Research Article

EVALUATION OF DEPRESSION SCREENING AND INTERVENTION PROGRAMS FOR THE ELDERLY IN QUANG NGAI, VIETNAM

Tram-Anh Thi Nguyen[#], Nguyet Thi Trinh

Department of Psychology and Education, The University of Danang, Danang, Vietnam

Abstract

According to a survey published by the National Center for Health Statistics, depression can affect people of any age, but the prevalence of the condition was shown to be second greatest among people aged 65 and older. The most significant repercussion of late-life depressed syndrome is an increase in the overall death rate, which can be attributed to either suicide or other illnesses. The primary objective of this research is to evaluate the impacts of depression caused by biological factors, interpersonal variables, and other socially linked factors on Vietnamese senior people. The Geriatric Depression Scale (GDS-15) was used to evaluate and screen the elderly for signs of geriatric depression in the final data set, which included 630 males (40.1% of the total) and 942 females (59.9% of the total). The participants ranged in age from 60 to 80 years and were all older than that. The most important findings revealed that aspects of this study, such as gender and the amount of time spent sleeping each day, had the potential to operate as predictors of elderly depression. *ASEAN Journal of Psychiatry, Vol. 24 (5) May, 2023; 1-9.*

Keywords: Geriatric Depression; Elderly; Predictors; Vietnamese; Biological Factors; Gender

Introduction

Depression, featuring by the presence of feelings of sadness, emptiness, or irritability, accompanied by bodily and cognitive changes, is a common mental disorder affecting more than 264 million people worldwide [1]. The report from National Center for Health Statistics showed that depression can be caused by all ages and people aging from 65 and over showed the second highest prevalence [2]. There has been lacking of robust evidence about the correlation between aging and increasing risk of depression, the prevalence of depression in the elderly and young people is the same if the age-related disease factor are excluded [3,4]. Evidence shows that the rate of depression in the elderly in the community ranges from 10%-15% depending on different studies, of which severe syndrome accounts for 1-4% [5,6]. Although the prevalence is not too high, depression in the elderly still needs concerning because of its serious effects.

Geriatric depression or late-life depression is de-

fined as the depressive syndromes that caused in adults older than age 65 years [5]. The most compelling consequences of late-life depressive syndrome are increasing mortality from both suicide and medical illness [7]. Firstly, mortality by suicide has been found from depressive older adults whereas during or not during treatment. The study of Lebowitz et al. demonstrated that committing suicidal behavior rate from 60% to 75% in depressive patients 75 years of age and older [8]. Depression along with dementia is one of three main group of risk factor for suicidal behavior in patient aged 80 and older [9]. Furthermore, the elderly in treatment for depression are still reported to have suicidal ideation and suicidal intention [10]. Lastly, in the case of elderly people died from medical illnesses, depression still have a mediation role in increasing mortality. Myocardial infraction is value evidence for this, where depression indirectly elevates mortality risk under arrhythmic mechanism [11]. Besides, sleeping and eating distempered, fatigue, reducing focus are also consequences of depression that

have profound affect to daily life activities of the elderly.

Many studies on depression in the elderly are being conducted in Vietnam. Typically, Ngoc conducted research on depression in the elderly in Thu Duc District, Ho Chi Minh City; Linh conducted research on the impact of financial situation and related factors on depression in the elderly in Hue city; and Khanh conducted research in Quang Ngai province [12-14]. These studies have also revealed the factors influencing the level of depression in the elderly, such as gender, economic circumstances, living area, and so on. There are still few studies on this important topic in Quang Ngai province. With this in mind, we conducted a study to investigate, survey, and evaluate the current state of depression in the elderly in Quang Ngai province. The topic will also demonstrate the independent factors that influence the difference in geriatric depression between groups.

As we age, our characteristics are very different from those of adults, so studying the causes of depression in the elderly needs a distinct and multidimensional approach. In which, the most prominent feature is a decrease in adaptive capacity leading to susceptibility to medical diseases and psycho-social problems [15]. Therefore, depression in the elderly often accompanies and interacts with age-related diseases and psychosocial adversity [16]. Some hypothesized factor behind the etiology of late-life depression includes biomedical factors, interpersonal factors, and other social-related factors. Study on biological factors by Tiemeier et al., such as cerebrovascular disease, inflammatory status, and endocrine and nutritional status; disturbance of the hypothalamic-adrenal-adrenal axis in the elderly has an impact on the severity of depression in the elderly [17]. Thus, in our study, we consider the difference in the severity of depression between groups of elderly people with different numbers of diseases. Another biomedical factor is usually concerned as a very important role in the development of geriatric depression is gene. Study of twins showed that if one partner has depression, the risk of the other partner also has depression is 50% in identical twins while this rate in fraternal twins is only 10%-25% [18]. Ample evidence from studies of twins or adopted children proved that genetic factors play an important role in the pathogenesis of mood disorders. To investigate the impact of genes on depression in the elderly, we will compare groups of elderly people whose rela-

tives also suffer from depression. In terms of interpersonal factors, interpersonal theory asserts that the breakdown/conflict in a specific relationship, particularly the relationship with the husband or other family members, and relationships at work; the loss of a loved one has been linked to depression. Relationships play an important role in the onset and progression of depression.

According to the study, an individual's interaction with the social environment around them may influence the increase in depressive symptoms. An individual is depressed because their relationship is dysfunctional. Our study aims to assert this point by examining the differences between different groups of elderly people in terms of their marital status and relationships with children, as measured by whether they live with children. The group of social factors including education, current job, living area, is also being considered in our study as independent factors. Many researchers have been concerned about the role of socioeconomic factors in the causes of mental disorders in general and depression. Unemployment, low income, and a lack of education are all indicators of socioeconomic deprivation and are considered risk factors for mental disorders [19,20]. According to Newmann, indicators such as low income, employment status, and the status of the elderly in society are predictors of a small but significant relationship with depression in the elderly [3,21]. Study of Areán et al. demonstrated that when the elderly does not have a health-prevention savings account, they experience stress and anxiety [22]. Furthermore, our study examines differences in the severity of geriatric depression in different age groups and gender groups because depression tends to worsen with age, with large differences in levels of unexplained depression by age, gender, or marital status [23]. Depressive symptoms and the diagnosis of unipolar depression are more common in women than in men, according to studies on gender differences in depression in the elderly [24]. Widowhood, chronic illness, dementia, and poverty are all factors that contribute to this disparity. However, because this difference is heavily influenced by psychosocial adversity, we wanted to investigate this pattern in Vietnam, which has many cultural differences from the communities studied. Finally, we evaluated the effect of sleep duration on geriatric depression, as there is a link between short and long sleep duration and an increased risk of depression in adults [25].

For diagnosing late-life depression, clinical inter-

view by a psychiatrist based on the criteria of the DSM-5 is still considered as gold standard. Therefore, our studies assess depression in the elderly *via* clinical examination by psychiatrists. The Vietnamese version of the Geriatric Depression Scale will be used for screening and assessment (GDS-15). According to Felix Torres, symptoms' intensity can vary from low to intense, including: Feeling sad or depressed; Loss of interest or pleasure in activities that were once enjoyed; Changes in appetite-weight loss or gain unrelated to diet; Difficulty sleeping or sleeping too much; Loss of energy or increased fatigue; Increased aimless physical activity (e.g., inability to sit still, walk, write) or slowed movement or voice Feeling worthless or guilty; Difficulty thinking, concentrating or making decisions; Thinking about death or suicide [26]. However, geriatric depression is often underdiagnosed. Difficult diagnoses are usually those with nonspecific symptoms such as weight loss, anorexia, persistent pain, behavioral disturbances, excessive drug abuse, or over anxiety. Depression in the elderly is more often manifested by physical symptoms such as headaches, fatigue, digestive disorders, insomnia. Besides, memory disorders such as decreased attention are also very common in depression in the elderly.

Clinicians have many difficulties in diagnosing depression in the elderly because classic depressive symptoms can be masked by complaints of somatic disorder due to excessive anxiety, paranoid excitability, and cognitive problems [18].

Materials and Methods

Participants

The main subjects of our study are elderly people over 60 years old in Quang Ngai province. The sample size of the study was calculated according to the formula of Daniel and Cross with the values selected as 0.036, 0.05, 1.96, 2 respectively for the parameters d, α, Z and DE (Design Effect) [27]. Adding 10% of the sample size to eliminate common method bias, the final sample size to collect is 1572.

After the screening process, no response was eliminated. The final data set involved 630 males (40.1%) and 942 females (59.9%) in which 661 participants (42.0%) aged 60-70, 598 participants (38.0%) at the age of 70-80 years and the rest are above 80 years old. Table 1 illustrates the descriptive statistics of participants.

Table 1. Descriptive statistics of demographic variables.

Survey participants		Mean	SD
Gender	Male	1.07	0.321
	Female	1.1	0.35
Age	60-70 years old	1.08	0.325
	71-80 years old	1.11	0.396
	Above 80 years old	1.09	0.228
Area	Rural	1.09	0.339
	Urban	1.08	0.339
Marital status	Unmarried	1.11	0.343
	Divorced/separated	1.04	0.204
	Widower/widow	1.09	0.342
	Married	1.08	0.34
Academic level	Unlettered	1.13	0.391
	Primary	1.08	0.334
	Secondary	1.07	0.307
	High school	1.09	0.381
	Vocational school and above	1.03	0.246
Main job	Retirement, other jobs	1.09	0.341
	Housework	1.07	0.294
	Agriculture	1.11	0.39

Living with	Wife/ Husband	1.09	0.336
	Son/daughter	1.08	0.344
	Grandchild and others	1.15	0.481
	Alone	1.08	0.29
Daily sleep time	Below 4 hours	1.11	0.388
	4-6 hours	1.07	0.275
	7-8 hours	1.08	0.342
	Above 8 hours	1.04	0.169
Medical status	Without illness	1.08	0.322
	Having 1 illness	1.11	0.368
	Having 2 illness	1.04	0.262
Someone in the family has depression	Yes	1.08	0.334
	No	1.15	0.435

The participants got the low score on the levels of depression. Table 1 presents the mean scores of groups on depression. The results showed that there was an insignificant difference between males and females when considered jointly on the score of depression, with females (M=1.10, SD=0.35) scored a little higher than males (M=1.07, SD=0.321). The elderly who is from 71 to 80 years old (M=1.11, SD=0.396) scored a little higher than the elderly 60-70 years old (M=1.08, SD=0.325) and above 80 years old (M=1.09, SD=0.328). The survey result reported that the elderly from rural area (M=1.09, SD=0.339) scored higher than other from urban area (M=1.08, SD=0.339). The elderly who is unmarried (M=1.11, SD=0.343) scored a little higher than others who are divorced/separated (M=1.04, SD=0.204), widower/widow (M=1.09, SD=0.342) or married (M=1.08, SD=0.34). With the academic level groups, the mean score of the participants who is unlettered (M=1.13, SD=0.391) was a little higher than primary level participants (M=1.08, SD=0.334), secondary level participants (M=1.07, SD=0.307), high school level participants (M=1.09, SD=0.381) or vocational school level and above (M=1.03, SD=0.246). The achieved finding showed that the elderly who have jobs in agriculture (M=1.1, SD=0.39) scored a little higher than others who are retired or other jobs (M=1.09, SD=0.341), housework (M=1.07, SD=0.294). The elderly who is living with grandchild and others (M=1.15, SD=0.481) scored a higher than others who are living with wife/husband (M=1.09, SD=0.336), son/daughter (M=1.08, SD=0.344), or living alone (M=1.08, SD=0.29). People who often sleep below 4 hours per day (M=1.11, SD=0.388) scored higher than others who often sleep from 4 to 6 hours per day (M=1.07, SD=0.275), from 7 to 8 hours per day (M=1.08, SD=0.342), or above 8 hours per day (M=1.04, SD=0.169). Looking at the depression level of the elderly in relation to the medical condition, it was found that those with 1 disease had a higher level of depression (M=1,11, SD=0,368) than those without the disease as well as having 2 or more diseases. The finding showed that the participants who have relative(s) with depression (M=1.08, SD=0.334) scored a little lower than others who do not have relative(s) with depression (M=1.15, SD=0.435).

Measurements

The Geriatric Depression Scale (GDS-15) is a well-known assessment use to evaluate and screen the elderly with signs of geriatric depression. The items are rate on bipolar scale with 2 options yes or no, in which item 1, 5, 7, 11, 13 are reverse items. Scores of 0-5 are considered normal, depending on age, education; 6-8 indicates mild depression; 9-11 indicates moderate depression; and 12-15 indicate major depression. It takes about 5 to 7 minutes to complete.

Procedure

The sampling process of the study consisted of two steps following the systematic random sampling method. Quang Ngai province is divided into two areas, suburban and urban, so this is also the criterion for stratification of sampling. Based on the population of each region, the required number of participants for the suburban area was 815 and the suburban area was 757. In the next step, participants were randomly selected *via* accepting the invitation sent by collaborators of the Service Team including the leader of the residential group

and the Elderly Association in collaboration with the village health officer. Participants were finally assessed by psychologist and psychiatrist at the commune/ward health station.

Results

The levels of geriatric depression are presented in Table 2. The below table showed that the highest rate of geriatric depression was minimal depression (93%) and the lowest rate was severe depression (0.1%) with only one older person. The proportion of mild depression was 5.3% of the depressed elderly in which the cases with moderate depression had 1.6%. The mean score of the elderly in the levels of geriatric depression was 1.09 (SD=0,339).

An independent sample t-test was conducted to explore the difference between participant groups in the level of geriatric depression. An alpha level of 0.05 was utilized. Descriptive statistics are in Table 3. The results showed that there was a gender difference in the levels of depression in the elderly when considered jointly on the score of depression, $t(1570)=-1.292$, $p=0.013$ with females

(M=1.10, SD=0.35) scored a higher than males (M=1.07, SD=0.321). There was a difference between participants who had family member(s) with depression and did not when considered jointly on the score of depression, $t(1570)=-1.550$, $p=0.004$. The participants who did not have relative(s) with depression (M=1.15, SD=0.435) scored higher than others who had relative(s) with depression (M=1.08, SD=0.334). No significant difference between the elderly from rural area and urban area $t(1570)=0.209$, $p=0.710$.

A one-way between subjects Analysis of Variance (ANOVA) was conducted to compare the effect of age, marital status, academic level, main job; person's living with, daily sleep time, medical status on the levels of geriatric depression. The findings were presented in Table 4. There was a significant effect of age on the levels of geriatric depression $F(2,1569)=3.810$, $p=0.022$. Post hoc comparisons using the turkey Honestly Significant Difference (HSD) test indicated that the mean score for the elderly who is from 71 to 80 years old (M=1.11, SD=0.396) scored a little higher than the elderly 60-70 years old (M=1.08, SD=0.325) and above 80 years old (M=1.09, SD=0.328).

Table 2. The levels of depression in the elderly.

The levels of depression	N	Percentage (%)	M	SD
Minimal depression	1463	93	1.09	0.339
Mild depression	83	5.3	-	-
Moderate depression	25	1.6	-	-
Severe depression	1	0.1	-	-
Total	1572	100	-	-

Table 3. The levels of depression in the elderly.

Factor	Value	M	SD	T-test	
				t	Sig. (2-tailed)
Gender	Male	1.07	0.321	-1.292	0.013
	Female	1.1	0.35		
Area	Rural area	1.09	0.339	0.209	0.71
	Urban area	1.08	0.339		
Family member(s) with depression	No	1.08	0.334	-1.55	0.004
	Yes	1.15	0.435		

Table 4. One-way ANOVA results.

Factor	Value	M	SD	F-test		
				df	F	Sig. (2-tailed)
Age	60-70 years old	1.08	0.325	2	3.81	0.022
	71-80 years old	1.11	0.396			
	Above 80 years old	1.09	0.228			
Marital status	Unmarried	1.11	0.343	3	0..261	0.853
	Divorced/separated	1.04	0.204			
	Widower/widow	1.09	0.342			
	Married	1.08	0.34			
Academic level	Unlettered	1.13	0.391	3	1.495	0.201
	Primary	1.08	0.334			
	Secondary	1.07	0.307			
	High school	1.09	0.381			
	Vocational school and above	1.03	0.246			
Main job	Retirement, other jobs	1.09	0.341	2	2.027	0.132
	Housework	1.07	0.294			
	Agriculture	1.11	0.39			
Living with	Wife/ Husband	1.09	0.336	3	0.738	0.529
	Son/daughter	1.08	0.344			
	Grandchild and others	1.15	0.481			
	Alone	1.08	0.29			
Daily sleep time	Below 4 hours	1.11	0.388	3	2.103	0.098
	4-6 hours	1.07	0.275			
	7-8 hours	1.08	0.342			
	Above 8 hours	1.04	0.169			
Medical status	Without illness	1.08	0.322	2	2.296	0.101
	Having 1 illness	1.11	0.368			
	Having 2 illness	1.04	0.262			

There was no significant effect of marital status on the levels of geriatric depression $F_{(2,1568)}=0.261$, p=0.853. There was no significant effect of academic level on the levels of geriatric depression $F_{(2, 1568)}=1.495$, p=0.201. There was no significant effect of main job on the levels of geriatric depression $F_{(2, 1569)}=2.027$, p=0.132. There was no significant effect of person's living with on the levels of geriatric depression $F_{(2,1568)}=0.738$, p=0.529. There was no significant effect of daily sleep time on the levels of geriatric depression $F_{(2,1568)}=2.103$, p=0.098. There was no significant effect of medical status on the levels of geriatric depression $F_{(2,1569)}=2.296$, p=0.101.

Discussion

This study is conducted to examine the influence of biomedical factors, interpersonal factors, and other social-related factors on depression in Vietnamese elderly. The main achieved results showed that most factors in this study could be predictors of the geriatric depression. However, there was just a small difference in mean scores between groups of the depressed older people, so that future studies should investigate the contributing factors of the elderly depression with other data analysis methods or other research approach to clarify the influence of those factors.

Our research reported that the level of depression in elderly women was more severe than elderly men. The present study confirmed the findings about gender difference in geriatric depression and elderly women were at greater risk for depression than elderly men. This finding is in accordance with findings reported by Girgus et al. who reviewed numerous abstracts of studies on depression in old age and concluded that there was gender difference in depression of people over the age of 60 [24]. Specifically, the authors revealed that elderly women had a significant greater likelihood of a depression diagnosis or more depressive symptoms based on the results of standard measures, so that women were more likely to have a diagnosis of depression or more depressive symptoms when compared to men. The reasons leading to this difference could be gender differences in negative life events, stressors and coping styles in the elderly. Seematter-Bagnoud et al. confirmed that women experienced a higher frequency of negative life events such as bereavement, onset of a new illness, disease, family conflicts, and suffered more stressors and negative effects on their mental health than men [28]. It is also suggested that women frequently ruminate when face with difficulties or stressors and this coping style could contribute to the risk of increasing depressive symptoms [29-31]. With rumination, avoidance coping styles were also more frequently reported by women than men and this would lead to the gender difference in geriatric depression [32]. Contrary to our findings, a cross-sectional study conducted in a Swedish sample in the age group 65-80 years of Djukanović et al. showed that there were more elderly men experienced depressive symptoms than women [33]. Additionally, Forlani et al. conducted a cross-sectional analysis with 359 participants aged 74 years and older and concluded that there was no gender difference in prevalence of depression [34].

The findings showed that the elderly who slept below four hours per day had a higher level of depression than others. Therefore, it could be concluded that sleep duration could be a factor influencing depressive symptoms in the older adults. Szklo-Coxe et al. found that the elderly with short sleep less than six hours were likely to at higher risk of depression than others with long sleep more than nine hours [35]. The relationship between sleep duration and depressive symptoms also reported in the study of Jackowska and Poole who found that participants aged 50 years and older who slept five hours and below on an average weeknight would had higher odds of depressive symptoms than others. Additionally, the authors also discovered that feeling tired when waking up in the morning and the difficulty in falling asleep was predictors of depressive symptoms. Individuals with short sleep duration combined with high sleep problems were nearly twice as likely to experience depressive symptoms at follow-up [36]. Short sleep duration would increase tiredness in daytime with sleepiness or psychological fatigue and then lead to depression so that short sleep duration is significantly associated with increasing the risk of depression [25,37,38].

Conclusion

Depression, featuring by the presence of feelings of sadness, emptiness, or irritability, accompanied by bodily and cognitive changes, is a common mental disorder affecting more than 264 million people worldwide. This study is conducted to examine the influence of biomedical factors, interpersonal factors, and other social-related factors on depression in Vietnamese elderly. The main achieved results showed that factors in this study

such as gender, daily sleep time, medical status could be predictors of the geriatric depression. Future studies should further investigate the contributing factors of the elderly depression with other data analysis methods or other research approach to clarify the influence of those factors and suggest strategies to protect and improve psychological well-being of the older people.

References

1. World health organization. Depression. 2019.

2. Villarroel MA, Terlizzi EP. Symptoms of depression among adults: United States, 2019. National Center for Health Statistics. 2020;1-8.

3. Newmann JP. Aging and depression. Psychology and Aging. 1989;4(2):150.

4. Roberts RE, Kaplan GA, Shema SJ, Strawbridge WJ. Does growing old increase the risk for depression. American Journal of Psychiatry. 1997;154(10):1384-1390.

5. Alexopoulos GS. Depression in the elderly. The Lancet. 2005;365(9475):1961-1970.

6. Sözeri-Varma G. Depression in the elderly: Clinical features and risk factors. Aging and Disease. 2012;3(6):465-471.

7. Reynolds III CF, Kupfer DJ. Depression and aging: A look to the future. Psychiatric Services. 1999;50(9):1167-1172.

8. Lebowitz BD, Pearson JL, Schneider LS, Reynolds CF, Alexopoulos GS, et al. Diagnosis and treatment of depression in late life: Consensus statement update. Jama. 1997;278(14):1186-1190.

9. Sinyor M, Tan LP, Schaffer A, Gallagher D, Shulman K. Suicide in the oldest old: An observational study and cluster analysis. International Journal of Geriatric Psychiatry. 2016;31(1):33-40.

10. Szanto K, Prigerson H, Houck P, Ehrenpreis L, Reynolds III CF. Suicidal ideation in elderly bereaved: The role of complicated grief. Suicide and Life-Threatening Behavior. 1997;27(2):194-207.

11. Frasure-Smith N, Lespérance F, Talajic M. Depression and 18-month prognosis after myocardial infarction. Circulation. 1995;91(4):999-1005.

12. Ngoc ND. Study on the prevalence of depressive disorder and some related factors in the elderly in Thu Duc district, Ho Chi Minh City in 2014. 2014.

13. Linh NHT. Study on the prevalence of depressive disorder in the elderly in Hue city. 2013.

14. Khanh DVD. Research on depression in the elderly in Son Tinh district, Quang Ngai province in 2015. 2015.

15. Phong DN. Age health. Medical Publisher. 2004;187.

16. Alexopoulos GS, Buckwalter K, Olin J, Martinez R, Wainscott C, at al. Comorbidity of late life depression: An opportunity for research on mechanisms and treatment. Biological Psychiatry. 2002;52(6):543-558.

17. Tiemeier H, Bakker SL, Hofman A, Koudstaal PJ, Breteler MM. Cerebral haemodynamics and depression in the elderly. Journal of Neurology, Neurosurgery & Psychiatry. 2002;73(1):34-39.

18. Huy BQ. Depression. Medical Publisher. 2008;7-72.

19. Patel V, Araya R, De Lima M, Ludermir A, Todd C. Women, poverty and common mental disorders in four restructuring societies. Social Science & Medicine. 1999;49(11):1461-1471.

20. Weich S, Nazroo J, Sproston K, McManus S, Blanchard M, et al. Common mental disorders and ethnicity in England: The EMPIRIC study. Psychological Medicine. 2004;34(8):1543-1551.

21. Malhi GS, Moore J, McGuffin P. The genetics of major depressive disorder. Current Psychiatry Reports. 2000;2(2):165-169.

22. Areán PA, Gum A, McCulloch CE, Bostrom A, Gallagher-Thompson D, et al. Treatment of depression in low-income older adults. Psychology and Aging. 2005;20(4):601.

23. Copeland JR, Beekman AT, Braam AW, Dewey ME, Delespaul P, et al. Depression among older people in Europe: The EURODEP studies. World Psychiatry. 2004;3(1):45-49.

24. Girgus JS, Yang K, Ferri CV. The gender difference in depression: Are elderly women at greater risk for depression than elderly men?

Geriatrics. 2017;2(4):35.

25. Zhai L, Zhang H, Zhang D. Sleep duration and depression among adults: A meta-analysis of prospective studies. Depression and Anxiety. 2015;32(9):664-670.

26. Felix Torres MM. American Psychiatric Association. 2020.

27. Daniel WW, Cross CL. Biostatistics: A foundation for analysis in the health sciences. Wiley. 2018.

28. Seematter-Bagnoud L, Karmaniola A, Santos-Eggimann B. Adverse life events among community-dwelling persons aged 65-70 years: Gender differences in occurrence and perceived psychological consequences. Social Psychiatry and Psychiatric Epidemiology. 2010;45(1):9-16.

29. Nolen-Hoeksema S, Larson J, Grayson C. Explaining the gender difference in depressive symptoms. Journal of Personality and Social Psychology. 1999;77(5):1061-1072.

30. Thomsen DK, Mehlsen MY, Viidik A, Sommerlund B, Zachariae R. Age and gender differences in negative affect-is there a role for emotion regulation? Personality and Individual Differences. 2005;38(8):1935-1946.

31. Trives JJ, Bravo BN, Postigo JM, Segura LR, Watkins E. Age and gender differences in emotion regulation strategies: Autobiographical memory, rumination, problem solving and distraction. The Spanish Journal of Psychology. 2016;19:E43.

32. Lutzky SM, Knight BG. Explaining gender differences in caregiver distress: The roles of emotional attentiveness and coping styles. Psychology and Aging. 1994;9(4):513-519.

33. Djukanović I, Sorjonen K, Peterson U. Association between depressive symptoms and age, sex, loneliness and treatment among older people in Sweden. Aging & Mental Health. 2015;19(6):560-568.

34. Forlani C, Morri M, Ferrari B, Dalmonte E, Menchetti M, et al. Prevalence and gender differences in late-life depression: A population-based study. The American Journal of Geriatric Psychiatry. 2014;22(4):370-380.

35. Szklo-Coxe M, Young T, Peppard PE, Finn LA, Benca RM. Prospective associations of insomnia markers and symptoms with depression. American Journal of Epidemiology. 2010;171(6):709-720.

36. Jackowska M, Poole L. Sleep problems, short sleep and a combination of both increase the risk of depressive symptoms in older people: A 6-year follow-up investigation from the english longitudinal study of ageing. Sleep Medicine. 2017;37:60-65.

37. Shen J, Barbera J, Shapiro CM. Distinguishing sleepiness and fatigue: Focus on definition and measurement. Sleep Medicine Reviews. 2006;10(1):63-76.

38. Van Noorden MS, Van Fenema EM, Van Der Wee NJ, Zitman FG, Giltay EJ. Predicting outcome of depression using the depressive symptom profile: The Leiden Routine Outcome Monitoring Study. Depression and Anxiety. 2012;29(6):523-530.

Correspondence author: Tram-Anh Thi Nguyen, Department of Psychology and Education, The University of Danang, Danang City, Vietnam

E mail: nttanh@ued.udn.vn