

# Depressive Symptoms and Their Correlates Among Older People in Rural Viet Nam: A Study Highlighting the Role of Family Factors

Trang Thi Hanh Do<sup>1</sup> , Duc Thi Minh Nguyen<sup>2</sup>  
and Linh Thuy Nguyen<sup>1</sup> 

<sup>1</sup>Hanoi University of Public Health, Hanoi, Viet Nam. <sup>2</sup>Hoai Duc Center for Preventive Medicine, Ha Noi, Viet Nam.

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**ABSTRACT:** This study examined the prevalence of depressive symptoms among older people living in a rural district in Hanoi, Vietnam in 2021. A cross-sectional survey was conducted with a sample of 495 people aged 60 years or older, using a structured questionnaire. The prevalence of self-reported depression, based on the short-form Geriatric Depression Scale—15 items, was 28.7%. Results from multiple variable logistic regression analyses showed that there was a significant association between age, educational level, family support, domestic violence, and depression. The study findings emphasize the importance of screening for depression in older people living in rural areas and the need for interventions aimed to enhance family support and reduce family-related stressors.

**KEYWORDS:** Depression, rural, Vietnam, older people, family

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**CORRESPONDING AUTHOR:** Linh Thuy Nguyen, Department of Epidemiology, Hanoi University of Public Health, 1A Duc Thang Street, Bac Tu Liem District, Ha Noi 10000, Viet Nam. Email: linh.ntl239@gmail.com

## Introduction

The world is experiencing a rapid increase in the elderly population, which has been estimated to almost double from 12% to 22% during the period from 2015 to 2050.<sup>1</sup> Over 20% of the world's older adult population live with a mental or neurological disorder and these disorders result in 6.6% of all disabilities (disability-adjusted life years—DALYs) among people over 60 years of age.<sup>1</sup> It has been reported that dementia and depression are the most common mental and neurological disorders among this age group. Depression alone affects 5.7% of those aged 60 years or older<sup>2</sup> and has been reported as a major contributor to disability and mortality among older patients.<sup>3</sup> Depression is characterized by depressed mood, loss of pleasure or interest, poor concentration, poor sleep quality, feelings of low self-worth or excessive guilt, and hopelessness about the future.<sup>4</sup> Depressive symptoms can be mild or severe, chronic, or recurrent, and may substantially impact an individual's functioning at work or in daily life. At its most severe level, depression can lead to suicide.<sup>5</sup> A treatable condition, depression should not be considered a normal part of aging.<sup>6</sup> However, depression is both under-identified and undertreated by health care professionals, due to the fact that depressive symptoms often co-occur with other health problems in older adults as well as the stigma surrounding mental illness.<sup>1</sup>

In Vietnam, an individual aged 60 years or above is considered an elderly person.<sup>7</sup> A young country, Vietnam is facing severe aging of the population which is occurring at a faster pace and an earlier development level than most other countries worldwide.<sup>8</sup> With decreasing fertility rates and increasing life expectancies, this country became an aging society in 2015 and is predicted to become an aged country in 2035.<sup>9</sup> However,

rising life expectancy does not always imply a rise in the number of healthy life years. A report revealed that in 2016, a Vietnamese person living to the age of 60 was expected to live 22.7 years longer on average but only remain healthy for 17.2 years of these.<sup>10</sup> Much of the disability in older people is due to chronic non-communicable diseases and disabilities associated with aging.<sup>8</sup> In Vietnam, together with dementia, depression has been increasingly considered the most common mental illness.<sup>11</sup> Using different instruments to measure depressive symptoms and with samples derived from different areas of the country, previous studies reported high prevalence rates of depression among older people living in Vietnam, ranging from 25.5% to 66.9%.<sup>12–16</sup> This emphasizes the need for development of policies and the implementation of interventions and programs to enhance the health and well-being of the older population in Vietnam.<sup>17</sup>

In Vietnam, mental health has not received sufficient attention by the government. As in many other low- and middle-income countries, there are still gaps in meeting the needs of people with mental health problems, reflected by a severe lack of mental health care human resources, an inadequate number of psychiatric hospital beds, limited development, and enactment of mental health legislation as well as shortage and poor diversification of mental health services.<sup>18,19</sup> To address these challenges, a range of solutions have been suggested, one of which was to provide more epidemiological data and intervention research on mental illnesses to inform health policies and plans.<sup>18,19</sup> Although depression among the elderly has received increasing attention in Vietnam, evidence around the prevalence of depression among this important population is still limited, especially in rural settings.<sup>14</sup> This study aimed to estimate the



prevalence of depressive symptoms and identify their associated factors among the elderly in rural Vietnam. In addition, there is currently no standard guideline on depression screening for early detection at the local grassroots level, which could be a major weakness in mental health care in the country.<sup>20</sup> This study helps to identify at-risk groups, ensuring that health care workers are informed of what risk factors to screen for, which is critical for the development of successful interventions aimed to prevent depression and its consequences. While Vietnam's health care is shifting toward prevention,<sup>17</sup> understanding the burden of depression and its associated factors among older adults is of great importance to achieving that goal.

## Materials and Methods

### *Study design and setting*

This was a cross-sectional survey conducted with older residents living in households in Hoai Duc, a rural district of Hanoi, the capital city of Vietnam. Data was collected in October and November 2021.

### *Participants*

Participants were eligible if they were aged 60 years or older, residing in the Hoai Duc district, able to understand and answer the interview questions, and willing to enroll in the study.

### *Sample size and sampling methods*

The sample size was calculated using the formula for estimating a population proportion with specified precision<sup>21</sup>:

$$n = z_{1-\alpha/2}^2 \times p \times (1-p) \times DE / d^2$$

Where  $z$  is the statistic for a level of confidence (for a significance level of 95%,  $z$  value is 1.96);  $p$  is the prevalence of depression among the elderly residing in rural areas in Vietnam (a prevalence of 26.4% was selected from a previous study in Vietnam<sup>14</sup>);  $d$  is the precision ( $d$  had a value of 5%, which was chosen to produce good precision and a smaller error of estimate);  $DE$  is the design effect, being equal 1.5 (to allow for multi-stage sampling). With these values and an assumed non-response rate of 10%, the minimum required sample size calculated was 492.

A 3-stage sampling procedure was undertaken. Firstly, 2 communes in Hoai Duc district were randomly selected. Secondly, in each of the selected communes, systematic random sampling was applied to select 246 households with people aged 60 years or older based on the household booklets managed by the commune health centers. Finally, in each of the selected households, 1 elder person was randomly selected. In total 495 eligible participants participated in the study.

### *Data collection*

Each participant was invited to participate in a face-to-face interview at his/her home with a trained research team member. Interviewers were district health workers, who were nurses, did

not have a pre-established relationship with the participants and were experienced in working with the community through national and local health programs. Before data collection, all interviewers were involved in a 2-day training in ethical conduct of research, basic research skills, and research procedure to ensure consistency of data collection practice among interviewers.

In each commune, coordination of the sampling frame preparation was supported by the head of the commune health center. Before data collection, invitation letters were sent to potential participants through a network of village health workers, led by the head of the commune health center. For each interview, there was a village health worker taking the interviewer to the participant's home to conduct the interview at the time mentioned in the invitation letter.

Written informed consent was obtained from all participants before the interview. Participation in the interview was completely voluntary. Ethics approval was obtained from the Ethical Review Board for Biomedical Research of Hanoi University of Public Health (Approval No. 321/2016/YTCCHD3).

The interview was conducted in a private room without the presence of other family members to ensure privacy and confidentiality. It took an average of 40 minutes for a participant to complete the interview.

To further ensure the quality of the data, during the data collection period, close supervision and support for interviewers were undertaken via regular meetings with the research team leader. Besides, about 10% of the participants were contacted by the research via telephone so that information about their experience with the interview were obtained.

Data was collected with a structured questionnaire, which involves the following 3 components:

*Socio-demographic characteristics:* Variables included age, gender, marital status, employment, monthly income, and living arrangement.

*Symptoms of depression:* Depression was measured with the Vietnamese version of the Geriatric Depression Scale—15 items. This is a self-report measure of depressive symptoms in older adults, first developed by Yesavage et al<sup>22</sup> and has been extensively used in different populations.<sup>23</sup> This study used the short version of the GDS, which comprises 15 items, asking respondents to answer in a "yes/no" format about how they felt over the previous week.<sup>23</sup> In this study, depressive symptoms were categorized as normal, mild, and moderate/severe if the GDS scores ranged from 0 to 4, 5 to 9, and  $\geq 10$ , respectively.<sup>24</sup> The Vietnamese version of the 15-item GDS has been validated and used in studies with elderly samples in Vietnam.<sup>24</sup> In this study, this scale has good internal consistency with a Cronbach's alpha of .84.

*Other covariates:*

*Family support:* In the questionnaire, the respondents were asked 3 questions on: (1) Having financial support from their family members; (2) Being cared for by their family members; (3) Being helped with domestic chores. The respondents were classified as having family support if they answered "yes" to at least 1 question.

*Domestic violence:* Information about domestic violence was collected with a “yes/no” question, asking the respondents if they had ever experienced domestic violence (ie, physical and mental violence, sexual abuse).

### Statistical analysis

During the data collection period, the research team leader checked the returned questionnaires for missing and inconsistent information on a daily basis. We developed a coding manual for each variable prior to data entry. After that, data from face-to-face interviews were entered into an electronic database using Epi Data version 3.1. Double entry was applied for 10% of the questionnaires for accuracy checking. We used STATA 14.0 for all data analyses. We checked for missing data and invalid values of variables by generating frequency distribution of all variables. When there was suspicion of invalid information, the original questionnaire would be referred to for checking. Due to a strict data quality management process, the level of missing data in this study was very low (less than 1% for each variable), hence, all analyses were based on available data.

Participants' demographic and family characteristics were summarized in total. Differences between any 2 groups were tested using *t*-tests for normally distributed continuous data, Kruskal Wallis test for continuous data not normally distributed, and  $\chi^2$  tests for categorical data.

To identify factors associated with depressive symptoms, univariable and multiple variable logistics regression models were performed. For multivariable logistic regression analyses, backward elimination was done with those covariates that had a  $P > .1$  from univariate analyses. To compare models when excluding covariates, the likelihood-ratio test was used. Those covariates that changed the coefficients for depression by more than 15% or resulted in a likelihood-ratio test  $P < .05$  when removed were retained in the final model. All reported *P*-values are 2-tailed and considered statistically significant at  $\alpha = .05$ .

## Results

### Characteristics of study participants

In total, 495 older adults residing in Hoai Duc district, Hanoi took part in the study. Table 1 summarizes the demographic characteristics of the study participants. Overall, about half of these participants were 60 to 69 years old and just under 12% were over 80 years. The proportion of females was 2 times higher than the proportion of males. About 50% of the participants completed secondary school and just under 4% were illiterate. The number of people having a job was 355, accounting for 71.1%, but only 50.1% had monthly income. The vast majority of the participants were living with family or others (90.3%)

### Depressive symptoms among the study participants

Table 2 presents the prevalence of self-perceived depression among the study participants by gender. The median

**Table 1.** Characteristics of the study participants.

CHARACTERISTICS	TOTAL (N = 495)
Age group	
60-69	260 (52.5)
70-79	176 (35.6)
80+	59 (11.9)
Gender	
Male	155 (31.3)
Female	340 (68.7)
Marital status	
Single	173 (35)
Married	322 (65)
Education	
Illiteracy	19 (3.8)
Literacy	28 (5.7)
Primary school	91 (18.4)
Secondary school	257 (51.9)
High school	60 (12.1)
Diplomacy/college/university/higher-education	40 (8.1)
Having a job	
No	355 (71.7)
Yes	140 (28.3)
Having monthly income	
No	247 (49.9)
Yes	248 (50.1)
Living arrangement	
Family or others	447 (90.3)
Alone	48 (9.7)

(IQR—interquartile range) GSD-15 score across all participants was 2 (IQR: 1-5) with the maximum score being 14. There was no difference in the median score between males and females ( $P > .05$ , Kruskal Wallis test). The overall prevalence of depressive symptoms (5 points and above) among all older adults was 28.7%. The prevalence was higher among females compared to males (32.1% vs 21.3%,  $P < .05$ )

### Factors associated with depressive symptoms among older adults

Table 3 presents the results of univariable and multivariable logistic regression models for depression. Univariable analyses showed that 6 variables had a significant association with

**Table 2.** Level of perceived depression among older adults by gender.

DEPRESSION		MALE (N= 155)	FEMALE (N=340)	TOTAL	P-VALUE
GDS score; median (IQR)		2 (1; 4)	3 (1; 6)	2 (1; 5)	.08
0-4	Normal	122 (78.7)	231 (67.9)	353 (71.3)	.036
5-9	Mild depression	24 (15.5)	87 (25.6)	111 (22.4)	
≥10	Moderate/severe depression	9 (5.8)	22 (6.5)	31 (6.3)	
Depression		33 (21.3)	109 (32.1)	142 (28.7)	.02

**Table 3.** Univariable and multivariable logistic regression analyses of factors associated with depression among the older adults.

CHARACTERISTICS	PREVALENCE OF DEPRESSIVE SYMPTOMS (N= 142) N (%)	UNIVARIABLE ANALYSIS			MULTIVARIABLE ANALYSIS		
		OR	95% CI	P-VALUE	OR	95% CI	P-VALUE
<b>Age group</b>							
60-69	80 (30.8)	Ref			Ref		
70-79	52 (29.6)	0.94	0.62-1.43	.79	0.82	0.51-1.30	.399
80+	10 (17)	0.46	0.22-0.95	.04	0.33	0.14-0.76	.01
<b>Gender</b>							
Male	33 (21.3)	Ref			Ref		
Female	109 (32.1)	1.74	1.12-2.73	.02	0.89	0.54-1.47	.65
<b>Education</b>							
Illiteracy	15 (79)	Ref			Ref		
Literacy	12 (42.9)	0.2	0.05-0.76	.02	0.2	0.05-0.85	.03
Primary school	37 (40.7)	0.18	0.06-0.59	.01	0.21	0.06-0.75	.02
Secondary school	60 (23.4)	0.08	0.03-0.25	<.01	0.08	0.02-0.29	<.01
High school	9 (15)	0.05	0.13-0.17	<.01	0.04	0.01-0.18	<.01
Diplomacy/college/ university/higher-education	9 (22.5)	0.08	0.02-0.29	<.01	0.07	0.02-0.29	<.01
<b>Living arrangement</b>							
Alone	22 (45.8)	Ref			Ref		
Family or others	120 (26.9)	0.43	0.24-0.79	.01	0.66	0.32-1.35	.26
<b>Family support</b>							
No	18 (72)	Ref			Ref		
Yes	124 (26.4)	0.14	0.06-0.34	<.01	0.20	0.07-0.52	.001
<b>Domestic violence</b>							
No	123 (26.7)	Ref			Ref		
Yes	19 (55.9)	3.48	1.72-7.06	.001	3.76	1.69-8.33	.01

depression, including being 80 years old or above, being female, being illiterate, living alone, not having family support, and suffering from domestic violence.

In multivariable analyses, 4 variables remained significantly associated with depression including age, educational status, having family support, and domestic violence. The odds of

having depressive symptoms decreased with the increase in age ( $P$ -value for overall association  $<.05$ ). Compared to those who were aged 60 to 69 years, the odds of having depressive symptoms among people aged 70 to 79 years decreased by 18%; and the odds decreased by 67% among those aged 80 years or older. Results also showed a decreasing trend in the odds of having depressive symptoms as the educational level increased ( $P$ -value for overall association  $<.05$ ). Compared to those who were illiterate, the odds of having symptoms suggestive of depression decreased by 80% for people who were literate but had not finished primary school. For those who had finished primary school, secondary school, high school, and tertiary education, the odds of having depressive symptoms decreased by 79%, 92%, 96%, and 93%, respectively. Results also suggest that family support is a protective factor for depression as the odds of having depressive symptoms decreased by 80% among those who received support from their family, compared to those who did not get support (OR = 0.20; 95% CI 0.07-0.52). Domestic violence was strongly associated with depressive symptoms. The study results showed a fourfold increase in the odds of having depressive symptoms among those who reported experiencing domestic violence compared to those who did not (OR = 3.76; 95% CI 1.69-8.33).

## Discussion

### *Prevalence of depression*

The present study highlights the importance of mental health among older people living in rural areas in Vietnam. In this study, 28.7% of the participants had symptoms suggestive of depression. This prevalence is comparable to prevalence of depression among rural older people in other Southeast Asian countries including Malaysia (27.8%)<sup>25</sup> and Indonesia (31.72%), which suggests that the high prevalence of depression is consistent across countries in the region.

The result of the study is consistent with that of several current studies in Vietnam, showing that depression is common among Vietnamese older adults in rural areas. For example, a study by Vu et al in 2017 conducted in another rural district of Hanoi, used the Geriatric Depression Scale—4 items to assess depression among older people. The authors found that 26.4% of the participants were at risk of depression.<sup>14</sup> Another study in a similar setting used the Patient Health Questionnaire (PHQ-9) to assess a sample of 376 people aged 60 years or older and found that 26.1% of the participants had symptoms of depression.<sup>13</sup> However, the prevalence of depression among older people in our study is much higher than that found in a study in 2005 (17.2%), which also used the GDS-15 to measure depression.<sup>26</sup> This data suggests an increasing trend over time in the prevalence of depression among older people in Vietnam, implying a pressing need for mental health care for this important population.

This study also found a significantly higher prevalence of depression among female participants compared to male participants. The female gender has been found a common risk factor for depression in all stages of life,<sup>3,27,28</sup> and this holds true for Vietnamese older females from rural communities.<sup>14</sup> Depression and female gender have a complex relationship. Biologically, the serotonin concentration, which is related to stress, is more likely to be higher in women than in men.<sup>29</sup> In addition, a deregulation hypothalamic-pituitary-adrenal axis response to stress is more likely to happen in women than in men.<sup>30</sup> The higher prevalence of depression among female individuals in their later stage of life may be also due to a range of psychosocial factors. For instance, women are more likely to be widowed or to live alone, are at a higher risk of poor health and chronic conditions, are more likely to suffer from cognitive decline, and can experience financial shortages and caregiving burdens.<sup>27</sup> Moreover, Vietnamese older women may have encountered life stressors in the past such as, exposure to war and the associated loss, as well as experiencing gender inequality, and fewer educational opportunities.<sup>31</sup> Our finding that depression is more prevalent among females lends support to gender-sensitive interventions aimed to promote the well-being of Vietnamese older people. This is especially important in rural areas, many of which are still in the shadow of Confucian ideology that relegates women to an inferior social status compared to men.<sup>32,33</sup>

### *Correlates of depression among the elderly*

Our study found a negative association between age and the development of depression. Results from multiple regression analyses have similarly shown that the odds of having depressive symptoms decreased with the increase in age. Evidence about the link between age and depression in older adults has not been conclusive. There have been studies reporting that depression was significantly associated with aging,<sup>3,34</sup> however, some other studies showed a reverse association between depression and age.<sup>12</sup> One possible explanation for our study's finding is that older adults have life experiences which allow them to better resolve problems linked with stressful events, compared to younger adults. This ability can be associated with better adaptation after such events.<sup>35</sup> Further studies are needed to provide more insight into the effect of age on mental health among older adults in rural Vietnam.

In addition to age, another demographic factor significantly associated with depression was educational level. Our data showed that the risk of depression among older people decreased with an increase in educational level. This finding is consistent with that of a 2019 study with 376 Vietnamese older adults<sup>13</sup> and aligns with studies in other parts of the world.<sup>3,28,34,36</sup> It has been argued that a higher educational level allows older people to enrich their resources for dealing with life's stressful situations.<sup>37</sup> The study finding suggests that older people with low education levels should be identified as an "at-

risk” group for developing depression and be targeted by mental health care interventions and programs.

Moreover, our study also highlights the association between depressive symptoms among the elderly and family-related factors. Older individuals who had family support, which includes sharing the burden of housework and provision of financial support and emotional care, were less likely to have symptoms suggestive of depression compared to those who did not have family support. This finding is in line with prior research that has consistently indicated that perceived support from family members can have a positive effect on mental health of older people.<sup>38-40</sup> It has been explained that instrumental, financial, and emotional support from the family can help buffer stressful circumstances in the later stage of life.<sup>41</sup> Additionally, having loyal family members who are willing to lend a hand in a supportive way seem to make the older individuals feel worthy, included and, in this way, live up to the expectations of their family.<sup>38</sup> Support from spouses and children may also enhance the mental health of older people through intangible benefits such as fostering their sense of belonging and life purpose. This can contribute toward healthy lifestyle habits and a positive world-view, thereby promoting positive mental health.<sup>38,42</sup> The finding of this study suggests that the influence of family support on mental well-being of the elderly is consistent across cultures and indicates that family support should be an important component of interventions and programs aiming to improve mental health of Vietnamese older adults.

In addition to family support, the association between domestic violence and depression was also identified in this study. Domestic violence was found to have a strong impact on depression. Those who had suffered from domestic violence had a fourfold increase in the odds of having depressive symptoms. This result supports findings from another study of ethnic minority elderly in Central Highlands, Vietnam, revealing that exposure to stressful life events including bereavement, illness, accidents, domestic violence, financial difficulties, interpersonal conflict, unintended job loss a broken marriage, and legal problem in the past year was significantly associated with depression.<sup>12</sup> The study is also consistent with research in other parts of the world which show an increase in the risk of mental ill-health among older adults exposed to domestic violence compared to those in non-violent relationships.<sup>43</sup> While the impact of domestic violence on the elderly in Vietnam is still of limited research interest compared to the impact on the working-age population, our study may contribute to raising awareness about the importance of addressing domestic violence against Vietnamese older adults. The study also suggests the need for more evidence on the impact of different types of domestic violence including physical, psychological, sexual violence, and neglect on depression and other mental conditions in older people in the country, which will then inform interventions and policies that focus on promoting mental health and well-being of this population.

### *Limitations*

This study had several limitations which need to be taken into consideration when interpreting the results. First, the measure of depressive symptoms relied on self-report, therefore, recall bias or under-reporting might have occurred.<sup>44</sup> This might partly result from factors such as, shame or social stigma. To reduce this to some extent, an anonymous questionnaire was used for data collection, and participants were asked to arrange a private place for the interview before it started to ensure privacy and confidentiality. In addition, interviewers were research staff who did not have any prior relationship with the participants. Second, as this is a cross-sectional study, causal inferences between depression and its correlates could not be established. This suggests a need for longitudinal studies that allow for the determination of the causal path between a wide range of factors and depression among the elderly in Vietnam. Last, the study was conducted in Hoai Duc, a rural district of Hanoi, the capital city of Vietnam, which may be at a higher level of socio-economic development compared to remote rural districts, which might affect the generalization of the results to all rural areas in Vietnam. However, the study contributes to bridging the current gap in knowledge about the prevalence of and factors associated with depression among older adults in Vietnam, especially the role of family-related factors in older people’s mental health. The results of our study is also of potential relevance to other low- and middle-income countries with a fast-aging population like Vietnam.

### **Conclusion**

This study’s findings contribute to the knowledge about depression and its associated factors among rural older people in Vietnam. As depression symptoms are highly prevalent, there is a need for strengthening mental health care for older adults. Screening for depression is of great importance for the early detection and management of cases. Factors associated with depression found in this study could be the basis for identifying “at risk” groups for developing depression. In addition, this study emphasizes the need for interventions and programs that consider the particular needs of women and that enhance family support and reduce family-related stressors, especially domestic violence and abuse against the elderly.

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### **Author Contributions**

TD, LN, and DN developed the study protocol. DN collected the data. All authors were involved in data analysis and

manuscript preparation, and approved the final version of this manuscript.

### Ethics Approval and Consent to Participate

All procedures performed in the study involving human participants were in accordance with the ethical standards of the Ethical Review Board for Biomedical Research at Hanoi University of Public Health. All information on the original dataset was collected confidentially.

### ORCID iDs

Trang Thi Hanh Do  <https://orcid.org/0000-0001-8896-6974>

Linh Thuy Nguyen  <https://orcid.org/0000-0002-9233-1143>

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