

ปัจจัยที่เกี่ยวข้องกับภาวะซึมเศร้าของผู้สูงอายุในเมืองเว้ ประเทศเวียดนาม*

กัญญา พาม พย.บ.** ปัทมา สุธิต DNSc*** จัน บุ มิณ ฮาง พบ.****

บทคัดย่อ

ภาวะซึมเศร้าเป็นความผิดปกติทางจิตใจและอารมณ์ที่พบบ่อยในผู้สูงอายุและมีผลกระทบต่อสถานะสุขภาพ การศึกษาเชิงพรรณนาแบบภาคตัดขวางนี้มีวัตถุประสงค์เพื่อวิเคราะห์ปัจจัยที่เกี่ยวข้องกับภาวะซึมเศร้าของผู้สูงอายุที่อาศัยอยู่ในชุมชนเมืองเว้ ประเทศเวียดนาม ผู้เข้าร่วมวิจัยจำนวน 420 คน เป็นผู้ที่มีคุณสมบัติตามเกณฑ์การคัดเลือกของการวิจัย และได้รับการคัดเลือกโดยใช้วิธีสุ่มตัวอย่างแบบง่าย เก็บรวบรวมข้อมูลด้วยวิธีการสัมภาษณ์โดยใช้แบบสอบถาม และได้รับแบบสอบถามกลับคืนร้อยละ 98.1 ผลการวิจัยพบภาวะซึมเศร้าร้อยละ 34.2 (ระดับเล็กน้อย ร้อยละ 21.3 ระดับปานกลาง ร้อยละ 6.8 และระดับรุนแรง ร้อยละ 6.1) และพบว่าภาวะซึมเศร้ามีความสัมพันธ์กับอายุ เพศ ระดับการศึกษา สภาพความเป็นอยู่ รายได้ โรคร่วม ความสามารถในการทำกิจวัตรประจำวัน และการสนับสนุนทางสังคม อย่างมีนัยสำคัญทางสถิติที่ $p < 0.05$ นอกจากนี้ผลการวิเคราะห์การถดถอยโลจิสติกแบบหลายตัวแปรพบว่า เพศ รายได้ โรคร่วม และการสนับสนุนทางสังคมมีความสัมพันธ์กับภาวะซึมเศร้าอย่างมีนัยสำคัญทางสถิติที่ $p < 0.05$ ผลการศึกษานี้ให้ข้อมูลที่เป็นปัจจุบันเกี่ยวกับภาวะซึมเศร้าในผู้สูงอายุชาวเวียดนาม พยาบาล ตลอดจนผู้ให้บริการสุขภาพอื่นๆ สามารถนำข้อมูลนี้ไปพัฒนาวิธีการหรือกลยุทธ์เพื่อป้องกันภาวะซึมเศร้าของผู้สูงอายุได้

คำสำคัญ: ปัจจัย ภาวะซึมเศร้า ผู้สูงอายุ ประเทศเวียดนาม

วันที่รับบทความ 1 กรกฎาคม 2563 วันที่แก้ไขบทความเสร็จ 9 พฤศจิกายน 2563 วันที่ตอบรับบทความ 11 พฤศจิกายน 2563

*ได้รับการสนับสนุนทุนวิจัยและฝึกอบรมเพื่อส่งเสริมคุณภาพชีวิตคนวัยแรงงาน คณะพยาบาลศาสตร์ มหาวิทยาลัยขอนแก่น ประเทศไทย
 **นักศึกษาระดับปริญญาตรี คณะพยาบาลศาสตร์ มหาวิทยาลัยขอนแก่น ประเทศไทย และอาจารย์คณะพยาบาลศาสตร์ มหาวิทยาลัยดำนิง เทคนิการแพทย์และเภสัชศาสตร์ ประเทศเวียดนาม
 ***ผู้เชี่ยวชาญสาขาวิชา คณะพยาบาลศาสตร์ มหาวิทยาลัยขอนแก่น ประเทศไทย E-mail: z3101_ps@hotmail.com
 ****อาจารย์ มหาวิทยาลัยแพทยศาสตร์และเภสัชศาสตร์เว้ ประเทศเวียดนาม

Factors associated with depression among older adults in Hue, Vietnam*

Thi Thuy Pham B.N.S** Pattama Surit DNSc *** Tran Nhu Minh Hang MD.****

Abstract

Depression is a common mental and emotional disorder in older adults and can impact their health status. This cross-sectional descriptive study aimed to analyze factors associated with depression among older adults in communities of Hue, Vietnam. Four hundred and twenty participants meeting the study criteria were selected using a simple random sampling technique. Data were collected by interview method using questionnaires. The response rate was 98.1%. The results showed that 34.2% of the participants were depressed: mild (21.4%), moderate (6.8%), and severe (6.1%), respectively. Depression was significantly associated with age, gender, educational level, living condition, income, comorbidity, activities of daily living (ADL) score, and social support, with $p < 0.05$. In the multivariate logistic regression model, only gender, income, comorbidity, and social support were significantly associated with depression, with $p < 0.05$. The results of this study provide updated information regarding depression in the Vietnamese older adults. This may help nurses and other healthcare providers to develop interventions or strategies to prevent depression for this population.

keywords: factors; depression; older adults; Vietnam

Received 1 July 2020 Revised 9 November 2020 Accepted 11 November 2020

*This research was supported by Research and Training Center for Enhancing Quality of Life of Working-Age People, Faculty of Nursing, Khon Kaen University

**Master student of Faculty of Nursing, Khon Kaen University, Thailand, teacher of Faculty of Nursing, Danang University of Medical Technology and Pharmacy

***Assistant Professor, Faculty of Nursing, Khon Kaen University, Thailand, Corresponding author, Email: z3101_ps@hotmail.com

****Physician and lecturer of Hue University of Medicine and Pharmacy, Vietnam

Introduction

The number of aging population has been significantly growing. People aged 65 years old and over are expected to increase from nearly 900 million in 2015 to approximately 2 billion in 2050 or from 12% to 22% of the total global population, with the majority of the volume focusing on developing countries.¹ Longevity gives older adults the opportunities to continue their activities and careers and to pursue their passions.² However, the increase in age leads to physiological changes and illnesses, such as loss of hearing, eye problems, low back pain, neck pain, osteoarthritis, diabetes, chronic obstructive pulmonary disease (COPD), hypertension, and cardiovascular disease.¹ Moreover, some factors related to old age can cause mental health problems, such as loss of relatives and friends, inability to participate in social activities, and losing control of their lives due to physical function changes. Limited financial resources, along with age, also generate many negative emotions, such as sadness, anxiety, loneliness, and low self-esteem which have led to apathy and retreat from society.³ Cognitive and mood disorders, especially depression, can be developed among older adults which, in turn, negatively affect their physical health.⁴

Among the multiple chronic diseases in the elderly, depression is the most common mental and emotional disorder that occurs at the end of life.⁵ The prevalence of depression in the elderly ranges from 10% to 20%, depending on the cultural and socio-economic situation of each region.⁶ Depression in the elderly has a great influence on their health status. It is related to morbidity, mortality, sleeping inadequacy, loss of energy, change in concentration, hesitancy, worthless-

ness, guilty, and hopelessness.^{7,8,9} Moreover, besides demographic characteristics, such as age,¹⁰ gender,^{11,12,13} income, living condition,^{5,7,13} there are other factors associated with depression in older people, including chronic diseases^{10, 11,14,} lack of social support,^{5,13} and lack of daily living activities.^{11,13,14}

Vietnam is one of the countries facing a rapid rate of population growth. The number of people aged 60 years old and over accounted for 10.2% of the total population in 2012 and is expected to reach 20.1% of the total population in 2038.¹⁵ According to a study by Leggett et al. (2012), it was found that the rate of depression in older adults was 47%.¹⁶ Also, from the “Also, from the joint Annual Health Review (JAHR)” statistics, depression ranks in the second place after Alzheimer’s disease, accounting for 17% of the burden of mental disorders in the Vietnamese elderly.¹⁵ However, there are few studies on this subject in Vietnam. Previous studies were conducted in Hanoi and Quang Ngai Province^{9,10} which have differences in economic and social contexts from Hue. Furthermore, from our pilot study in eight older adults aged 60 and over in Truong An Ward, Hue City, the results indicated two out of eight subjects had depression and there were some factors associated with it. However, this study has a limitation due to the small sample size; therefore, a clearer view of depression and factors associated with it should be further explored. The findings of this study will get an array of updated data related to the rate of depression and its associated factors in the Vietnamese elderly who live in Hue communities. The data may help healthcare providers have a better understanding of this issue and, in turn, develop proper interventions or strategies to prevent

depression in this population.

Research question

What are the factors associated with depression among older adults in Hue, Vietnam?

Materials and methods

This cross-sectional descriptive study was conducted with 420 older adults living in Hue, Vietnam. The sample size was calculated by the following formula:

$$n = (z)^2 p (1 - p) / d^2$$

where: n = sample size

$z^2 = 1.96$, for the level of confidence of 95%

$p = 0.47$, the proportion of depression among older adults from the previous study¹⁶

$d =$ tolerated margin of error ($d= 0.05$)

Thus, the sample size was 384 participants.

The researchers added 10% more to the sample size for losing the subjects so that the total number was 420 participants.

For the setting of this study, four out of 27 wards were randomly selected. Based on Hue geographical characteristics, the researchers selected one ward from the south, one ward from the north, one ward from the center, and one ward from the border area. The sample size of each ward was determined using the probability proportional to size (PPS) sampling.

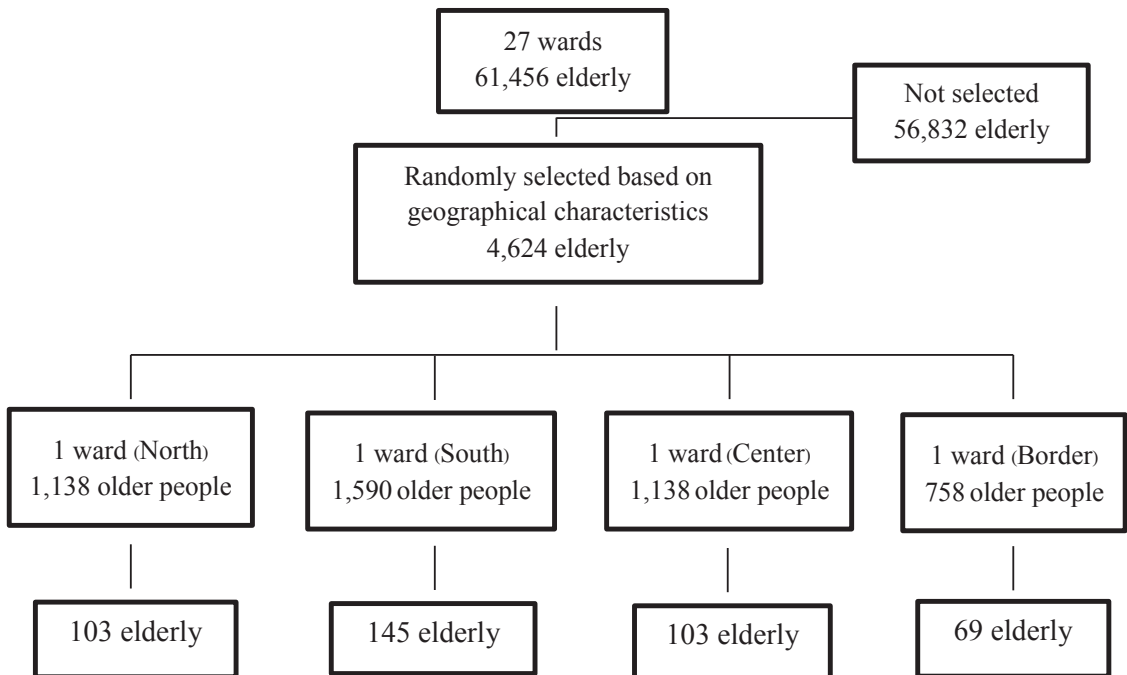


Diagram 1 Sample size

The participants who met the study criteria, including having age 60 years old and over, being able to communicate in writing, reading, and speaking in Vietnamese, being willing to participate in the study, and having a stable health status to participate in the whole study, were chosen by a simple random sampling technique. The elderly who had the Mini-Mental State Exam (MMSE) score lower than 24 points (out of 30)¹⁷ and had psychotic diseases were excluded. Data collection was conducted after the researchers received approval from the Center for Ethics in Human Research, Khon Kean University. The participants were required to complete questionnaires by a face-to-face interview method. Moreover, to get a high validity, before the interviews the interviewers consisting of five research assistants were trained to use the questionnaires by the researchers. The descriptive statistics, chi-square test, and multiple logistic regression were used to analyze data through SPSS.

The instruments used in the study were originally in English and were translated into Vietnamese by the forward-backward translation process. Details of the instruments are described as follows:

1. Demographic questionnaire: It consists of age, gender, educational level, living condition, income, and comorbidity.

2. The Katz ADL index¹⁸: It is used to assess the participants' competency in performing activities of daily living (ADL). This instrument was developed and modified by Katz et al. and consists of six functions, including bathing, dressing, toileting, transferring, continence, and feeding. The participants respond by answering "yes" or "no". In each

function, if the participants answer "yes", they will get one score and if they answer "no", they will not get any score. The total score is 6 and the level of ADL is divided into three levels:

1) full function (5-6 scores), moderate functional impairment (3-4 scores), and severe functional impairment (0-2 scores).

This instrument is widely used for the elderly in all settings. Its reliability in the Vietnamese version was tested with 30 participants who had the same characteristics as the study's subjects. Cronbach's alpha coefficient was acceptable with the level of 0.74.

3. The Multidimensional Scale of Perceived Social Support (MSPSS)¹⁹: It was developed by Zimet, Dahlem, Zimet, and Farley in 1988 and used to measure the perceived level of support that a person receives from three sources, including families, friends, and significant others. The original scale consists of 12 items and is scored on a 7-point Likert scale from "very strongly disagree" to "very strongly agree". Participants who have a high score illustrate a high level of support. The instrument was tested for internal consistency reliability and Cronbach's alpha coefficient was acceptable with the level of 0.88.

4. The Geriatric Depression Scale 15 (GDS 15)²⁰: It was developed by Yesavage et al. to assess depression in older adults. It consists of 15 questions, requiring "yes" or "no" answer. The range of scores indicates a level of depression (0-4 = normal, 5-8 = mild, 9-11 = moderate, and 12-15 = severe). The sensitivity and specificity of this scale are 92% and 89%, respectively.

Results

The number of participants at the end of the study was 412, with a response rate of 98.1%. The mean age was 73.69 years old (SD = 9.12). Participants aged 60–69 were 37.1%, compared with those aged 70–79 (31.8%) and aged 80 and over (31.1%). Most of the participants were female (59.5%) and literate (85.9%), lived with family (92.2%), had income more than 1,950,000 VND per month (59.5%), and had at least two diseases (47.6%). Moreover, the majority of participants had full function of activities of daily living (97.1%) and had a moderate level of social support (74.0%).

All variables were associated with depression with a statistically significant level at $p \leq 0.05$. Particularly, older adults aged 80 years old and over had depression more than those aged 70–79 and 60–69 (45.0%, 29.0%, and 28.8%, respectively). Female participants were more likely to have depression than their counterparts (40.4% and

25.1%). Participants who had a lower educational level or illiteracy were more depressed than those who had a higher educational level (illiteracy 53.4%, primary school 43.7%, secondary/high school 26.4%, and undergraduate/graduate 22.7%, respectively). Also, participants living alone had depression more than those living with their families (59.4% and 32.1%). Moreover, participants with a low income had depression more than those with a high income (56.4% and 20.0%), and participants who had at least two diseases more suffered from depression than those who had one disease or none (43.4%, 30.2%, and 20.0%, respectively). Besides, participants with impaired function in activities of daily living were more likely to suffer from depression than those with full function (100% and 32.2%), and participants with a low level of social support were more likely to be depressed than those with a high level of social support (61.8% and 16.4%). (See Table 1)

Table 1 Frequency and percentage of demographic characteristics and factors associated with depression, using a chi-square test (n = 412)

Variables	f	%	No depression		Depression		P-value
			f	%	f	%	
Age							
(Mean = 73.69, SD = 9.12)							
60–69 years old	153	37.1	109	71.2	44	28.8	0.003*
70–79 years old	131	31.8	93	71.0	38	29.0	
80 years old and over	128	31.1	61	55.0	50	45.0	
Gender							
Male	167	40.5	125	74.9	42	25.1	0.001*
Female	245	59.5	146	59.6	99	40.4	

Table 1 Frequency and percentage of demographic characteristics and factors associated with depression, using a chi-square test (n = 412) (Cont.)

Variables	f	%	No depression		Depression		P-value
			f	%	f	%	
Educational level							
Illiteracy	58	14.1	27	46.6	31	53.4	
Primary school	119	28.9	67	56.3	52	43.7	<0.001*
Secondary/High school	125	30.3	92	73.6	33	26.4	
Undergraduate/Graduate	110	26.7	85	77.3	25	22.7	
Living condition							
Alone	32	7.8	13	40.6	19	59.4	0.002*
With Family	380	92.2	258	67.9	122	32.1	
Income							
< 900,000 VND	94	22.8	41	43.6	53	56.4	<0.001*
901,000-1,950,000 VND	73	17.7	34	46.6	39	53.4	
>1,950,000 VND	245	59.5	196	80.0	49	20.0	
Comorbidity							
No	90	21.8	72	80.0	18	20.0	<0.001*
One disease	126	30.6	88	69.8	38	30.2	
At least two diseases	196	47.6	111	56.6	85	43.4	
ADL (Mean = 5.88, SD = 0.67)							
Full function	400	97.1	271	67.8	129	32.2	<0.001*
Moderate/severe impairment	12	2.7	0	0.0	12	100.0	
Social Support							
Low support	34	8.3	13	38.2	21	61.8	<0.001*
Moderate support	305	74.0	197	64.6	108	35.4	
High support	73	17.7	61	83.6	12	16.4	

*p ≤ 0.05

For the level of depression, 65.8% of the participants had no depression whereas 21.4% of them had a mild level of depression. (See Table 2)

Table 2 Mean and standard deviation of levels of depression (n = 412)

Level of depression	Mean	SD	n	%
Normal			271	65.8
Depression	4.03	3.00	141	34.2
Mild depression			88	21.3
Moderate depression			28	6.8
Severe depression			25	6.1

From the multivariate logistic regression, the female group was 1.77 times more depressed than the male group (OR = 1.77; 95% CI = 1.04–3.02). Participants with incomes below than 900,000 VND per month were 3.15 times more depressed than those with incomes greater than 1,950,000 VND per month (OR = 3.15; 95% CI = 1.65–6.05).

Moreover, participants with at least two diseases were 2.87 times more depressed than those with no disease (OR = 2.87; 95% CI = 1.48–5.56). Furthermore, participants with a low level of social support were 3.82 times more depressed than those with a high level of social support (OR = 3.82; 95% CI = 1.27–11.47). (See Table 3)

Table 3 Factors associated with depression, using the multivariate logistic regression (n = 412)

Factors	OR	95% CI		P-value
		Lower	Upper	
Gender				
male	ref			
female	1.77	1.04	3.02	<0.05*
Income				
>1,950,000 VND	ref			
901,000–1,950,000 VND	3.85	2.02	7.33	<0.05*
< 900,000 VND	3.15	1.65	6.05	<0.05*
Comorbidity				
No disease	ref			
At least two diseases	2.87	1.48	5.56	<0.05*

Table 3 Factors associated with depression, using the multivariate logistic regression (n = 412) (Cont.)

Factors	OR	95% CI		P-value
		Lower	Upper	
Social support				
High support	ref			
Moderate support	2.00	0.96	4.19	
Low support	3.82	1.27	11.47	<0.05*

*p ≤ 0.05

Discussion

The proportion of depression among older adults in this study was 34.2% or around one-thirds of participants. The mean age of participants was quite high (M= 73.69, SD = 9.12), and 31.1% of the participants were 80 years old and over. Being aged is one of the most important risk factors of depression since the advance of age is correspondent with existed number of health issues. From a literature review, one of the studies showed that older adults were at a higher risk of depression than those who were younger.²¹ Comparing with the study conducted in Trung Tu commune, Ha Noi in 2012 by Dao et al., it showed that the rate of depression was high, accounting for 66.89% or two-thirds of participants.¹⁰ Dao’s study was conducted in the second-largest city in Vietnam which had a booming population and strong urbanization. Moreover, it was conducted in one of the densest population areas in Hanoi and focused on the majority of government officers who lived in dormitories which are different from the distribution of private houses like Hue. However, comparing this study with previous studies conducted in other countries, our findings are quite similar to them, such

as Iran¹³ and Singapore.⁵ This can be explained by the fact that depression is related to economic and social issues.

Also, our results showed that age was a significant factor related to depression among older adults (p = .003). The proportion of depression in the participants aged 80-year-old and over (45.0%) was significantly higher than those aged 70–79 (29.0%) and 60–69 (28.8%). This result is consistent with Dao’s study which also showed that people aged 70 and over were two folds more depressed than those aged under 70 years old.¹⁰ This may explain that due to the aging process, physical health is declined, the risk of life-threatening diseases is increased, daily living activities are limited, and the ability to participate in clubs for the elderly is declined, especially those over 80 years old.

Furthermore, the finding of this study showed that there was a significant relationship between gender and depression. In the multivariate logistic regression model, females were 1.77 times more depressed than males. This result is consistent with previous studies in many countries.^{5, 11, 13, 22} In a regression model of Tanjanai’s study, the result showed that women were 1.5 times more depressed than men.¹³ This can be

explained by the role of women in current society. Women are still under pressure from family burdens to care for their children and to have limitations of social participation. Moreover, in some cases, women are economically dependent on their husbands and their self-determination is limited as well.

People with a lower educational level were more likely to experience depression than those with a higher educational level. Our result is consistent with previous studies. For example, Kim et al. (2009) reported that education had a significantly negative correlation with depression ($r = -0.265$, $p < 0.001$).¹¹ Another study conducted in Iran also found that uneducated older adults had a high prevalence of depression (39.8%).¹³ This may explain that the elderly with high levels of education have prepared their knowledge of general health as well as mental health; therefore, their abilities to respond to the environment in late-life are better.

This study also indicated that the rate of depression in older adults living alone was significantly higher than those living with family. This is similar to the study by Nguyen and Doan which showed that older people living alone had a higher rate of depression (50%) than those living with relatives (27.2%).²³ Moreover, the result of Yaka's study showed that older adults living alone were more likely to suffer from depression than those living with spouses or children (34.5% versus 16.3%, $p < 0.001$).⁷ It can be demonstrated that living alone can make older adults feel lonely or hard to share joys and sorrows with children, friends, and relatives. Thus, we suggest that in any socio-economic situation, the elderly need to live closely with their family.

Furthermore, the results of this study found that there was a significant relationship between low income and depression. People with incomes less than 900,000 VND per month were 3.15 times more depressed than those with incomes greater than 1,950,000 VND per month (OR = 3.15; 95% CI = 1.65-6.05). Another study also found that the highest rate of depression was among unemployed older adults without a pension (41.7%).¹³ Our results are similar to the findings of Li's and Tanjanai's studies which showed that income was related to depression.^{5,13} Kim and his colleagues had also recommended that economic support was important as a strategy for alleviating geriatric depression. Higher household incomes can help to reduce depressive symptoms by decreasing financial stress and increasing social support.¹¹

Many studies have shown that the association between the incidence of comorbidities and depression in the elderly was a bi-directional.²⁴ In our study, older adults who had no disease suffered from depression less than those who had at least two diseases (20.0% versus 43.4%). Furthermore, older adults with at least two diseases were 2.87 times more depressed than those with no disease (OR = 2.87; 95% CI = 1.48-5.56). This result is similar to the previous study.²⁴ Thus, we suggest that to prevent depression, nurses should pay more attention to the elderly who have a comorbidity, particularly those with at least two diseases.

Our results also showed that depression was significantly associated with ADL. It means that a lack of ability to carry out daily activities can increase the prevalence of depression in older adults. It is consistent with the studies that were conducted in China²⁵ and Iran.¹³ Moreover, dependence on oth-

ers for daily activities is the most important factor that increases the likelihood of depression with OR: 3.8 (CI 95%: 1.8–8.4).¹³ This may be explained by the decline of the function as it increases the negative thoughts that make the elderly more susceptible to depression.

Besides, there was a significant association between social support and depression. Our finding showed that older adults who had a high level of social support suffered from depression less than those who had a low level of social support (16.4% versus 61.8%, $p < .001$). In multivariate regression, the results also showed that people with a low level of social support were 3.82 times more depressed than those with a high level of social support (OR = 3.82; 95% CI = 1.27–11.47). It is consistent with Nguyen’s study which showed that the rate of depression in people with less social support (33.8%) is higher than those with high social support (22.7%).²³ Li’s study also found a negative association between social support and geriatric depression ($\beta = -0.18$, $p < .05$).²⁵ Europeans consider that a lack of support from friends is a significant factor of depression whereas Asians believe that support from family is an associated factor with depression. Therefore, regarding the Vietnamese context, we suggest that family members should provide support to the elderly which may help to prevent depression.

Recommendations

Depression in older adults in Hue, Vietnam has significant associations with age, gender, educational level, living condition, income, comorbidity, ADL, and social support. The findings

of this study provide updated data which can be used as empirical knowledge for developing interventions or strategies to prevent depression in the elderly. Nurses working in the community should be familiar with the use of depression–screening tools, such as GDS 15 to early detect depression. The referral system should be available for sending the elderly who are prone to depression to receive a further investigation. Studies regarding depression in the elderly, especially the vulnerable group should be conducted to explore more information.

Acknowledgement

This research is supported by the Research and Training Center for Enhancing Quality of Life of Working–Age People, Faculty of Nursing, Khon Kaen University.

References

1. WHO. WHO–World report on ageing and health 2015 [Internet]; 2015 [cited 2019 Nov 23]. Available from: <http://www.who.int/ageing/events/world-report-2015-launch/en/>
2. WHO. WHO–MSD–MER–2017.2–eng.pdf [Internet]; 2017 [cited 2019 Nov 23]. Available from: <https://apps.who.int/iris/bitstream/handle/10665/254610/WHO-MSD-MER-2017.2-eng.pdf>
3. American Psychological Association. Aging and depression [Internet]; 2012 [cited 2020 Jan 11]. Available from: <https://www.apa.org/helpcenter/aging-depression>
4. McKinnon SA, Holloway BM, Santoro MS, May AC, Cronan TA. The effects of age, mental health, and comorbidity on the perceived

- likelihood of hiring a healthcare advocate. *Californian J Health Promot* 2016;14(3): 45-57.
5. Li J, Theng Y-L, Foo S. Depression and psychosocial risk factors among community-dwelling older adults in Singapore. *J Cross-Cult Gerontol* 2015;30(4):409-22.
 6. Barua A, Ghosh MK, Kar N, Basilio MA. Prevalence of depressive disorders in the elderly. *Ann Saudi Med* 2011;31(6):620-4.
 7. Yaka E, Keskinoglu P, Ucku R, Yener GG, Tunca Z. Prevalence and risk factors of depression among community-dwelling elderly. *Arch Gerontol Geriatr* 2014;59(1):150-4.
 8. Ferrari AJ, Charlson FJ, Norman RE, Patten SB, Freedman G, Murray CJL, et al. Burden of depressive disorders by country, sex, age, and year: Findings from the global burden of disease study 2010. *PLoS Med* [Internet]; 2013 [cited 2019 Nov 23]. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3818162/>
 9. Nguyen Thai QC, Nguyen TH. Mental health literacy: Knowledge of depression among undergraduate students in Hanoi, Vietnam. *Int J Ment Health Syst* 2018;12(1):12-9. doi: 10.1186/s13033-018-0195-1
 10. Dao ATM, Nguyen VT, Nguyen HV, Nguyen LTK. Factors associated with depression among the elderly living in urban Vietnam. *BioMed Res Int* [Internet]; 2018 Nov 25 [cited 2019 Nov 23]. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6286754/>
 11. Kim JI, Choe MA, Chae YR. Prevalence and predictors of geriatric depression in community-dwelling elderly. *Asian Nurs Res* 2009;3(3):121-9.
 12. Mirkena Y, Reta MM, Haile K, Nassir Z, Sisay MM. Prevalence of depression and associated factors among older adults at Ambo town, Oromia region, Ethiopia. *BMC Psychiatry* [Internet]; 2018 [cited 2019 Nov 23]. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6194620/>
 13. Tanjanai PT, Moradinazar M, Najafi F. Prevalence of depression and related social and physical factors amongst the Iranian elderly population in 2012. *Geriatr Gerontol Int* 2017;17(1):126-31.
 14. Peltzer K, Phaswana-Mafuya N. Depression and associated factors in older adults in South Africa. *Glob Health Action* [Internet]; 2013 [cited 2019 Nov 23]. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3549465/>
 15. MOH. JAH2016_Edraft.pdf [Internet]; 2016 [cited 2019 Nov 23]. Available from: http://jahr.org.vn/downloads/JAH2016/JAH2016_Edraft.pdf
 16. Leggett A, Zarit SH, Nguyen NH, Hoang CN, Nguyen HT. The influence of social factors and health on depressive symptoms and worry: A study of older Vietnamese adults. *Aging Ment Health* 2012;16(6):780-6.
 17. Folstein MF, Folstein SE, McHugh PR. Mini-mental state: A practical method for grading the cognitive state of patients for the clinician. *J Psychiatr Res* 1975;12(3):189-98
 18. Katz S, Downs TD, Cash HR, Grotz RC. Progress in development of the index of ADL. *The Gerontologist* 1970;10(1):20-30.

19. Zimet GD, Dahlem NW, Zimet SG, Farley GK. The multidimensional scale of perceived social support. *J Pers Assess* 1988;52(1):30-41.
20. Greenberg SA. The Geriatric Depression Scale (GDS). *Best Pract Nurs Care Older Adults General assessment series*: New York: New York University Rory Meyers College of Nursing; 2019.
21. Bitew T. Prevalence and risk factors of depression in Ethiopia: A review. *Ethiop J Health Sci* 2014;24(2):161-9.
22. Padayachey U, Ramlall S, Chipps J. Depression in older adults: Prevalence and risk factors in a primary health care sample. *South Afr Fam Pract* 2017;59(2):61-6.
23. Nguyen HTL, DoanV DK. Nghiên cứu tình hình trầm cảm và các yếu tố liên quan ở người cao tuổi tịa thành phố Huế năm 2013. *Tạp Chí Học Thực Hành Số* 2013;880:228-32.
24. Pilia M, Bairwa M, Khurana H, Kumar N. Prevalence and predictors of depression in community-dwelling elderly in rural Haryana, India. *Indian J Community Med* 2017; 42(1):13-8.
25. Li N, Pang L, Chen G, Song X, Zhang J, Zheng X, et al. Risk factors for depression in older adults in Beijing. *Can J Psychiatry Rev Can Psychiatr* 2011; 56(8):466-73.