


ORIGINAL ARTICLE

Abuse and other factors related to depression in older Ecuadorian adults

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Abstract

Objective: To identify abuse and other risk factors associated with depression in older Ecuadorian adults using data from the 2012 Ecuador's Survey of Health, Welfare, and Aging (SABE).

Methods: This cross-sectional study analyzed data from the 2012 SABE survey, which included 5235 adults aged 60 and above. The study evaluated residence, education level, ethnic self-identification, self-perceived health and memory, loneliness, cognitive status, and abuse. Depression was assessed using the Yesavage Depression Scale, short version (YDS-SV). Categorical variables were analyzed with the Chi-square test, differences between groups were calculated with the Kruskal-Wallis test, and multiple linear regression analysis was performed. A p -value of ≤ 0.05 was considered statistically significant.

Results: The mean age was 71.39 ± 8.59 years and 55.10% of the sample were women. Abuse was absent in 72.1% (3.773) of the population. The Chi-square test indicated significant associations between depression and poor self-reported health ($P=0.000$) and indigenous ethnicity ($P=0.000$). Multiple linear regression analysis revealed that age ($P<0.001$), abuse ($p<0.001$), cognitive status ($P=0.002$), and living alone ($P=0.034$) significantly contributed to mood as assessed by the YDS-SV. No statistically significant association was found for perceived health status or place of residence (urban or rural).

Conclusions: Risk factors associated with depression in older Ecuadorian adults include advanced age, living alone, cognitive decline, poor self-perception of health and cognition, and abuse.

KEYWORDS

abuse, cognitive status, depression, elderly, loneliness

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1 | INTRODUCTION

Depression is a prevalent mental disorder among older adults, often presenting with symptoms of sadness and anhedonia.¹ The overall prevalence is approximately 11.9% in women and 9.7% in men.² The risk factors for depression in this demographic can be categorized into biological and social factors, including the age,³ educational level, cognitive decline,⁴ reduced mobility,⁵ loss of autonomy in basic and instrumental activities of daily living,⁶ sensory deprivation,⁶ loneliness,⁷ and abuse.⁸

A meta-analysis involving nearly 2 million individuals highlighted old age, especially beyond 80 years, as the most significant risk factor for depression.⁹ Furthermore, depression is more prevalent among older adults with functional impairment (82.85% vs. 57.14%), with studies showing inverse correlations between depression and age ($r=0.471$) as well as cognition ($r=0.352$) among older adults without functional impairment.⁴

Surveys conducted in Europe and the USA estimate loneliness prevalence among older adults to range between 5% and 43%.¹⁰ Several meta-analyses have identified loneliness as a risk factor for developing depression, with an odds ratio (OR) ranging from 0.41 to 17.76.⁷ In a study by Erzen E. et al., loneliness was found to have a moderately significant effect on depression.¹¹ Additionally, Özer's research demonstrated that older adults experiencing higher rates of depression also face an increased prevalence of emotional abuse, neglect, financial abuse, and physical abuse.⁸ Therefore, people living with depression tend to have reduced social activity due to feelings of loneliness.¹²

Despite extensive knowledge of depression and its risk factors, there remains a lack of specific information on depression among older adults in Ecuador. Therefore, this study aims to identify abuse and other risk factors associated with depression among older Ecuadorian adults based on the 2012 Ecuador's Survey of Health, Welfare, and Aging (SABE).

2 | METHODS

2.1 | Participants

This cross-sectional study analyzed data from 5235 participants in the 2012 SABE survey.¹³ The survey targeted individuals aged 60 or older living in the Andean mountain range and coastal regions of Ecuador. Sampling involved selecting 317 rural areas (fewer than 2000 residents) and 547 urban areas, based on the 2001 Population Census cartography. The survey methodology and manuals, which include a comprehensive 847-question questionnaire covering medical, psychosocial, and economic aspects, are publicly available.

2.2 | Measurements

Cognitive function was assessed using the Spanish version of the Mini-Mental State Examination (MMSE) short version,¹⁴ with a maximum score of 19. Scores of ≤ 13 indicated cognitive decline.

Depression was measured using the short version of the Yesavage Depression Scale (YDS-SV), where scores between 0–5 indicated euthymia, 6–9 indicated mild depression, and > 10 indicated established depression.¹⁵ Abuse was evaluated through 10 dichotomous questions, scoring 0 (absence) or 1 (presence). The total abuse score was the sum of these responses.

2.3 | Statistical analyses

Categorical variables included residence type (rural or urban), living situation (alone or not), ethnicity, self-perceived health status, self-perceived memory, and educational level. These were described using measures of central tendency and dispersion as appropriate.

The data quality assessment followed established criteria: (i) missing data $< 5\%$, (ii) difference between mean and median $\leq 10\%$ of the maximum score, and (iii) floor and ceiling effects $\leq 15\%$.¹⁶ The skewness and kurtosis coefficients were required to be within the range $[-1, 1]$.¹⁷

Mood was segmented using the YDS-SV scores to classify participants as having no depression, mild depression, or established depression. Chi-square (χ^2) tests were used to analyze these groups, with $p \leq 0.05$ considered statistically significant. The Kruskal–Wallis test examined differences among the three groups regarding age, cognitive score, and abuse, with $p \leq 0.05$ being considered statistically significant.

A multivariate analysis was performed using multiple linear regression. The YDS-SV provided a sum score, allowing for a backward stepwise linear regression model. In bivariate analysis, predictors with a p -value < 0.10 included age, abuse, cognitive status, health status, living situation, and residence area. Variance inflation factors (VIFs) assessed multicollinearity, while the Durbin–Watson statistic tested for residual autocorrelation. The model's goodness-of-fit was evaluated using the R-squared (R^2) value.

3 | RESULTS

Among the 5235 participants, 55.1% were women, and the mean age was 71.4 ± 8.6 years (Table 1). The majority (65.8%) lived in urban areas, and 91.2% lived with at least one other person. Most participants identified as mixed race (66.7%), while 55.3% reported their health status as fair. Elementary education was the highest level achieved by 77.5% of participants, and 46.4% self-reported their cognitive status as average. Abuse was absent in 72.1% (3773) of the sample.

Notably, some categorical variables had missing data (Table 2). The cognitive evaluation was missing in 8.3% of the sample, self-reported

TABLE 1 Descriptive data of the sample.

Variable	Median	Mean	SD	IQR	Asymmetry	Kurtosis
Age	70.00	71.391	8592	13.00	0.772	0.031
Cognition	15.00	14.472	3561	4.00	0.921	0.590
Depression	7.00	7411	2321	3.00	0.361	0.402

Abbreviations: IQR, interquartile range; SD, standard deviation.

health status in 0.1%, self-reported cognitive status in 8.5%, and ethnic identification in 6.39%. Analysis of educational levels excluded 30.5% of the sample due to grouping into other ununiform categories.

The Kruskal–Wallis test revealed statistically significant differences between depression and the variables of interest: age, cognition, and abuse (Table 3). We used multiple linear regression analysis to predict YDS-SV scores based on the independent variables. The final model included age ($P < 0.001$), abuse ($P < 0.001$), cognition ($P = 0.002$), health status, living alone ($P = 0.034$), and the living area (Table 4).

4 | DISCUSSION

This study utilized data from Ecuador's Survey of Health, Welfare, and Aging (SABE) to identify potential factors related to depressive

symptoms, such as age, ethnic self-identification, place of residence (rural or urban), educational level, cognitive status, self-reported health and cognition, loneliness, and abuse.¹⁸

Our analysis showed that older participants had higher levels of depressive symptoms, which aligns with other study that have shown similar results.¹⁹ A meta-analysis by Cai et al. found that more than one-third of the world's older adult population suffers from depression, with the highest prevalence in the oldest age group.²⁰ In terms of ethnicity and depressive symptoms, our study found that indigenous participants exhibited more depressive symptoms, possibly due to differences in how depression manifests across ethnic and cultural groups. However, research examining this relationship is limited.^{21,22}

Older adults living in rural areas were at greater risk of depression than those in urban areas. This finding suggests that residence plays a role in depression, potentially due to longer commute times

TABLE 2 χ^2 test (Depression is the segmentation variable).

Categories	Variable		χ^2	p	
	Cognition	Normal (n)			Pathological (n)
Normal		817	180		
Mild depression		2305	623	55.61	
Depression		599	277 ^a	0.000	
Educational level					
	Elementary	Middle School	University		
Normal	582	137	65		
Mild depression	1842	307	107	74.67	
Depression	550	39 ^a	10	0.000	
Health status					
	Excellent	Very good	Good	Regular	Bad
Normal	16	44	314	562	154
Mild depression	38	79	607	1790	634
Depression	2	4	93	511	379 ^a
Memory					
	Excellent	Very good	Good	Regular	Bad
Normal	34	98	398	401	63
Mild depression	78		970	1387	318
Depression	8	16	195	482	174 ^a
Ethnicity					
	Indigenous	Black	Mixed	Mulatto	White
Normal	84	26	745	29	128
Mild depression	315	103	2021	104	416
Depression	132 ^a	40	585	46	126
Living situation					
	Alone	With someone else			
Normal	110	982			
Mild depression	307	2846	955	0.008	
Depression	130 ^a	859			
Living area					
	Urban	Rural			
Normal	612	481			
Mild depression	1774	1379	13.08	0.001	
Depression	493	496 ^a			

^aStatistically significant for the variable.

TABLE 3 Kruskal–Wallis test, $p \leq 0.05$ statistically significant; Average range.

Variable	Normal	Mild depression	Depression	H (K-W)	p
Age (years)	2431.01	2487.07	2664.76	14.46	0.001
Cognition	2640.01	2446.56	1976.69	116.04	0.000
Abuse	2337.82	2583.24	3049.52	196.83	0.000

TABLE 4 Multiple linear regression analysis by backward elimination of factors contributing to YDS-SV scores in Older Ecuadorian Adults.

Variable	Unstandardized coefficients		Standardized coefficients		95% CI	p
	B	SE	Beta	T		
Age (years)	0.029	0.005	0.169	4.695	(0.017–0.043)	<0.001
Abuse	0.472	0.073	0.259	6.441	(0.331–0.624)	<0.001
Cognition	0.020	0.007	0.107	3.299	(0.009–0.034)	0.002
Health status	0.007	0.003	0.068	1.688	(–0.013–0.001)	0.093
Living situation	0.011	0.006	0.077	2.141	(–0.021–0.002)	0.034
Living area	0.095	0.054	0.064	1.797	(–0.010–0.209)	0.075

Note: Final model: $R = 0.692$, $R^2 = 0.477$, $R^2_{adj} = 0.470$, Standard error of the estimate: 1.1089.

Abbreviation: YDS-SV, Yasavage Depression Scale Short Version.

and limited mental health services in rural regions.¹⁸ However, research in rural areas is often expensive and complex, given their heterogeneity and high migration rates.²³ Studies yield mixed results, with some showing higher depression rates in urban areas²⁴ and others reporting the opposite.²⁵

Our study found that participants with middle school education had higher depressive symptoms, differing from the literature that often associates lower education with more depressive symptoms.²⁶ Education is generally considered protective against cognitive decline,²⁷ which is linked to depression in older adults.²⁸ The reason for our findings remains unclear.

We documented that individuals with depression had worse cognitive performance, consistent with prospective studies showing a correlation between depression and cognitive decline, particularly in processing speed and semantic memory.¹⁹ Thus, the presence of depressive symptoms is associated with cognitive impairment, semantic memory decline, behavioral changes, and global cognition in older adults.^{29,30} Our analysis also showed a statistically significant association between depression and self-reported health, in line with a study that found a higher prevalence of depression among those over 90, which was linked to declining health, reduced quality of life, and increased mortality.³¹

This study documented that older Ecuadorians exhibited more depressive symptoms if they had a poor perception of their cognition, identified as indigenous, and/or lived alone. This is consistent with studies in Europe that have identified social isolation as a major risk factor for depression in individuals with limited social

networks.³² Other multicenter studies have found depression to be more prevalent in widowed, divorced, or never-partnered individuals and those without children or with limited contact with them.³³ Our results show that social isolation is linked to depression, a known risk factor for cognitive decline. A meta-analysis found that 28.5% of adults aged 60 or older reported loneliness.³⁴ In contrast, a study in Shanghai found that loneliness strongly predicted changes in depressive symptoms.³⁵

Özer et al. found a high prevalence of abuse among older adults, including emotional abuse (51.4%), physical abuse (21.9%), sexual abuse (3.8%), abandonment (0.03%), and negligence (35.6%).⁸ Our study reported similar findings, indicating that older adults aged 75–95 experienced more emotional abuse. Women, single individuals, those with low education, and those economically dependent on others were more likely to experience emotional abuse and negligence ($P = 0.05$).

Multiple linear regression analysis showed that age, abuse, cognitive status and living situation significantly contributed to the mood as assessed by the YDS-SV. We found no statistically significant association with health perception ($P = 0.093$) or place of residence ($P = 0.075$). Depression has been linked to chronic inflammation, persistent activation of glucocorticoids, and hypercortisolism, affecting cognitive function.³⁶ It also reduces monoamine levels like dopamine, serotonin, and norepinephrine, creating a cycle of depression affecting cognitive state.³⁷

The strengths of this study include the use of the SABE survey, which provides a representative dataset of Ecuadorian older adults, and the ability to analyze a significant sample size. Furthermore, this is pioneering research, because there are no more publications with this survey on depression in older Ecuadorian adults. Some limitations of our study include the fact that it is based on a dataset created in 2012. However, Ecuador's economic and social development has remained relatively static over the last 12 years, so the data should not be significantly affected or altered. There was missing data that could have enabled deeper analysis, such as multiple imputations. Still, we believe this had minimal impact on the presented results. Additionally, some variables, such as educational level and ethnicity, were categorized in a way that excluded smaller groups due to their small numbers.

Ecuador has faced several economic challenges and opportunities, including fluctuations in economic growth, reliance on oil, debt management, and the impact of external events like the COVID-19 pandemic. The Gross Domestic Product (GDP) has fluctuated significantly, ranging from around 4% to –1% growth in the years following 2012. The pandemic caused a GDP contraction in 2020.³⁸ Historically, Ecuador's economy has relied on oil revenues, and global price declines in 2014 and 2015 impacted public finances, leading to austerity measures and the search for alternative revenue sources. These insights are based on economic and financial reports, government publications, central banks, and international organizations like the International Monetary Fund and the World Bank, which indicate that the data would not be significantly affected.³⁸

5 | CONCLUSION

The risk factors associated with depression in older Ecuadorian adults include advanced age, living alone, cognitive decline, poor self-perception of health and cognition, and abuse. Recognizing these factors is crucial for identifying and potentially modifying them through targeted social, psychological, and medical interventions at individual and population levels.

AUTHOR CONTRIBUTIONS

The conception and design of the study, or the acquisition of data, or the analysis and interpretation of the data: JAM, DAM, and MSD. The draft of the article or the critical review of the intellectual content: MSD, BLPS. The final approval of the version presented: MSD, BLPS, JAM, and DAM.

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CONFLICT OF INTEREST STATEMENT

The authors of this research have no conflicts of interest.

ETHICS STATEMENT

This study followed the World Medical Association's Code of Ethics (Declaration of Helsinki) for human subjects research. The manuscript adheres to the guidelines for conducting, submitting, editing, and publishing scholarly work in medical journals. Efforts were made to ensure the inclusion of representative human populations based on sex, age, and ethnicity. In this cross-sectional study, the public access database was used with the appropriate bioethical considerations, ensuring all participants' data were anonymized.

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