Unsafe house environment influencing on depression in the elderly in Thailand[*]

[1,2]Rangsima Thipprakmas, [1]Jiraporn Chompikul, [3]Supattra Srivanichakorn,
[1]Aroonsri Mongkolchati, [1]Kawinarat Suthisukon, [1]Kriengsak Thamma-Aphiphol,
[4]Jutatip Sillabutra, [1]Weerawit Viripiromgool and [1]Kenika Chanchanakit

[1]ASEAN Institute for Health Development, Mahidol University, Thailand.
[2]Rasisalai Hospital, Srisaket province, Thailand.
[3]Department of Disease Control, Ministry of Public Health, Thailand.
[4]Faculty of Public Health, Mahidol University, Thailand.
[1]Corresponding Author's Email: Rangsima.Thi@outlook.co.th

Abstract

The house environment has a contribution to the prevalence of depression in the elderly. Unsafe house environment tend to enhance the depressive conditions of the elderly. This study was conducted to determine prevalence of depression, and to examine if unsafe house environment influencing on depression in the elderly in Thailand. A national cross-sectional survey which the data collection was conducted from December 2012 to April, 2013 was employed in this study. A total of 4,564 elderly was selected by the multi-stage random sampling. Chi-square tests and multiple logistic regression were used to examine associations between independent variables and depression in the elderly.

The researcher found that the prevalence of depression within the last 2 weeks in the elderly was 30.6%. Chi square tests detected the factors significantly associated with depression in the elderly were age groups, sex, education levels, marital status, occupation, types of family, religion, income per month, economic self-reliance, safe house environment, quality of life, family relationship, having a disease and daily life activities. In multiple logistic regression, low income per month (Adj. OR=1.29, 95% CI=1.05-1.59), little economic self-reliance (Adj. OR=1.89, 95% CI=1.27-2.80), poor quality of life (Adj. OR=7.26, 95% CI= 4.16-12.66), fair quality of life (Adj. OR=2.81, 95% CI=2.01-3.92), having a disease (Adj. OR=1.69, 95% CI=1.37-2.09), needed assistance for daily life activities (Adj. OR=1.61, 95% CI=1.19-2.18) and unsafe house environment (Adj. OR=2.03, 95% CI=1.59-2.61) were still remained as the

significant risk factors for depression in the elderly. After adjusting for other factors, the elderly who lived in the unsafe house environment were about 2 times more likely to get depression than those living in the safe house environment. The findings indicate that providing job opportunity to generate income for poor elderly should be widely promoted across the country. The local authority should take more responsibility in making the house environment more safe for the elderly.

Keywords: Depression; Elderly; Unsafe house environment; Quality of life; Thailand

Introduction

Depression is a mental health disorder characterized by chronic unhappiness, inability to experience pleasure, exhaustion, difficulty concentrating, appetite and sleep changes, feelings of guilt or worthlessness, and suicidal ideation (Pocklington, 2017). It is a mood disorder that can lead to a consistent feeling of lack of interest or sadness. It could directly influence a person able to think, feel, or act. If such symptoms last for more than 2 weeks, it is called to be depression. Different symptoms are associated with depression including feeling sad, teary, lonely, unhappy or empty (Araújo et al. 2015).

Many people misinterpreted depression symptoms as aging (Frerichs et al. 2016). Therefore, most geriatric depression symptoms were left untreated leading to more serious problems. A study carried out in nursing home, patients revealed that increasing depression could lead to a rising likelihood of death from diseases. Depression also increased the risk of death from a heart attack. While death was a common risk among patients of depression, another serious impact was suicidal feeling. Elderly patients with depression tended to have suicidal thought with a lack of interest in living life (Fok et al. 2014). The suicide rate among elderly patient between the age of 65 and above was a serious issue highlighted by National Institute of Mental Health. While it impacts life quality, it also affects the social behavior along with their ability to deal with life challenges. Thus, treatment of depression was highly important to ensure a safe and healthy life for the elderly.

While anxiety was among the most alarming mental disease of US, depression was also increase in prevalence; not only in the US but in different parts of the world. According to WHO (WHO, 2017) during 2017, 264 million individuals around the world suffered from persistent depression. However, during the year 2018, the total number of the elderly found to be dealing with different types of depression has reached 322 million. Only 3.4% of the

entire world population were found to have depression, while the figure excluded several older people that may experience symptoms but were not diagnosed for depressive disorder (Wisajun, and Lotrakul, 2018). In developing countries or low developed countries, people tend to have more serious levels of depression. While depression was increasing in different countries, it was also found that depression among females was higher (4.1%) when compared to males (2.7%) (McLaren et al. 2015).

In Thailand, depression has been a prevalent mental disorder which was under-recognized, not only by people affected but also by the public and by the health personnel. A study of WHO further revealed that around 800,000 older people suicide on a yearly basis, and among these individual's depression due to different reasons, was a common phenomenon. The study further revealed that depression remained among the top causes of suicide. Some studies showed that among different age groups, adults were found to have a high rate of depression while suicide was also increasing among the adults (Snippe et al. 2016). During the year 2012, some studies revealed females tended to have higher depression and suicide rates when compared to males. Furthermore, the study also concluded that depression was higher among adults above the age of 45 years. While the younger population between age 15-18, had lower depression, the people above the age of 60 also had a low depression. Other studies pointed that depression among adults, the elderly above the age of 70 were at higher risk of developing depression disorder when compared to other age groups.

In Thailand, the prevalence was as high as 68% when mild depression was included in the statistic in the year of 2016. Despite high rates of geriatric depression, depression was underdiagnosed and undertreated in this population which indicated a need for research to identify risk factors and develop effective interventions. The prevalence of depression in Thailand has been reported to range from 5.9 to 38.9% (Woolhouse et al. 2015) depending on the study population and the instrument used in the study. Females have been shown to be more likely to have depression than males (Andrews et al., 2018). Past research had shown that marital status, economic situation and family relationships played a role in geriatric depression. The risk was higher for women and religion had a protective effect (Hung et al. 2017; Charoensakulchai et al. 2019).

Due to limited studies available to define root causes leading to depression, there would be a gap in preventative measure development to address depression in the elderly in Thailand. Thus, this study was significant as it addressed a gap in the existing academic

literature, as there had also been few studies about risk factors of geriatric depression in Thailand. Despite research indicated that cultural context influenced how particular risk factors contributed to the likelihood of developing depression (Hung et al. 2017). The research identified whether unsafe house environment or other factors were contributing to depression. Thus, the research was significant as identifying geriatric depression risk factors where the findings would be useful for developing preventative measures.

The main objective of this study was to examine prevalence and risk factors for depression in the elderly in Thailand. The research significantly contributed by increasing awareness regarding issue of increasing depression in the elderly. It revealed the root causes of depression that government must target to prevent the risk from increasing. It could help the government in developing programs that help to educate the society regarding the adverse effects of geriatric depression. It could also help in development of reforms and measures required to reduce risk of growing geriatric depression in the society.

Objectives of the Research

1. to determine prevalence of depression in the elderly in Thailand.
2. to examine if unsafe house environment influencing on depression.

Research Methodology

This research was conducted as a national survey. The study population for this research comprised older men and women residing in Thailand, with elderly defined as ≥ 60 years of age, which is the threshold typically used for classifying individuals as seniors in Thailand. Their family members were working away from home. The inclusion criteria were: 1) elderly individuals who lived for six months or more in the study area, 2) elderly individuals raising their grandchildren aged$\leq$ 18 years or disable persons and 3) elderly individuals living with their spouse or alone.

Study participants were recruited from four regions in Thailand: Bangkok, Central, North, and Northeast and South. The two provinces with the highest and second-highest numbers of elderly residents were selected from each region to ensure sufficient representation of seniors, and a random sampling technique was used to choose 20% of the districts in each province for regional representation. A list of the provinces and districts that will be included in this research provided in Table 1.

Table 3.1 Selected regions, provinces, and districts

Region	Provinces	Districts
North	Chiang Mai	Mueng, Sanpatong, Jomtong, Chiang Dao and Maeye
	NakhonSawan	Nong-bua, PaiSalee and Takfa
North East	NakhonRatchasima	Mueng, Non-Thai, KornbureePratai, Sengsang and Sikew
	KhonKaen	Wang Noi, Wang Yai, Pon, Ban Pai and Nong Song Hong
Central	Bangkok	Ratchathewi and Phayathai
	Nonthaburi	Bangbuatong, Sai-Noi and Bang Yai
	Chonburee	Mueng, Bo Thong, PhanasNikhomandNongYai
	Supanburee	Dan Chang, Don Jadee, Au Thong and Nongyasai
South	Nakhon Si Thammasat	Mueng, Chawing, Hausa and No pitta
	Songkhla	Radon, Kasasin and Stingray

Step 1: The sample size was estimated using a confidence interval of 95%, an acceptance error of 1.5%, and a proportion of having depression in 2016 of 0.68. The authors added 20% to the sample size in case of any incomplete data. Thus, the required sample size was at least 4,564. Multi-stage random sampling was employed to draw a sample. The participants were recruited from four regions in Thailand: north, northeast, central and south. Two provinces with the highest and second-highest numbers of elderly residents were selected from north, northeast and south regions. Four provinces with the large number of the elderly were selected from the central region to ensure sufficient representation of seniors.

Step 2: The questionnaire that was created for this research comprised eight parts.

The first part was designed to collect socio-demographic data including age, gender, education level, marital status, occupation, type of family and religion. This part comprised of eight questions.

The second part of the questionnaire included a series of question about health care and personal diseases such as having hypertension, diabetes, etc. This part comprised of 6 questions.

The third part was about relationship of their family relationship with living together 5 questions. The participants got 0 point if they did not do,1 point if they sometimes did and 2 points if they always did it.

The fourth part of questionnaires was designed to assess the economic situation. This part comprised of 3 questions interviewed about the family income per month income comparing with expense and economic self-reliance. This part also included the safe house environment which consisted of 7 questions. The scoring was 1 point if the participants said YES. and was 0 point if they said NO. The participants having total score of 7 points were classified into living in safe house environment.

The fifth part consisted of information about social support. This part included 8 questions. The scoring was 1 point given if the participants received social support, 0 if they did not receive any social support.

The sixth part which designed to assess quality of life. Questionnaires about quality of life comprised of 5-point Likert scale of 26 questions that divided into 2 groups; positive statement (23 questions) and negative statement (3 questions) . The scoring was 1 point for NO, 2 points for LESS, 3 points for MODERATE, 4 for VERY MUCH and 5 points for MOST for the positive statements, and vice versa for negative ones. Sum of the score was 26 - 130 points which was classified into three levels:26-60 points for low, 61-95points moderate and 96-130 points for high.

The seventh was about doing daily life activities. There were six questions which classified the participants into two group: helping him/herself with everything, needed an assistant.

The eight part was about depression in the elderly which consisted of eight questions The participants got 1 point if they said YES (they had the symptom), o if they said NO. The question number 1-6 was a screening test for the depression. If the participants had three score or more, this indicated having depression (Department of Mental Health, 2014). The question number 7-8 was about suicide ideation.

Step 3: In order to ensure the validity of the questionnaire, The Questionnaire was checked for content validity by discussing with Experts in Mahidol University and who were working in related fields in the study area, Discussion was held together with the researchers to scrutinize the issues of intelligibility, specificity of variables to be measured and significance of the contents of the questionnaire. For the reliability of the instrument, a pre-test was carried out to explore the unclear or ambiguous questions. This pre-test helped in assessing reliability.

The reliability of the questionnaire was analyzed by SPSS version 21. Cronbach Alpha coefficient of the questionnaire was used to test the reliability of family relationship and quality of life which were 0.773 and 0.713.

Step 4: Data were collected from December 2012 to April 2013. The first phase required contacting government agencies representing the 10 provinces and developing a plan to collect data in collaboration with public health departments, government hospitals, and other governmental organizations. Next, a formal permission letter for data collection will be drafted, after which the researcher met with representatives from various government agencies to discuss specific aspects of the data collection plan and procedures. The six research assistants collected the required data, and accuracy checks was conducted before proceeding with data analysis. The data collection process was conducted after getting approval from the Ethic Committee of the Institute for Population and Social Research and Human, Mahidol University (COA. No 2010/343.2111). The participants verbally signed the concent form before the data collection. The researcher allowed for anonymous self-administration. Maintaining respondent anonymity was important for this research because the participants were asked to provide information about sensitive subjects such as health issues, family conflicts, economic difficulties, and negative emotional states. Respondents tend to be more honest when answering personal questions on sensitive topics if they could do so anonymously, so self-administration reduces the risk of social desirability bias.

Step 5: The Data analysis included both descriptive statistics (frequencies, means, standard deviations, median and quartile deviation) and inferential statistics. The inferential statistics included the Chi-square tests and multiple logistic regression which were used to examine associations between independent variables and depression in the elderly.

Research results

Objective 1: The results show in Table 1 which greater proportion of females (66.6%) as compared to males. The majority (76.4%) of participants finished primary school. The marital status of a great proportion (47.1%) was noted as 'widowed'. Only 49.8% were employed. About half (50.2%) were raising their grandchildren alone, 31% were living alone and 16.4% were living together, while 2.4% reported living with a disabled person. The inquiry about the economic situation informed that 60.2% were earning 3000 THB (about US$ 96.8) or more. The median income was noted to be 3000 THB, with a minimum of 0 THB and the maximum of 95,000 THB. The researcher also inquired about the safety of the house

environment. The participants had to respond to a total of 7 statements as shown in Table 2. While 96.4% reponded that their houses have sufficient light and electricity, only 88.8% revealed that their house is safe from an accident. Overall, the majority (80.6%) reported that they lived in safe house environment. However, 19.4% reported that their house environment was unsafe (Table 3). The researcher categorized the participants on the basis of their quality of life and showed that a large number of participants rated their quality of life as moderate (78.5%) as shown in Table 3. Besides, the factors of family relationship, daily life activities, and having at least one disease were also investigated in this study. The majority (53.2%) were having a moderate level of family relationship, while 26.1% reported the low level. The results of daily life activities reflected that only 11.4% had a dependence on others while 88.6% could help themselves. Considering the health care status of the participants, only 30.4% were not having a disease, while the rest reported having at least one disease (Table 3).

Table 1 Distribution of participants by socio-demographic factors

Socio-demographic factors	Number	Percent
Gender		
Male	1519	33.3
Female	3045	66.7
	4,564	100.0
Age groups		
60-69	2,105	46.1
70-79	1,721	37.7
>80	738	16.2
	4,564	100.0
Median = 70, QD = 6, Min = 60, Max = 101		
Education levels		
No education	824	18.1
Primary school	3,467	76.0
Secondary school	178	3.9
Vocational	55	1.2
Bachelor	40	0.9
	4,564	100.0
Marital status		
Single	438	9.6
Married	1,689	37.0
Widow	2,140	46.9
Divorced/separated	297	6.5
	4,564	100.0

Socio-demographic factors	Number	Percent
Occupation		
Unemployed	2257	50.2
Employed	2307	49.8
	4,564	100.0
Types of family		
Raising children alone	2,289	50.2
Living together	748	16.4
Living alone	1,413	31.0
Living with a disabled person	111	2.4
	4,564	100.0
Religion		
Buddhism	4348	95.2
Christian	67	1.5
Islam	149	3.3
	4,564	100.0
Income per month (Baht)$^\$$		
< 3000	1814	39.8
≥ 3000	2744	60.2
Median = 3000, QD= 1725, Min=0, Max=95000		
	4,564	100.0
Economic self-reliance		
Not at all	189	4.1
Little	1,489	32.6
Moderate	2,421	53.1
High	465	10.2
	4,564	100.0

$^\$$ 31 Baht for US$ 1

Table 2 Distribution of participants by living in the safe house environment

Safe house environment	Number	Percentage for Yes
My house is stable and strong.	4,186	92.0
My house can protect the sun and rain.	4,299	94.5
My house has a toilet and space around the house which is comfortable and safe.	4,260	93.6
My house has sufficient clean water to use.	4,370	96.1
My house has sufficient light and electricity.	4,393	96.4
My house (inside and outside) is safe from an accident such as slip and fall inside.	4,032	88.8
My house is safe from the robber and far from the source of the amulet.	4,144	91.3

Table 3 Distribution of participants by risk factors of depression

Variables	Number	Percent
Safe house environment		
Yes	3,672	80.5
No	892	19.5
	4,564	100.0
Quality of life levels		
Low	312	6.8
Moderate	3,370	73.8
High	882	19.3
	4,564	100.0
Median=82, QD=8, Min=30, Max=129		
Family relationship levels		
Low	1,082	23.7
Moderate	2,624	57.5
High	858	18.8
	4,564	100.0
Daily life activities		
Did everything by himself/herself	4,056	88.9
Needed an assistant	508	11.1
History of having at least one disease		
Yes	3,240	71.0
No	1,324	29.4
	4,564	100.0

The participants were directly inquired for the symptoms of depression. Table 4 illustrates that 30.6% of participants were found to have depression. The highest prevalence (34.8%) was detected in the Central Region of Thailand.

Table 4 Distribution of participants by having depression and regions

Regions	Having depression			
	Yes		No	
	Frequency	Percent	Frequency	Percent
North	111	27.4	294	72.6
Northeast	568	28.8	1406	71.2
Central	470	34.8	880	65.2
South	140	28.9	344	71.1
Total	1289	**30.6**	2924	**69.4**

Objective 2: The results of the research founds that, Association between the socio-demographic factor and depression. In Table 5 presents that age groups, gender, education levels, marital status, occupation, types of families, religion, income per month, and economic self-reliance were statistically significant associated with depression in the elderly. Table 6 shows the elderly who regarded their house environment as unsafe tend to have 2.08 times more chances of depression (OR=2.08, 95%CI=1.77-2.44) than those who lived in a safe house environment. Multiple logistic regression using backward Wald procedure, in which all the insignificant factors were excluded from the model (Table 7). The following factors were still remained as the significant factors associated with depression in the elderly: low income per month, little economic self-reliance, poor quality of life, fair quality of life, having a disease, needed assistance for daily life activities and unsafe house environment. After adjusting for other factors, the elderly who lived in the unsafe house environment were about 2 times more likely to get depression than those living in the safe house environment.

Table 5 Association between the socio-demographic factor and depression

Socio-demographic factor	n	Depression		Crude OR	95% CI	P-value
		Yes (%)	No (%)			
Age groups						
60-69	2,081	25.8	74.2	0.56	0.46-0.68	<.001
70-79	1,698	33.6	66.4	0.81	0.67-0.99	0.034
>80	785	38.3	61.7	1		
	4,564					
Gender						
Male	1,402	28.2	71.8	1		
Female	3,162	31.8	68.2	1.19	1.04-1.37	0.015
	4,564					
Education levels						
No education	858	39.6	60.4	2.20	1.57-3.10	<.001
Primary school	3,379	29.1	70.9	1.38	1.00-1.90	0.047
Secondary school and above	327	22.9	77.1	1		
	4,564					
Marital status						
Single	536	29.6	70.4	0.85	0.68-1.08	0.182
Married	1,697	27.7	72.3	0.78	0.67-0.89	<.001
Widow/Divorced/separated	2,331	33.0	67.0	1		
	4,564					

Socio-demographic factor	n	Depression		Crude OR	95% CI	P-value
		Yes (%)	No (%)			
Occupation						
Unemployed	2,273	35.0	65.0	1.53	1.34-1.74	<.001
Employed	2,291	26.1	73.9	1		
	4,564					
Types of families						
Raising children/taking care of a disable person alone	2,473	28.2	71.8	1		
Living together or alone	2,091	33.2	66.8	1.27	1.11-1.45	<.001
	4,564					
Religion						
Buddhism	4,331	30.5	69.5	0.82	0.59-1.13	0.022
Christian/Islam	233	34.9	65.1	1		
	4,564					
Income (Baht per month)						
< 3000	1,824	38.3	61.7	1.80	1.58-2.06	<.001
≥ 3000	2,740	25.6	74.4	1		
	4,564					
Economic self-reliance						
Not at all	234	47.9	52.1	4.07	2.70-6.14	<.001
Little	1,455	43.3	56.7	3.39	2.59-4.43	<.001
Moderate	2,357	24.1	75.9	1.41	1.08-1.83	0.012
High	518	18.4	81.6	1		
	4,564					

Table 6 Association between independent variables and depression

Independent variables	n	Depression		Crude OR	95% CI	P-value
		Yes %	No %			
Safe house environment						
Yes	3,585	27.4	72.6	1		
No	979	43.9	56.1	2.08	1.77-2.44	<.001
	4,564					
Quality of life levels						
Low	355	69.0	31.0	16.40	10.84-24.83	<.001
Moderate	3,344	32.1	67.9	3.48	2.72-4.47	<.001
High	865	12.0	88.0	1		
	4,564					
Family relationship levels						
Low	986	36.2	63.8	2.05	1.60-2.63	<.001
Moderate	2,784	27.0	73.0	1.33	1.06-1.67	0.013

High	794	21.7	78.3	1		
	4,564					
Having at least one disease						
Yes	3,109	34.0	66.0	1.75	1.50-2.03	<.001
No	1,455	22.8	77.2	1		
	4,564					
Daily life activities						
Needed assistance	651	51.8	48.2	2.78	2.29-3.39	<.001
Did everything	3,913	27.8	72.2	1		
	4,564					

Table 7 Multiple logistic regressions for predictors of depression in the elderly

Risk factors	Adjusted OR	95% CI	P-value
Income per month			
< 3000	1.29	1.05-1.59	0.017
≥ 3000	1		
Economic self-reliance			
Not at all	1.54	0.82-2.90	0.184
Little	1.89	1.27-2.80	0.002
Moderate	1.04	0.71-1.51	0.854
High	1		
Quality of life levels			
Low	7.26	4.16-12.66	<.001
Moderate	2.81	2.01-3.92	<.001
High	1		
History of having at least one disease			
Yes	1.69	1.37-2.09	<.001
No	1		
Daily life activities			
Needed assistance	1.61	1.19-2.18	0.002
Did everything	1		
Safe house environment			
Yes	1		
No	2.03	1.59-2.61	<.001

After performing the Chi-square test, the researcher then computed the full model of multiple logistic regressions to analyze the association between the predictors and depression (Table 7). It has been carried out to interpret the impact of independent variables in a controlled setting. On including significant independent variables in the full model of logistic regression, it is notable that the factors of age groups, gender, education levels, marital status,

occupation, and family relationship that were significant association in the Chi-square test were found to have no significant association with depression in full model of regression. The remaining factors of income per month, economic self-reliance, quality of life, disease history, daily life activities, and safety house environment were then considered for their significant association with depression. After adjusting other factors, elderly with monthly income of < 3000 THB were 1.27 times more likely to have depression (OR=1.27, 95%CI=1.02-1.58). Elderly having little economic self-reliance have 1.84 time more likely to get depression (OR=1.84, 95%CI=1.23-2.77). The elderly with low level of quality of life are found to have 6.99 times more likely to get depression (OR=6.99, 95%CI=3.97-12.31), while the moderate level of quality of life renders 2.75 odds for depression (OR=2.75, 95%CI=3.97-12.31).

The disease history renders the elderly to have 1.63 times to get depression (OR=1.63, 95%CI=1.31-2.03). The dependence on others for daily life activities makes the elderly have 1.56 times more likely chances of depression (OR=1.56, 95%CI=1.14-2.13). In addition, elderly with unsafe house environment tend to have 1.99 times more likely to get depression (OR=1.99, 95%CI=1.55-2.55) than those living a safe house.

The New body of knowledge

Figure 1 A Conceptual Model of Unsafe house environment influencing on depression in the elderly in Thailand.

The study concluded that depression was not the mere outcome of a single actor; rather it was influenced by a combination of biological, psychological and social factors. According to biopsychosocial model was a framework that combines biology, socio-

environment, and psychology related factors for the study of disease. The present study independent variables were derived from various theories related to the bio-psycho-social model and empirical evidence from past literature. According to existing literature, biological factors that influenced depression included age, gender, education, religious, etc. On the contrary, according to the theory proposed by Gilbert, social environmental factors such as the relationship with families, daily life activities, family type, role and status and education influence the physical as well as mental health of people. Finally, psychological factors, such as safety house environment and quality of life were the strongest to influence depression among adult. Individuals living in unsafe conditions with a violent partner tend to face a higher degree of depression when compared to safer individuals. Furthermore, When the quality of life is high, the psychological factors were also found to be high. In the view of biopsychosocial theories was strongly criticized for understanding disease or issue related to human health due to limited factors taken into account. A person might develop depression due to physical disabilities, or despite living quality life, demographic reasons or other external factors. Over the years, the model was used to study depression using different new factors, such as expanding social factor to spirituality and culture. This study used similar bio-psycho-social theories to drive variables influencing depression among the elderly of Thailand. The study used a socio-demographic variable, quality of life, social support and other variables previously used by a number of researchers that used biopsychosocial models. The study could determine which of the factors were strongly related to the depression prevalent among the elderly of Thailand.

Discussion of research results

The study collected data from the five regions of Thailand, including the Central, North, North East, and South. It was ensured for governing the integrity of the research findings to serve the intended objectives. In this regard, the researcher focused at least 20% representation from each region, to integrate generality. Besides, the research has been conducted on the elderly population of Thailand, since the previous literature has a significant knowledge gap in predicting the predicators of depression among this population of Thailand. Thus, the current study contributed to the field of study by presenting a comprehensive set of findings on the predictors of depression among Thai elderly. The following section discussed the results achieved by analyzing the survey findings through SPSS tools. More specifically, the credibility of the research findings was reassured by supporting the findings with previous

literature. At first, the researcher inquired the participants about having depression, which generated the results of almost 31% (i.e., 30.6%) elderly people to have depression, while almost 69% (i.e., 69.4%) denied in this regard. These findings were contrary to the reported statistics (34) that informed the prevalence of mild depression among Thai seniors to be almost 68%. Therefore, these responses cannot be regarded as credible enough to comprehend the real scenario as a whole, since there could be the impact of embarrassment, self-consciousness, or reluctance in reporting the challenging conditions. Accordingly, the researcher conducted a custom survey and investigated a number of factors that were related to depression, in order to generate coherent findings. The section below first demonstrated the prevalence of depression across Thailand's elderly people and then narrows the findings to identify the key predictors of depression across the Thai seniors. The current study aimed at identifying factors associated with the geriatric depression among elderly people in Thailand. The researcher took valued insights from the previous literature regarding the phenomenon and identified the knowledge gap in the literature with respect to presenting a comprehensive set of findings on the variety of contributing factors of depression among Thai elderly people. In this regard, the overall study endeavored to achieve the research objectives in terms of determining the prevalence of depression in the elderly in Thailand and examining the key factors associated with depression. The factors were specifically related to the social-demographic aspects of elderly life, including gender, marital status, economic situation, religion, family type, family relationship, quality of life, daily life activities healthcare history/status, social support, education, and occupation of the targeted population. It was notified that the researcher has only estimated the impact of factors on depression in terms of strength of association between the variables, rather than justifying the cause-and-effect of their contributions. As such, 4,564 participants from four key regions of Central, North, North-East, and South of Thailand (at least 20% participation from each region). The collected data were analyzed using SPSS statistical measures of Chi-square and simple and multiple logistic regression. Accordingly, the results of the study were interpreted based on the values of odd ratios at 95%CI. The data acquired from elderly Thai people affirmed the impact of all the studied factors on the prevalence of depression across the population. However, the unique contribution of this study was specific to the narrowed outcomes of the multiple logistic regression model (evaluating the impact of factors in a controlled setting). As a result, the key predictors of depression had been identified as the 'economic situation', 'safety of house environment', 'daily life activities', 'level of quality of life', and 'healthcare history/statuses

of the elderly Thai people. Research on depression among the elderly has long been investigating the phenomenon on the basis of multiple physical, psychological, and situational variables. As a general comment, the previous literature could be argued to have focused the investigation on depression or depressive symptoms to cause health issues. On the other hand, researchers also reported certain factors as the main contributors of geriatric depression among individuals. However, a knowledge gap existed, since the literature could not report the impact of all the factors in a particular frame of reference. In more precise words, a comprehensive account of the contributing factors of depression was missing. Therefore, the current study has at first filled this knowledge gap in the relevant field of study.

Secondly, the gap in the literature specifically highlighted the representation of Thailand elderly population. The importance of focusing this aspect of a knowledge gap in the literature is more explicit from the focus of the researchers and practitioners on globally increasing prevalence of depression among the elderly. Only a few research works focused the Thai population (Ma et al. 2105; Muramatsu, 2012) while the reported scenario of elderly minimal consideration for health care services also intensify the scenario (McLaren et al. 2015).

Primarily, the researcher contributed to the field of study by presenting valued insights into the factors of geriatric depression among Thai elderly people. Even though the findings were not generalizable across the diverse cultural settings, the study has still enhanced the integrity of the Thai literature. Thus, the findings provided a clear direction for future researchers to investigate the cause and effect of the identified factors of depression, and add value to the Thai literature. It was notified that the prevalence of geriatric depression has been approaching high rate in Thailand. In the same context, it has also been reported that elderly Thai people are reluctant in accessing healthcare services or encounter challenges in accessing the health care providers for their mental or physical health issues (McLaren et al. 2015). Such a scenario clearly indicates the need for intervention strategies that would at first instill readiness among elderly people to realize the need for health care services, and then ensuring accessibility to the services. In this manner, it would be possible to reduce and prevent the increasing prevalence of depression among Thai seniors. With respect to instilling readiness and acceptance towards using healthcare services, community-level interventions were advised. In this regard, participatory learning approach needed to be adopted while involving different community groups, in order to generate a credible solution for serving the needs of the community (Kim et al. 2009). The findings of this study would help to target the specific community groups in this regard, i.e., the representation of females,

widowed/separated/divorced people, living alone or together, having low educational status, having a disease history (specifically mental or physical illness), unemployed people, and having low monthly income must be ensured.

With respect to ensuring accessibility to healthcare services, certain aspects were of utmost consideration. For instance, healthcare centers or clinics need to be on walking distance for the community, specifically for the physical difficulties of Thai seniors . In addition, mobile health service would serve the intended objectives of reducing the rate of depression in society. In this regard, health promoters or health visitors as primary healthcare service providers would further facilitate the process, if the individuals were selected from the community, and trained accordingly. Furthermore, if there was a referral system in place, the hierarchy must be transparent and comprehensible to the healthcare users and also the care providers.

Suggestions

1. It has the potential to provide direction to the future researchers, should be study indepth about routine daily life risk factor in the elderly and root cause that bring the elderly to get depression, both in the Thai-specific and general contexts. If a researcher adopts a Thai-specific research plan, the findings of the current study would facilitate the researcher in determining how the identified factors eventually contribute to depression among Thai elderly people. On the other hand, if the researcher aimed at investigating the prevalence of depression across diverse national or regional settings, the custom survey of this particular research would facilitate the intended objectives of generality.

2. The particular survey questionnaire of this study could be further developed to estimate the mediating role of different physical and mental health illnesses. In this manner, the integrity of the literature would further improve to report the scenario of geriatric depression in Thailand elderly population. In general, future researchers and practitioners were recommended to invest extensive efforts in broadening the remission criteria for depression among elderly society individuals.

3. The qualitative research was recommended to obtain the information about the depression in the Elderly and the causes of depression. The in-depth interview should be conducted among the female elderly aged ≥ 80 years.

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