que as distintas problemáticas sociais podem afetar seu bem-estar emocional. Entre os homens, mais estudos são necessários para identificação precoce da depressão.

## Introduction

Depression is recognized worldwide as one of the most important public health problems. The prevalence of this disorder varies by country, but rates are typically between 4.2% to 17%.[1] Moreover, according to some estimates, by 2020 depression will be the second-leading cause of lost years of healthy life globally and the main cause in developed countries.[2]

In Mexico, studies of depression have been conducted among different populations, using a variety of methodological strategies and instruments. One of the most recent studies in the country is the National Survey of Psychiatric Epidemiology (Encuesta Nacional de Epidemiología Psiquiátrica - ENEP),[3] which was conducted in 2002 in the urban population aged 18 to 65. It used the Composite International Diagnostic Interview (CIDI) as the basis for diagnosis. During the last year of the interview, major depression was one of the most frequently reported disorders, with a prevalence of 1.5%. Another large research study was the National Survey of Performance Evaluation 2002-2003 (Encuesta Nacional de Evaluación de Desempeño, (ENED),[4] which included adults aged 18 and over from both urban and rural sectors. In this study, the definition of depression was based on a set of questions developed according to the criteria of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV), and the increased prevalence over the previous year was 4.5%. Other epidemiological studies conducted in Mexico among the general population have generated estimates for shorter periods using the Center for Epidemiologic Studies Depression Scale (CES-D), which has been widely used at the international level in community samples. This scale measures the presence of depressive symptoms in the seven days prior to the interview.[5] It should be noted that the CES-D is not an instrument for the clinical diagnosis of depression but is, instead, a screening instrument that indicates the risk of illness through the recent expression of depressive symptomatology.[6]

The most important studies that have used this scale in Mexico include those conducted in samples of adolescent students in Mexico City and those conducted in various groups, including women who live in rural areas,[7] the migrant rural population[9] and the elderly,[10] who attend health centers and have received psychoeducational intervention due to the presence of depressive symptoms.[8] There are only a few epidemiological studies that include large samples and have used the CES-D for measuring depressive symptomatology. These include the National Surveys on Addictions (Encuestas Nacionales de Adicciones - ENA), conducted in 1988 and 1998. In their sample selection, the authors considered the urban population aged between 12 and 65. The first of these studies reported that, among the adult population, 34% had displayed one or more depressive symptoms during the seven days prior to the interview.[11] The second study evaluated the presence of depressive symptomatology in relation to drug use among adolescents. This study showed that 5.2% of those who were above the cut-off point of 16 on the CES-D scale reported having experimented with substances, compared to only 1.6% of those who did not display symptoms of depressive emotional discomfort.[12]

Other studies have found that some of the socio-demographic factors related to the presence of depression in the adult Mexican population include being a woman, being older, having a low socioeconomic level, being unemployed (mainly in men) and not being married or having a partner.[3,13,14] Some of the associated personal factors include consuming drugs or alcohol and being a victim of violence or migration.[9,15,16]

Although these studies have provided an epidemiological overview of depression and other key mental health problems in various populations, there is no national study designed to include the entire population aged 12 to 65 with regional representation of both urban and rural sectors. Moreover, no recent data on the socio-demographic and personal correlates of depressive symptomatology in the Mexican population are available.

The aim of this paper is to describe the prevalence of depressive symptomatology and its main associated socio-demographic and personal factors in a representative sample drawn from the Fifth National Survey on Addictions, conducted in 2008.

## Material and methods

The description of the methodology of the Household Survey (ENA 2008) has been published in other studies.[17] Key features are described below. The survey was based on a random, probabilistic, multistage sampling design. Information was gathered through face-to-face interviews, or from a computerized version, from adults aged between 18 and 65 and teenagers aged between 12 and 17; the interviews were conducted in the respondents' homes. The protocol was approved by the Ethics Committee of the Ramón de la Fuente National Institute of Psychiatry, and all the participants read an informed consent letter (or, when their educational attainment was low or they did not know how to read or write, it was read to them); then, they signed the letter. When minors were invited to participate, parents or tutors signed the letter of consent before the minor participated in the survey; the minor also agreed to be interviewed. The research team emphasized that participating in the interview was voluntary. They also stressed the confidential nature of the information and the means by which confidentiality would be guaranteed. The ENA 2008 has national and state representativeness, and it includes both rural areas, which are defined as areas with 2,500 or fewer inhabitants, and urban sites, which have more than 2,500 inhabitants. The ENA 2008's final sample size was 51,227 interviews, with a no-answer rate of 22%.

The distribution of the sample followed the census data. Nearly two in every ten individuals were aged 12 to 17. With regard to marital status, 42.2% of the population was married, and 39.1% was single. Most of the respondents had completed secondary school at most. The majority, 75%, lived in urban sectors. Monthly family incomes for 40.1% of the total sample were between one and two times the national minimum wage.

## Instruments

All the respondents in the ENA 2008 answered twelve core sections of the survey, which included socio-demographic questions and questions related to tobacco, alcohol and drug consumption. A random sub-sample, comprising 22,962 individuals, also answered a series of additional questions that included a section on depressive symptomatology; this article contains information on the proportion of respondents who answered this section.

To assess depressive symptomatology, we used the CES-D scale, designed by Radloff[5] in 1976. The CES-D scale consists of 20 questions that evaluate depressive mood, lack of positive affection, somatic symptoms and interpersonal difficulties experienced in the week prior to the study. The questions are graded from 0 to 3 (where 0 means that he/she did not display the symptom during that week, 1 means that he/she displayed the symptom on 1 or 2 days, 2 means that the respondent displayed the symptom on 3 to 4 days and, finally, 3 means that he/she displayed the symptom from 5 to 7 days). The possible range of scores is from 0 to 60 points; the higher the score, the greater the presence of depressive symptomatology.

It is worth mentioning that this instrument was developed to detect clinical depression in community samples and that a sensitive cut-off point qualification of 16 was established previously.[6] This approach was validated by Radloff (1977) in a sample of 70 North American Caucasian patients with a clinical diagnosis of depression. It is also worth stressing that this conventional score has been methodologically disputed in different international studies because it is considered sensitive, but not very specific, which leads to an overestimation of cases. In fact, the author herself noted that this approach was a relatively arbitrary procedure.[5] Therefore, in this study, we decided to use a cut-off point of 24 points or more because previous studies conducted specifically in Latino populations have confirmed that this score is able to jointly maximize sensitivity and specificity in 97.7% and 79% of cases, respectively.[18,19,20] Later, we created a dummy variable in which a score equal to or less than 23 was coded as 0 and a score equal to or greater than 24 was coded as 1, indicating the presence of depressive symptomatology.

In this study, the internal consistency or reliability of the scale measured with Cronbach's α (alpha) was 0.85. This same index has been found in different international studies for the general population.[21]

For this analysis, we included variables from the ENA 2008 questionnaire concerning gender, age, marital status, educational attainment, family monthly income, and type of community settlement (rural or urban). To obtain respondents' views on how safe or unsafe they felt in their community of residence, we used the Scale of Risk Perception, developed by Villatoro and collaborators in 1997. It consists of six questions that evaluate the following features: sale of drugs in schools, public thoroughfares or corner stores; sexual violence in the environment; use of physical force or the threat of being hurt or killed; attacks with violence; or any other activities that threatens the security of the respondent, his/her family and/or neighbors.[22] The answers to the six questions were summarized, and a single dummy variable was produced. The internal consistency of the scale with Cronbach's alpha was 0.84.

To assess the link with personal factors, we used four indicators: 1) dependence or abuse of alcohol, 2) being an experimental drug user, 3) being a regular drug user, and 4) having been a victim of sexual abuse. The first three factors were built on the basis of the section of alcohol and drug use in the ENA 2008, which includes basic questions that have been previously validated in national[23] and international[24] household surveys. Specifically, alcohol abuse/dependence was measured on the basis of the DSM-IV definition.[25] Experimental drug consumption refers to the use, between one and five times, of one or more substances included in the questionnaire as follows: opium and its by-products, tranquilizers, sedatives, amphetamines, marijuana, cocaine, crack, hallucinogens, inhalants, heroine or methamphetamines. Regular consumption was defined as use on more than five occasions of one or more substances. Finally, sexual abuse was measured using an indicator developed and validated in previous studies by Ramos and collaborators (1998)[26] that

explores whether the respondent has been ever forced, hit, or threatened in some way to engage in sexual relations without his/her consent.

## Analysis

To assess the relationship between depressive symptomatology and the personal and sociodemographic variables considered, a univariate analysis was performed as a first step. The final model was tested through multiple logistic regression analysis, considering the sample design of the multistage study with a different probability of selection of the interviewees, because only one individual per household was randomly selected. This analysis was modeled using the svy command in STATA version 11 (StataCorp, Texas, USA).

Depressive symptomatology was categorized as a dummy variable, and the predictive variables included in the analysis were coded according to the options shown in Table 1. When a variable had more than one category, the first option was used as a reference.

## Results

Depressive symptom prevalence during the seven days prior to the study was 5.1% (CI 95% = 4.7-5.6) nationwide. The percentage of females who mentioned depressive symptoms was 7.5% (CI 95% = 6.8-8.3), whereas in males, the prevalence was 2.5% (CI 95% = 2.1-3.0). We found that in urban settings, the prevalence was 5.3% (CI 95% = 4.7-5.8), and in rural settings, the prevalence was 4.6% (CI 95% = 3.9-5.4).

### *Regional variations*

Figure 1 shows the regional variations of depressive symptoms by gender. This analysis was based on the confidence intervals estimated for each region, considering the survey design. The results showed that regional behavior was very similar for both genders. Women living in the central region, however, showed a higher prevalence of depressive symptoms than those living in the northwestern or southern regions.

### *Factors related to depressive symptomatology*

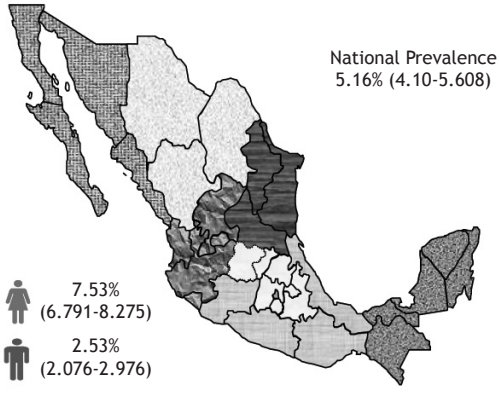
When analyzing how depressive symptomatology is distributed among the various socio-demographic groups by gender, we found that comparisons were statistically significant ($p < 0.001$) for almost all the variables analyzed when using the $x^2$. Only the kind of settlement (urban or rural) was insignificant for both men and women (Table 1).

We observed that in women, depressive symptomatology progressively increased with age, while there were some fluctuations in this linear age relationship for men. Depressive symptoms increased for the group aged 18 to 29, decreased for the group aged 30 to 39 and increased again for the two remaining older male cohorts. Divorcées, followed by women who were separated or widowed, displayed the highest rates of depressive symptoms. Single women displayed the lowest depression rates. Depressive symptoms were most prevalent in male widowers and in separated or divorced men. Married men were the least affected. Both genders reported that as education level increased, depressive symptomatology significantly decreased. People who had studied at a university or completed a postgraduate course had the lowest prevalence of depressive symptoms in comparison with those who had not completed higher education or who had never attended school. Depressive symptoms were highest for both genders among those who earned less than the minimum wage and were significantly lower in those respondents who earned more than six times the minimum wage. There were no significant setting differences because both men and women who lived in urban areas were as likely as those who lived in rural settings to be affected by depressive symptomatology. On the other hand, there was a strong effect of community safety. Depressive symptomatology was lower for both women and men who regarded their community as a safe place to live, compared to those who perceived their community as unsafe.

Personal variables also impacted the rate of depressive symptoms. Depressive symptoms were higher for both men and women who displayed alcohol abuse or dependence, who reported experimental or regular consumption of medical or illegal drugs, or who had experienced sexual abuse.

The results of our multiple logistic regressions, conducted separately for each gender, are shown in Tables 2 and 3. To estimate each odds ratio, we used the Enter Method, modeling the sample design as described in the section on data analysis. Moreover, due to the variability of this problem at the national level, the region of the country was included as a control variable in the regressions.

For females, the results indicated that being divorced increased the risk of depressive symptoms 2.2 times compared with the risk for married women. Moreover, those with lower educational attainment, especially those who had not completed university degrees, were at greater risk of having depressive symptoms. Perceiving one's place of residence as




| Geographic Distribuition by Regions | Women | | Men | | Total | |
|---|---|---|---|---|---|---|
| | % | CI | % | CI | % | CI |
| Northwestern | 5.23 | 3.545-6.911 | 1.85 | 0.807-2.890 | 3.57 | 2.548-4.597 |
| Northcentral | 6.23 | 4.311-8.149 | 2.22 | 1.038-3.411 | 4.25 | 3.096-5.406 |
| Northeastern | 5.74 | 4.095-7.388 | 2.47 | 0.982-3.960 | 4.14 | 3.080-5.207 |
| Westerm | 8.13 | 6.174-10.089 | 2.98 | 1.366-4.592 | 5.60 | 4.273-6.924 |
| Federal District | 9.17 | 5.936-12.409 | 2.74 | 0.508-4.966 | 6.26 | 4.271-8.281 |
| Central | 8.70 | 7.106-10.301 | 2.72 | 1.842-3.601 | 5.91 | 4.933-6882 |
| Southern-Central | 8.13 | 6.245-10-020 | 2.37 | 1.347-3.394 | 5.45 | 4.373-6.533 |
| Southern | 5.28 | 3.977-6.586 | 2.40 | 1.477-3.331 | 3.92 | 3.118-4.728 |

**Figure 1** Regional distribuition of depressive symptomalogy in people aged 12 to 65.

**Table 1** Prevalence of depressive symptomatology by ENA 2008 socio-demographic variables (n = 22,962)

| | Women | | | Men | | |
|---|---|---|---|---|---|---|
| | n | NCS* | %** | n | NCS* | %** |
| **Age (in years)** | | $X^{2***} = 25.802$; $p \leq 0.001$ | | | $X^2 = 25.273$; $p \leq 0.001$ | |
| From 12 to 17 | 2,089 | 133 | 6.3 | 2,089 | 36 | 1.7 |
| From 18 to 29 | 3,662 | 248 | 6.8 | 3,170 | 92 | 2.9 |
| From 30 to 39 | 2,648 | 185 | 7.0 | 2,284 | 39 | 1.7 |
| From 40 to 49 | 2,648 | 172 | 9.4 | 1,741 | 47 | 2.7 |
| From 50 to 65 | 1,854 | 172 | 9.3 | 1,604 | 62 | 3.8 |
| **Marital status** | | $X^2 = 59.679$; $p < 0.001$ | | | $X^2 = 24.648$; $p < 0.001$ | |
| Married | 5,107 | 384 | 7.5 | 4,620 | 101 | 2.2 |
| Common-law marriage | 1,597 | 156 | 9.8 | 1,327 | 40 | 3.0 |
| Separated | 466 | 55 | 11.8 | 187 | 7 | 3.8 |
| Divorced | 136 | 21 | 15.7 | 72 | 2 | 3.1 |
| Widow/widower | 381 | 40 | 10.4 | 91 | 9 | 9.7 |
| Single | 4,386 | 254 | 5.8 | 4,591 | 116 | 2.5 |
| **School level** | | $X^2 = 142.567$; $p < 0.001$ | | | $X^2 = 27.891$; $p < 0.001$ | |
| Graduate and postgraduate | 1,225 | 37 | 3.0 | 1,251 | 7 | 0.5 |
| High school | 2,368 | 148 | 6.3 | 2,193 | 62 | 2.8 |
| Middle school | 3,927 | 237 | 6.0 | 3,731 | 88 | 2.4 |
| Elementary school | 2,305 | 228 | 9.9 | 1,934 | 55 | 2.9 |
| Unfinished elementary school | 1,627 | 170 | 10.5 | 1,399 | 47 | 3.3 |
| Never studied | 581 | 89 | 15.3 | 348 | 13 | 3.8 |
| **Monthly income** | | $X^2 = 29.695$; $p < 0.001$ | | | $X^2 = 23.025$; $p < 0.001$ | |
| Over 6 minimum wages | 939 | 47 | 5.0 | 869 | 9 | 1.1 |
| From 2 to 6 minimum wages | 4,154 | 265 | 6.4 | 3,969 | 81 | 2.0 |
| From 1 to 2 minimum wages | 4,334 | 363 | 8.4 | 3,959 | 115 | 2.9 |
| Less than 1 minimum wage | 1,326 | 128 | 9.7 | 1,120 | 44 | 3.9 |
| **Kind of settlement** | | $X^2 = 3.247$; $p = 0.072$ | | | $X^2 = 0.003$; $p = 0.954$ | |
| Rural | 2,513 | 168 | 6.7 | 2,392 | 60 | 2.5 |
| Urban | 9,560 | 741 | 7.8 | 8,497 | 215 | 2.5 |
| **Perception about his/her community** | | $X^2 = 74.127$; $p < 0.001$ | | | $X^2 = 47.317$; $p < 0.001$ | |
| Safe | 8,038 | 488 | 6.1 | 7,146 | 127 | 1.8 |
| Unsafe | 4,036 | 422 | 10.5 | 3,742 | 148 | 4.0 |
| **Alcohol abuse-dependence** | | $X^2 = 221.385$; $p < 0.001$ | | | $X^2 = 159.003$; $p < 0.001$ | |
| With abuse-dependence | 204 | 71 | 34.8 | 1,101 | 90 | 8.2 |
| Without abuse-dependence | 11,870 | 839 | 7.1 | 9,788 | 185 | 1.9 |
| **Kind of drug consumption** | | $X^2 = 28.351$; $p < 0.001$ | | | $X^2 = 99.38$; $p < 0.001$ | |
| Non drug consumer | 11,753 | 860 | 7.3 | 9,875 | 219 | 2.2 |
| Experimental drug consumer | 196 | 30 | 15.4 | 527 | 10 | 1.9 |
| Regular drug consumer | 125 | 19 | 15.2 | 487 | 46 | 9.4 |
| **Sexual abuse** | | $X^2 = 356.531$; $p < 0.001$ | | | $X^2 = 77.352$; $p < 0.001$ | |
| Sexually abused | 241 | 95 | 39.3 | 28 | 8 | 28.5 |
| Noy sexually abused | 11,832 | 815 | 6.9 | 10,860 | 267 | 2.5 |

*NCS = Population with depressive symptomatology.
**Percentage of people with depressive symptomatology within the line category.
***Comparisons of $x^2$ are between each gender.

**Table 2** Socio-demographic and personal variables related to depressive symptomatology in female population

| | Odds ratio | 95% Confidence Interval | p |
|---|---|---|---|
| **Age (in years)** | | | |
| From 12 to 17 | 1.000 | | |
| From 18 to 29 | 1.022 | 0.643-1.624 | 0.928 |
| From 30 to 39 | 0.823 | 0.509-1.330 | 0.426 |
| From 40 to 49 | 1.144 | 0.722-1.810 | 0.567 |
| From 50 to 65 | 0.757 | 0.434-1.322 | 0.328 |
| **Marital status** | | | |
| Married | 1.000 | | |
| Common-law marriage | 1.113 | 0.757-1.636 | 0.586 |
| Separated | 1.115 | 0.633-1.964 | 0.707 |
| Divorced | 3.249 | 1.592-6.632 | 0.001 |
| Widow | 1.206 | 0.688-2.115 | 0.513 |
| Single | 0.840 | 0.568-1.244 | 0.384 |
| **Maximum education level attained** | | | |
| University degree | 1.000 | | |
| High school | 2.432 | 1.257-4.705 | 0.008 |
| Middle school | 2.603 | 1.364-4.969 | 0.004 |
| Elementary school | 4.405 | 2.212-8.771 | < 0.001 |
| Unfinished elementary school | 5.847 | 2.827-12.092 | < 0.001 |
| Never studied | 8.618 | 3.986-18.633 | < 0.001 |
| **Monthly economic income** | | | |
| Over 6 minimum wages | 1.000 | | |
| From 2 to 6 minimum wages | 0.0926 | 0.554-1.550 | 0.771 |
| From 1 to 2 minimum wages | 1.091 | 0.598-1.988 | 0.777 |
| Less than 1 minimum wage | 1.350 | 0.749-2.432 | 0.318 |
| **Kind of settlement** | | | |
| Rural | 1.000 | | |
| Urban | 1.279 | 0.973-1.681 | 0.078 |
| **Living in community** | | | |
| Safe | 1.000 | | |
| Unsafe | 1.748 | 1.317-2.322 | < 0.001 |
| Alcohol abuse-dependence | 6.318 | 3.287-12.146 | < 0.001 |
| Experimental drug consumer | 1.613 | 0.688-3.780 | 0.271 |
| Regular drug consumer | 0.730 | 0.282-1.888 | 0.517 |
| Sexual abuse | 6.833 | 4.340-10.758 | < 0.001 |

**Table 3** Socio-demographic and personal variables related to depressive symptomatology in male population

| | Odds ratio | 95% Confidence Interval | p |
|---|---|---|---|
| **Age (in years)** | | | |
| From 12 to 17 | 1.000 | | |
| From 18 to 29 | 1.721 | 0.955-3.101 | 0.071 |
| From 30 to 39 | 1.295 | 0.573-2.929 | 0.534 |
| From 40 to 49 | 1.988 | 0.781-5.064 | 0.149 |
| From 50 to 65 | 2.851 | 1.054-7.707 | 0.039 |
| **Marital status** | | | |
| Married | 1.000 | | |
| Common-law marriage | 1.091 | 0.570-2.086 | 0.793 |
| Separated | 1.171 | 0.470-2.917 | 0.735 |
| Divorced | 1.547 | 0.414-5.780 | 0.516 |
| Widow | 4.278 | 1.613-11.344 | 0.004 |
| Single | **1.743** | **0.847-3.590** | **0.131** |
| **Maximum education level attained** | | | |
| University degree | 1.000 | | |
| High school | 4.562 | 1.352-15.392 | 0.014 |
| Middle school | 3.934 | 1.165-13.282 | 0.027 |
| Elementary school | 5.126 | 1.343-19.560 | 0.017 |
| Unfinished elementary school | 6.387 | 1.757-23.213 | 0.005 |
| Never studied | 5.501 | 1.155-26.192 | 0.032 |
| **Monthly economic income** | | | |
| Over 6 minimum wages | 1.000 | | |
| From 2 to 6 minimum wages | 1.517 | 0.567-4.058 | 0.407 |
| From 1 to 2 minimum wages | 2.215 | 0.818-5.998 | 0.118 |
| Less than 1 minimum wage | **2.845** | **0.925-8.752** | **0.068** |
| **Kind of settlement** | | | |
| Rural | 1.000 | | |
| Urban | 1.199 | 0.718-2.002 | 0.487 |
| **Living in community** | | | |
| Safe | 1.000 | | |
| Unsafe | 1.812 | 1.217-2.696 | 0.003 |
| Alcohol abuse-dependence | 3.869 | 2.431-6.159 | < 0.001 |
| Experimental drug consumer | 0.627 | 0.285-1.381 | 0.247 |
| Regular drug consumer | 2.295 | 1.256-4.193 | 0.007 |
| Sexual abuse | 9.903 | 2.724-36.007 | 0.001 |

unsafe also increased the risk of displaying depressive symptoms. Likewise, the presence of alcohol abuse/dependence or prior sexual abuse increased the risk 5.3 and 5.8 times, respectively (Table 2).

Men aged 50 to 65 were 1.8 times more likely to display depressive symptoms than those aged 12 to 17. Being a widower increased the risk 3.2 times. Having less than an university degree and perceiving one's place of residence as unsafe cumulatively increased risk by 81.2%. Displaying alcohol abuse/dependence, being a regular drug consumer or having been a victim of sexual abuse were also significantly related to depressive symptomatology (Table 3).

## Discussion

We report recent information on the national prevalence of depressive symptomatology, as well as the geographical distribution and the socio-demographic and personal factors related to this growing problem. To obtain this information, we used a representative sample of Mexicans, which included a population aged 12 to 65 living in both rural and urban communities.

In this context, the national prevalence of depressive symptomatology during the week prior to the study was 5.1% for the entire population. For the female population, the prevalence was higher, at 7.5%, compared to 2.5% for men. It is worth noting that, due to different methodological designs, populations, measuring instruments and variations in CES-D cut-off scores between our research and previous study designs, the results obtained in this study are not absolutely comparable with prior literature, constituting a limitation of the study. In addition to the aforementioned limitations, the CES-D, which is a screening test for community samples, only detects possible cases of depression. It does not provide a clinically verified diagnosis of the disorder.[6] Moreover, most of the previous studies that have used this instrument have set a score of 16 as the cut-off point.

Several studies have questioned the high prevalence of depressive symptomatology reported previously because this low cutoff may increase the rate of "false positives". The population scoring above this cut-off may also include participants with only with mild or transitory symptoms.[27] Therefore, a score of 24 was selected as the cut-off point in this paper. Studies conducted in Mexico and other Latin American countries have suggested that a range from 24 to 26 increases the sensitivity and specificity of the instrument.[18-20] Likewise, in studies of Mexican rural populations, Salgado (1994)[6] recommended that the analysis of results with the CESD not be interpreted using pre-established cut-off points because it is important to take cultural variability into account.

A comparison of our results by kind of setting found that depressive symptomatology was similar in rural and urban settings and that the presence of depressive discomfort affected both communities in the same way. However, because most epidemiological studies of mental health nationwide have focused on urban populations or have been restricted to certain age groups, the estimates in this study cannot be compared with previous studies. Nevertheless, evidence drawn from our data shows that the prevention and treatment of mental health problems should be extended to rural regions because there is very little information on the etiology, manifestation and treatment needs of the rural community.[28] In this context, our study provides an initial overview of the level of depressive symptomatology in these communities.

In line with previous literature, we found a higher predominance of women affected by depressive symptoms than men. These results are likely influenced both by biological issues and by the cultural norms of each region.[29]

Females in the central region had a greater level of symptomatology than those in the northwestern and southern regions. It is important to consider that the states that are part of this region have high rates of social problems, including drug and alcohol consumption and migration, which could be related to the presence of emotional uneasiness in women. The data on drug and alcohol consumption, drawn from a recent survey of addiction,[17] indicate that several of the states in this region display the highest prevalence of the consumption of illicit substances. Moreover, according to national statistics, Guanajuato and the State of Mexico are among the top 10 states for migration rates. Snyder and collaborators (2007)[30] mention that the wives of migrants display high rates of affective disorders, such as depression, anxiety, and "feeling nervous." Their children display high rates of drug and alcohol abuse. Both problems are apparently related to the absence of the male figure at home, as well as to family reorganization and to the inclusion of women in the labor market when remittances are unstable.[31] Men's rate of symptoms was not affected by region, possibly indicating that, for them, in addition to their overall lower rates of symptoms, there is a countrywide cultural pattern that makes the expression of this symptomatology more homogeneous and difficult to detect.

Our multiple logistic regression identified which sociodemographic and personal variables were most related to depressive symptomatology in the Mexican population. Having low educational attainment, together with a perception of insecurity in one's place of residence, are indicative of perceived "backwardness" and/or social inequity for both men and women. Moreover, the literature notes that perceived community disorder, whether in a physical form (such as graffiti, garbage, deserted houses) or a social form (such as prostitution, disruptive behavior, delinquency), and its resulting fear of crime or victimization[32] jointly affect general well-being and mental health.[33] Poor social conditions affect the Mexican population and may make certain locales more vulnerable to depressive discomfort.

Divorce increased the risk that women would display depressive symptomatology. In line with our finding, national studies have documented how divorced women, who are also typically the heads of their household, are more likely to display a depressive disorder. These women undergo multiple major life transitions, including changes in marital, social and labor status, and new relationships with their former spouse and children, in a short period of time. In addition, divorcees undertake a greater proportion of tasks related to child rearing, work and maintaining a household than do their married counterparts.[13,34] Men between the ages of 50 and 65 are more likely to display depressive symptomatology. It is important to identify and treat depression in elderly men. They may experience more stress, particularly if they have changed or modified traditional gender roles, such as being the family provider.

The loss of this cultural role, e.g., through retirement, leads to a loss of self-esteem that can cause depression and can sometimes lead to a high risk of suicide.[35] In addition, we found that being a widower increased the risk of developing depressive symptomatology. This supports prior results from Burin (1990),[36] who noted that men who have lost their partners are more likely to develop depressive discomfort because, among other factors, they find it culturally complicated to care for and pay attention to themselves without a spouse.

Many of our results are intuitive and coincide with international studies. Both our studies and the existing literature suggest that single people and those with low educational attainment show higher indices of depressive symptomatology.[37]

Sexual abuse is a significant predictor of depressive symptomatology for both men and women. It is crucial to make health workers aware of the need for the timely detection of this traumatic event. Sexual abuse creates a stigma, and victims may hide what they have experienced. Men, in particular, may keep silent because of perceived cultural and gender issues. Indeed, the literature confirms that people who have been sexually abused are more likely to develop depression, suicidal ideation, post-traumatic stress disorder and anxiety.[38]

Finally, the consumption of alcohol and other substances increases the risk for depressive symptomatology. The depressive risk related to the consumption of alcohol was significant for both genders, while the consumption of other illegal substances was only a significant predictor for men. International research has questioned whether the use of toxic substances is a symptom of underlying depression or a dysfunction that occurs simultaneously.[39] In Mexico, data from the ENEP showed that one third of individuals with substance abuse disorders also had an affective disorder. Moreover, half the men who displayed substance abuse or dependence had also previously displayed depressive symptoms.[16] A survey conducted among female middle and high school students found that 60.7% of the women who had consumed drugs displayed depressive symptomatology, whereas only 25.2% of the non-consumers reported symptoms.[40] Given that drug consumption is a risk factor for displaying other mental health problems, it is important to provide integrated treatment.

### *Limitations of the study*

This study was conducted in a national sample, which enabled us to describe the distribution of depressive symptoms in Mexico and their related factors. Nevertheless, one study limitation is derived from the study design because it is transversal and correlational. Information drawn from it can only be interpreted as elements related to the problem under study, although the statistical design could imply a possibly causal relationship.

Another limitation is derived from the use of the CES-D, which is a list of symptoms rather than a diagnostic test. The results described here should be regarded more as a risk-based screen than as a possible diagnosis.

## Conclusion

The regional distribution of depressive symptomatology illustrated in this work clearly shows which regions would benefit from enhanced prevention and intervention programs, especially those designed for women. Social problems, such as drug and alcohol consumption or migration, may disproportionately affect women's emotional well-being. It is necessary to conduct more research at the national level to detect depression and other mental health problems in men in a timely fashion. As well as more research on the most vulnerable populations, such as rural and indigenous settlements that would provide greater clarity about the way they express their discomfort. Likewise, it is important to consider the influences of socio-demographic and personal factors on the rate of suffering in both men and women.

Finally, it is worth mentioning that although women showed a higher prevalence of depressive symptomatology, the socio-demographic and personal factors related to discomfort were almost the same for both genders. These discoveries indicate that it is necessary to intervene in the same areas for both men and women. However, it is also necessary to consider specific features related to the social construction of each gender because the meanings attributed to the depressive experience may vary subjectively between genders.

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*** Significant*
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