

# DEPRESSION OF THE PERUVIAN ELDERLY ADULT AND ASSOCIATED SOCIODEMOGRAPHICAL VARIABLES, ANALYSIS OF ENDES 2017

DEPRESIÓN DEL ADULTO MAYOR PERUANO Y VARIABLES SOCIODEMOGRÁFICAS ASOCIADAS: ANÁLISIS DE ENDES 2017

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## ABSTRACT

**Objective:** To determine the sociodemographic variables associated with depression in the elderly of Peru based on the information obtained through the Demographic and Family Health Survey (ENDES) of the year 2017 carried out by the National Institute of Statistics and Informatics (INEI). **Methods:** An observational, correlational and cross-sectional study that used a probabilistic sample of 4917 older adults (60 years and over). For the determination of depression in the population, the Patient Health Questionnaire (PHQ) of 9 questions included in the health questionnaire in the mental health section of ENDES 2017 was used as an instrument. **Results:** The prevalence of depression in the Peruvian elderly in 2017 was 14.2%. As sociodemographic variables associated with depression were the female sex [OR 1.995 (1.684 -2.364)]; lack instruction [ORaj 2.524 (2.126-2996)]; the age over 75 years [ORaj 1.763 (1.494 2.080)]; live in a rural area [ORaj 1.410 (1.198 -1.659)]; and be poor [ORaj 1.456 (1.229 - 1.724)]. It was not associated with disability ( $p = 0.704$ ). [ORaj 1.103 (0.663-1835)]. **Conclusion:** It was concluded that the prevalence of depression in the Peruvian adult is high. Among the sociodemographic variables that were identified as risk factors for presenting depression were female sex, lacking education, age over 75, living in rural areas and being poor.

**Key words:** Elderly; Depression; PHQ-9 Questionnaire; Risk factors; Perú. (source: MeSH NLM)

## RESUMEN

**Objetivo:** Determinar las variables sociodemográficas asociadas a la depresión en el adulto mayor peruano a partir de la información obtenida mediante la Encuesta Demográfica y de Salud Familiar (ENDES) del año 2017 realizada por el Instituto Nacional de Estadística e Informática (INEI). **Métodos:** Estudio observacional, correlacional y de corte transversal que usó una muestra probabilística de 4917 adultos mayores (60 años a más). Para la determinación de depresión en la población se usó como instrumento el Patient Health Questionnaire (PHQ) de 9 preguntas, incluido en el cuestionario de salud en la sección de salud mental del ENDES 2017. **Resultados:** La prevalencia de depresión en el adulto mayor peruano en el año 2017 fue de 14,2%. Como variables sociodemográficas asociadas a la depresión fueron el sexo femenino [ORaj 1,995 (1,684 -2,364)]; carecer de instrucción [ORaj 2,524 (2,126 - 2,996)]; la edad mayor de 75 años [ORaj 1,763 (1,494 - 2,080)]; vivir en una zona rural [ORaj 1,410 (1,198 -1,659)]; y ser pobre [ORaj 1,456 (1,229 - 1,724)]. No hubo asociación entre depresión y discapacidad ( $p=0,704$ ). [ORaj 1,103 (0,663 - 1,835)]. **Conclusión:** La prevalencia de depresión en el adulto mayor peruano es alta. Las variables sociodemográficas que estuvieron asociadas como factores de riesgo para el desarrollo de depresión en el adulto mayor fueron de sexo femenino, el carecer de instrucción, edad mayor de 75 años, vivir en zona rural y ser pobre.

**Palabras clave:** Adulto mayor; Depresión; Cuestionario PHQ-9; Factores de riesgo; Perú. (fuente: DeCS BIREME)

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## INTRODUCTION

Nowadays, global population pyramid is undergoing a profound change. Demographic transition and increase in life expectancy have favored global population growth of those 60+, among the main parts, Latin America<sup>1,2</sup>.

According to World Health Organization (WHO) projections of population at global level, the number of people 60+ is growing more rapidly than any other age group and, by 2050, 80% of elderly will live in developing countries<sup>2</sup>. According to last population censuses, demographic transition in Peru, Latin America and the world, shows a progressive increase in 60+3 age group. The Instituto Nacional de Estadística e Informática (INEI) states that there are more than 3 million of elderly in our country, and by 2050 it is estimated that elderly will represent 8.7 million of Peruvians<sup>4</sup>. However, this aging process may be affected by physical and mental disabilities, one of the most significant is depression. This pathology impairs functioning in daily life and it is underdiagnosed and undertreated in primary care settings. Depression also increases the perception of poor health and the utilization of health care services<sup>5</sup>.

Authorities have emphasized identification of this public health problem, hence, in recent years, Patient Health Questionnaire (PHQ) has been added by Instituto Nacional de Estadística e Informática to annual Demographic and Family Health Survey. This instrument is a self-report tool that may be used in primary health-care centers and could be helpful on research<sup>6</sup>. All this does not only contribute to identify this pathology, but also variables that revolve around it, preventable or modifiable, and to elaborate effective and comprehensive policies.

Due to the necessity to study this important phenomenon, this work has the objective to determinate sociodemographic variables associated with depression in elderly, according to analysis of ENDES 2017.

## METHODS

Observational, analytical and cross-sectional study, based on data collected through Demographic and Family Health Survey of 2017 (ENDES 2017).

Population of this study was made up of every

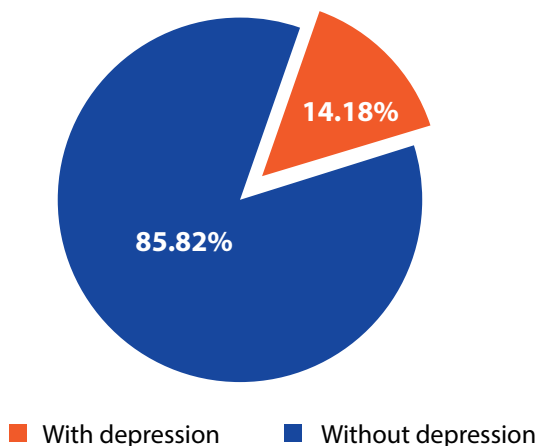
Peruvian elderly 60+ throughout 2017. Sample carried out by INEI was two-step, probabilistic, stratified, self-weighted, at the departmental level and by type of area. Sampling frame consists of statistical and cartographic information from 11th Population and 6th Housing National Censuses (2007) and 2012-2013 Update of Household Targeting System (SISFOH, for its acronym in Spanish), and updated cartographic material for this purpose within cartographic update process in order to carry out ENDES. Sampling units in urban areas were by Conglomerate and Private Home; and in rural areas, by Rural Registration Area and Private Home<sup>7</sup>.

In order to identify the independent variable (depression), Patient Health Questionnaire (PHQ) instrument was employed. This one is located at question 700 from ENDES Health questionnaire (2017) which in turn contains 9 questions whose value ranks from 0 until 3 points, scoring a final grade ranking from 0 until 27 points. To interpret results, defined by final score<sup>8</sup>, equal to or greater than 10 means depression. Validation of Peruvian PHQ-9 was carried out by mental health professionals from Ministry for Health<sup>6</sup>, in 2012.

Sex, age, level of education, poverty and disability were key variables. Age was reassembled in two groups: 60 to 75 years old and 75+. Level of education was divided in two according to absence or presence of any degree of education (early childhood, primary, secondary or tertiary education), as well as with variable "disability" (yes vs no). Variable "poverty" was established based on the quintiles, of which the first and second were considered poor. Program used for statistical analysis was Statistical Package for Social Sciences (SPSS), version 21, employing its module of complex samples according to strata, conglomerate and weighting factors of ENDES 2017. It was carried out a univariate analysis of data through determining frequencies and percentages. Subsequently, in the analytical phase, it was applied a bivariate and multivariate analysis by logistic regression in order to evaluate statistical significance level ( $p < 0.05$ ). Figures were made in Microsoft Excel 2016.

## RESULTS

Study population was composed of 4917 elderly, among whom prevalence of depression was of 14.2% (Figure 1).



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**Figure 1.** Depression in Peruvian elderly.

There was a female sex predominance, in both group with depression (67.6%) and group without depression (51.1%). Furthermore, 40.5% of elderly 75+ got depression. More than one third of elderly with depression (37.4%) did not have any level of education. On the other hand, 42.6% of elderly with depression

lived in rural areas. Moreover, two thirds of elderly with depression lived in poverty (66.9%), and disability was present in less than 3% of elderly with and without depression. In Table 1, we found descriptive data from demographic variables included in the study.

**Table 1.** Sociodemographic characteristics and depression in Peruvian elderly.

Variables	With depression n=697		Without depression n=4220	
	N°	%	N°	%
<b>Sex</b>				
Female	471	67,6%	2156	51,1%
Male	226	32,4%	2064	48,9%
<b>Age</b>				
> 75 years	282	40,5%	1174	27,8%
≤ 75 years	415	59,5%	3046	72,2%
<b>Level of education</b>				
Without education	261	37,4%	809	19,2%
With education	436	62,6%	3411	80,8%
<b>Place of residence</b>				
Rural	297	42,6%	1456	34,5%
Urban	400	57,6%	2764	65,5%
<b>Poverty</b>				
Yes	466	66,9%	2451	58,1%
No	231	33,1%	1769	41,9%
<b>Disability</b>				
Yes	18	2,6%	99	2,3%
No	679	97,4%	4121	97,7%

**Table 2.** Inferential analysis between sociodemographic characteristics and depression in Peruvian elderly.

Sociodemographic characteristics	OR	IC 95%	p value	OR (IC 95%)
<b>Bivariate analysis</b>				
Sex (female)	1,995	1,684-2,364	0,000	
Age (>75 years vs ≤ 75 years)	1,763	1,494-2,080	0,000	
Level of education (without education vs with education)	2,524	2,126-2,996	0,000	
Place of residence (rural vs urban)	1,410	1,198-1,659	0,000	
Poverty (yes vs no)	1,456	1,229-1,724	0,000	
Disability (yes vs no)	1,103	0,663-1,835	0,704	
<b>Multivariate analysis</b>				
Sex (female)	1,607	1,340-1,927	0,000	
Age (>75 years vs ≤ 75 years)	1,506	1,267-1,790	0,000	
Level of education (without education vs with education)	1,908	1,581-2,302	0,000	
Place of residence (rural vs urban)	1,238	1,014-1,511	0,036	
Poverty (yes vs no)	1,235	1,005-1,518	0,045	

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In the bivariate analysis, demographic factors associated with depression were female sex, being 75+, lack of education level, place of residence and poverty. There was no statistically significant association between depression and disability (Table 2)

In the multivariate analysis, these factors were still substantial. Female sex showed a low but significant association with depression (OR=1.607, CI 95%=1.340-1.927) versus controls. Age of 75+ (OR=1.506, CI 95%=1.267-1.790), was almost doubly probable of having depression, compared to controls. Moreover, not having an education doubled the risk of depression (OR=1.908, CI 95%=1.581-2.302), versus controls. Rural place of residence (OR=1.238, CI 95%=1.014-1.511) increased 1.2 times chances of having depression. Lastly, chances of having depression due to poverty was almost 1.2 times higher than those chances from controls (OR=1.235, IC 95%=1.005-1.518) (Figure 2).

## DISCUSSION

Mental health in elderly may be undermined due to physical, sexual, psychological, emotional or economic abuse; due to abandonment; due to inattention and disrespect, etc., which may negatively influence the development of mental illness. One of the most frequent mental illness in elderly, and that causes greater suffering, is depression, hence it is imperative to identify the factors contributing to the development of this illness in order to take action over them.

The prevalence of depression in study population was of 14.2%, which was similar to the prevalence obtained by Martha Martina Chávez according to ENDES 2014-2015 with a value close to 14.3%<sup>8</sup>, thus there was neither increase nor decrease during that three-year period.

In our study, we sought to identify demographic variables associated with depression in Peruvian elderly on the basis of ENDES 2017, which also has inferential

character towards national population. Associated factors were female sex, being 75+, lack of education, rural place of residence and poverty. These variables had been studied by other researches who agree in their determinative character for development of depression in elderly.

Paz<sup>10</sup>. in its work carried out in Metropolitan Lima and Callao found female sex was an associated risk factor towards depressive episode with OR of 1.8, similar value to that obtained by Mirkena in Ethiopia (OR: 1.72)<sup>11</sup>, and that match with results obtained in our study (OR: 1.995). This may be due to a greater exposure to psychological, physical or sexual abuse in comparison with male sex.

Regarding age, being 75+ was significantly associated with development of depression. Martina<sup>8</sup> obtained similar results in a similar study population (OR: 1.556). Elderly have witnessed the death of various relatives and friends. Moreover, this age group has many comorbidities, which could explain frequent manifestations of depression in 75+2.

Level of education was also associated with depression with an OR: 2.524, and in line with result of the study by Segura-Cardona<sup>12</sup>, which stated lower level of education increased chances of having depression. The author argued that self-rated health and self-care in elderly depended on level of education.

This study showed poverty was associated with development of depression in elderly. Ecuadorian Gómez<sup>13</sup> came to the same conclusion, since he considered low socio-economic status as one of the main risk factors that cause depression in elderly. Moreover, in a study carried out in Colombia, Paredes-Arturo found an association between depression and not having own income with an OR: 3.714. Bartwal in India<sup>15</sup> also agrees with this result. Living in poverty is often related to a lower access to healthcare and a lower recognition of the symptoms of this mental illness.

This work demonstrated that disability was little prevalent in study population, as well it could not establish any relationship between disability and depression in elderly ( $p=0.704$ ), which disagrees with the find of Martina<sup>8</sup>, who obtained an OR of 2.63.

The main limitation of this study was using secondary sources. Moreover, Demographic and Family Health Survey (ENDES) was not specifically made for arriving to diagnoses of depression, and even less to be targeted for elderly, who represent our study population. However, we can count on information gathered to be valid due to its statistical quality, because it followed a rigorous sampling for selecting study population and because it was carried out by previously trained staff.

## CONCLUSION

Sociodemographic factors associated with depression in Peruvian elderly were female sex, age greater than or equal to 75 years, rural place of residence, lack of education and poverty.

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