SYSTEMATIC REVIEW

Prevalence of Depression Among Community Dwelling Older Persons in Thailand and the Associated Factors: A Systematic Review

Suttama Suwanmanee [1], Halimatus Sakdiah Minhat [1,2]

[1] Department of Community Health, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, 43400 Serdang, Selangor, Malaysia.
[2] Malaysian Research Institute on Ageing, 43400 Serdang, Selangor, Malaysia

ABSTRACT

Aim: Depression symptoms in older persons are overlooked and untreated because they coincide with other conditions that older persons face. This review aimed to determine the prevalence and factors associated with depression among community dwelling older persons in Thailand according to the Social Cognitive Theory constructs. **Design:** Systematic review. **Data sources:** Four electronic databases: PubMed, PsychINFO, ScienceDirect and Scopus, with only articles published between January 2000 and December 2021 were included. **Methods:** The Preferred Reporting Systems for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were used to conduct this systematic review. All included articles were appraised using the Crowe Critical Appraisal Tool (CCAT), with all 13 studies were assessed to be of high quality, with score of more than 75. **Results**: A total of 13 full-texts articles were included in this review, of which 12 were cross-sectional study design, and only one was a cohort study. The prevalence of depression among older persons in Thailand were between 5.7% to 68%, with the most commonly reported factors that significantly associated with depression were gender, social support, marital status, employment status or income, and education level. **Conclusion:** Depression among older persons is a mental Health challenging issue in Thailand. Studying the factors that contribute to depression in older persons is more important in order to have a better understanding of the underlying causes as well as for early detection and effective management of depression among older persons in Thailand.
Malaysian Journal of Medicine and Health Sciences (2023) 19(5):257-268. doi:10.47836/mjmhs19.5.34

Keywords: Older persons, Depression, Thailand, Associated factors

Corresponding Author:
Halimatus Sakdiah Minhat, DrPH
Email: halimatus@upm.edu.my
Tel: +60123438175

INTRODUCTION

People's life expectancy has increased globally, due to advancements in medical and public health technologies, which contribute to an ageing society. According to United Nations (1), it was projected that 727 million of the global population will be those aged 65 years old and over by 2020, which mainly will be in the developing nations. This number is expected to double, reaching over 1.5 billion people by 2050. Furthermore, the worldwide proportion of people aged 65 and over is predicted to rise from 9.3% in 2020 to 16.0% in 2050, with one out of every six persons in the world will be those 65 and over by the mid of the century (1).

Thailand is a developing country which is also experiencing ageing population. As a developing nation, the ageing population is occurring at a faster rate compared to the developed nations. According to a report by the Foundation of Thai Gerontology Research and Development Institute (2), the proportion of Thai older persons aged 60 years and over were 12 million people in 2020. It was previously estimated that Thailand is becoming "A complete aged society" by 2022, when the proportion of the older persons aged 60 years and over reaches 20% (2). However, the projection may slight changing due to the recent COVID-19 pandemic which has been badly affecting the older persons and causing most of the mortality among this age group. The same report revealed that the Thai older persons aged 60 years and over will increase average of 4% per year, meanwhile older person at the late age (80 years and over) will also increase an average rate of 7% per year, over the next 20 years (2).

Ageing population brings along various implications, with health being one of the most worrying implications. With increasing age, older persons are expose to higher

risk of comorbidities or chronic illness, including physical and mental illnesses. Depression is one of the most common mental problems reported among older persons, globally, as well as in Thailand. The occurrence of depression may be caused by the presence of multiple debilitating physical illnesses (3), as well as the various life transition experienced during the ageing process which include loss of spouse (4), retirement (5), as well as losing important role in the community or society (6). The prevalence of depression was reported to increase from 233.16 to 345.08 per 100, 000 older persons in Thailand between 2008 and 2013 (7). Depression brings along with negative effect on various aspects of older persons life in both of physical and mental health, which raises the risk of mortality and has a negative impact on the quality of life in those aged 60 and over (8). Moreover, depression in the older persons cause impairment in social stability, low self-care management, and numerous diseases occurrences (9) as well as decreased life satisfaction (10). Among the factors that were reported to influence the occurrence of depression among the Thai's older persons include age (3), gender (11), education (12), financial status (12), marital status (13), presence of comorbidity (3), social support (4), and loneliness (14). Studying on contributing factors of depression among older persons are importance, in order to develop better understanding on the underlying causes, for an effective strategies and plan of actions to be implemented. Based on literature reviews, most of them identified several factors which varied with contexts. In order to cover all the factors associated with depression, the Social Cognitive Theory, which consists of personal, environmental, and behaviours factors were utilised in this review. Therefore, the objective of this review was to systematically identify the prevalence as well as factors associated with depression among community dwelling older persons in Thailand.

METHODS

Protocol and registration

The Preferred Reporting Systems for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (15) was used to conduct this systematic review. Studies included were English and Thai's papers; as well as studies published between January 2000 and December 2021. The inclusion criteria were: (i) Thai older persons, aged 60 years and over; (ii) community dwelling older persons; (iii) self-reported or diagnosed depression was the outcome of interest; (iv) observational studies, including cross-sectional, case-control, and cohort study; (v) quantitative analysis of associations via multivariable analysis with confounders adjustment; (vi) conducted in any part of Thailand, with the exclusion of articles excluded were: (i) those with study participants living alone or encountering with specific chronic diseases; (ii) living in institutions; (iii) qualitative and intervention studies, and (iv) publications that were not recognized original investigations, as well as review papers.

Search strategy

In December 2021, a search was conducted utilizing four electronic databases: PubMed, PsychINFO, ScienceDirect and Scopus. Four elements were used to find related keywords or search terms, which were 'depression', 'older persons', 'community dwelling' and 'Thailand', respectively. Keywords such as 'associated factors', 'determinants', 'contributing factors', 'predictors', 'older persons', 'older adults', 'aged', 'old', 'elderly', 'community dwelling', 'depression', 'low mood', and 'mental health' were included. Except for Web of Science, which topic was used, titles and MeSH terms were used to search for each topic separately. Operator 'OR' was used within each concept. Additionally, 'AND' operator was used to merge all of the concepts, retrieving a total of 2,135 publications. We also proceeded Google Scholar searching to use the terms 'depression' AND 'community dwelling Thai's elderly'. From this, ten publications were involved in this systematic review. The remaining papers were failed to include in the review because they were irrelevant.

The first step involved the screening of the title, which was done by one reviewer (SS) in order to exclude non-related topics. All duplicates were removed by both electronically and manually. A pair of reviewers (HSM and SS) then independently screened the remaining titles with their abstracts based on inclusion and exclusion criteria, to determine its relevance for the next phase. Full-text articles were retrieved if the title and abstract were insufficient to determine the eligibility criteria, and the decision was made accordingly. Any inconsistencies in the evaluation were reached an agreement by discussion.

Quality appraisal, data extraction and analysis

Each observational study's methodological quality was assessed according to the Crowe Critical Appraisal Tool (CCAT). Preliminaries, introduction, design, sampling, data collecting, ethical issues, result, discussion, and conclusion were the eight criteria used by the CCAT to evaluate the study. After converting the overall score to a percentage, to enable for comparison, the following categories were assigned; poor quality (≤50%), acceptable quality (51–74%), high quality (≥75%) (16).

A table was created to describe the data extraction from all potential studies. Author, year of publication, study design, locations of study, study population, sample size, sampling method, and study outcomes were all extracted as well as the statistic of the finding from each study. One reviewer extracted the data, which was then cross-checked by the other. Any different opinions were discussed accordingly. The synthesis of the findings was narrative in nature due to the heterogeneity of the studies. The extracted findings from individual articles reviewed were structured according to the constructs of the Social Cognitive Theory (SCT).

RESULTS

Study selection

A total of 2,135 publications were identified after searching via four databases, with another 10 publications identified from other sources. After the removal of duplicates, a total of 1,002 publications remained. Of those remaining, 575 publications were found ineligible based on further assessment of their titles and abstracts. From a total of 427 full texts assessed for eligibility, 414 were not retrieved due to reasons stated in figure 1, with only 13 full texts were included in the final review. The PRISMA flowchart of study selection is shown in figure 1.

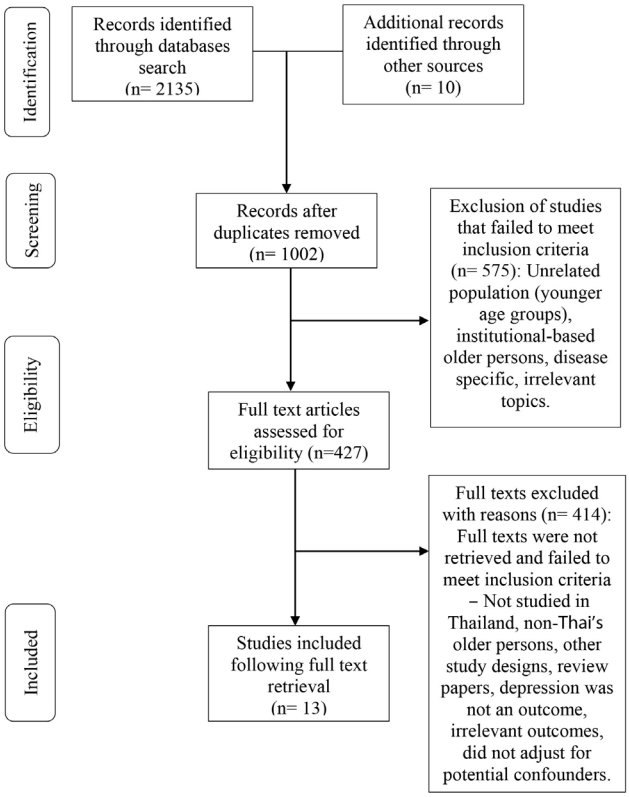

Figure 1: Data collection according to PRISMA flowchart

Quality assessment

Based on the Crowe Critical Analysis Tool (CCAT) (16); which is an established and validated approach for evaluating the quality of observational studies, all 13 studies included in this review were rated to be of high quality, with score of more than 75 (17) (Table I).

General characteristics of the included studies

The final studies included in the analysis (n=13) are reported in Table II. The review was dominated by a cross-sectional study design, with 12 of the articles were employing the study design, and only one was a cohort study.

Main findings

Prevalence of depression

Most of the studies reported the prevalence of depression as percentage with only two articles reported as mean (SD). Based on the results reported in all the 13 studies included in this review the prevalence of depression among older persons in Thailand were between 5.7% and 68%. The central part of Thailand had both the highest and lowest prevalence of depression (Table II).

Factors associated with depression

For the purpose of this review, the factors associated with depression among the older persons in Thailand were categorised according to the constructs of the Social Cognitive Theory, which are personal, behaviour, and environment factors (Table II).

The personal factors identified from all 13 articles reviewed that were found to be significantly associated with depression were age (13), female gender (13, 18–24), education levels (13, 20, 23–25), marital status (13, 20–21, 23, 25–26), working status (13, 23), income (18, 27), wealth (20), current occupation (13, 19), infirmity (13), disability (13, 20), serious/stressful life events (13, 20, 22). In term of health status: there were self-assessed health/ Self-impression of health (13, 28), underlying

Table I: Quality assessment of studies using Crowe Critical Analysis Tool (CCAT)

Citations	[a]	[b]	[c]	[d]	[e]	[f]	[g]	[h]	Total/ 40	%
Haseen & Prasartkul (2011) (13)	5	5	4	3	5	2	5	4	33	83
Kansri et al. (2019) (18)	5	5	4	5	5	5	5	5	39	98
Olpoc (2016) (19)	5	5	3	5	3	5	5	4	35	88
Anantapong et al. (2017) (25)	5	5	3	5	5	2	5	5	35	88
Kosulwit (2012) (27)	5	5	4	4	3	2	5	5	33	83
Abas et al. (2012) (20)	4	5	3	5	5	4	5	5	36	90
Aung et al. (2016) (28)	5	5	4	4	5	4	5	5	37	93
Noosorn & Kanokthets (2015) (29)	5	5	3	4	5	1	4	5	32	80
Ratanasiripong, et. al. (2021) (21)	5	5	4	5	5	4	5	5	38	95
Piboon et al. (2012) (22)	4	5	4	4	5	5	5	5	37	93
Suttajit et al. (2010) (23)	4	5	4	4	5	4	4	4	34	85
Charoensakulchai et al. (2019) (24)	5	5	4	5	5	4	5	5	38	95
Trongsakul (2021) (26)	5	5	4	4	5	1	5	4	33	83

[a] = Preliminaries; [b] = Introduction; [c] = Design; [d] = Sampling; [e] = Data Collection; [f] = Ethics; [g] = Result; [h] = Discussion

Table II: Prevalence and factors associated with depression among older persons in Thailand

Author(s) (year)	Study design	Location of study	Study population	N/ sampling method	Study outcomes	Factors according to SCT constructs
Haseen & Prasartkul (2011) (13)	Cross-sectional study	Kanchanaburi Province	Older Population living in Kanchanaburi Demographic Surveillance System (KDSS), Thailand in 2006	1,001 participants Using data from the Study on Health and Social Support among Older Population living in Kanchanaburi Demographic Surveillance System (KDSS), Thailand in 2006	The prevalence of depression: 28.5% *Binary logistic regression:* a. Infirmity [OR = 2.98, P = 0.041] b. Disability [OR = 3.12, P = 0.011] c. Serious life events [OR =5.25, P = 0.027]	Personal: a. Age b. Gender c. Education d. Marital status e. Working status f. Current occupation g. Infirmity h. Disability i. Serious life events j. Self-assessed health Behaviour: Nil Environment: Nil
Kansri et al. (2019) (18)	Cross-sectional study	Chainat Province	Thai older persons in Chainat Province	384 participants Multi-stage random sampling method	The prevalence of depression: Total = 27.35% Mild = 23.66% Moderate = 2.13% Severe = 1.56% *Logistics regression analysis:* a. Gender [OR=3.02, 95%CI: 1.46-6.34] b. Income [OR=1.01, 95%CI: 0.87-1.04] c. Family relationships [OR=3.85, 95%CI: 1.67-6.68]	Personal: a. Gender b. Income Behaviour: Nil Environment: Family relationship
Olpoc (2016) (19)	Cross-sectional study	Nakhon Nayok Province	Older persons aged 60 and above in Nakhon Nayok area from klongs 11-16,	150 older persons respondents	The prevalence of depression: Total = 68% Mild = 46.67% Moderate = 17.33% Severe = 4% *Bivariate analysis ($p<0.05$):* a. Marital status (χ^2=12.59), b. Occupation (χ^2=23.68) c. Underlying disease (χ^2=23.68)	Personal: a. Gender b. Occupation c. Underlying disease Behaviour: Nil Environment: Nil
Abas et al. (2013) (20)	Cohort study with a 1-year follow-up.	100 villages in rural Thailand. (Kanchanaburi Province)	A population-based study nested in a demographic surveillance site of 100 village	A stratified random sample of 1111 parents aged 60 years and over (1 per household) was recruited from the100 villages, with 960 (86%) proving depression data at follow-up.	The prevalence of depression = 22%. *Logistic regression:* a. Having all children out-migrated at baseline [OR= 0.43, 95% CI: 0.20-0.92] b. Having a child move back in the study year [OR = 1.75, 95% CI: 1.04-2.94]	Personal: a. Gender b. Education c. Marital status d. Physical impairment, e. Disability f. Wealth g. Severe life events Behaviour: Nil Environment: a. No. of live children b. Child's education c. Support from others d. Children outside district Child living arrangement
Ratanasiripong et. al. (2021) (21)	Cross-sectional study	9 provinces across all regions of Thailand. (North, Northeast, Central, East, South).	elderly from villages, community centres and elderly schools in nine provinces across all regions of Thailand.	1,800 older adults volunteer participants who met the inclusion criteria and did not meet the exclusion criteria.	The mean score of depression was 8.3 (8.8), range (0–42) *Regression analysis:* Marital status, working hours per week, family economic status and exercise were significantly contributed to the regression model, F (4, 522) = 11.66, p < 0.001 and accounted for 8% of the variance of depression (adjusted R2 = 0.08). When social support and resiliency were added in step 2, they significantly predicted depression, F (6, 520) = 19.38, P < 0.001, adjusted R2 = 0.17.	Personal: a. Gender b. Marital status Behaviour: a. Less frequent exercise Environment: a. poorer family economic

Table II: Prevalence and factors associated with depression among older persons in Thailand (continued)

Author(s) (year)	Study design	Location of study	Study population	N/ sampling method	Study outcomes	Factors according to SCT constructs
Piboon et al. (2012) (22)	Cross-sectional study	Chon Buri Province	community dwelling older adults from both rural and urban areas of four districts of Chon Buri Province	317 community dwelling older adults	The mean score of depression was 12.26 (4.49), approximately 46% indicated depression. Mild = 36% Moderate = 9% Severe = 1% The paths from problem-focused coping (β = –0.12), emotional-focused coping (β = 0.21), social support (β =–0.21), stressful life events (β = 0.13), loneliness (β = 0.23), ADL (β = 0.13), and gender (β =0.21) were significantly associated with depression (p < .05), accounting for 60% (R2 = .60) of the variance in depression	Personal: a. Gender b. Stressful life events c. emotional-focused coping d. activities of daily living Behaviour: Nil Environment: a. Loneliness b. Social support
Suttajit et al. (2010) (23)	Cross-sectional study	98 of villages in Kanchana-buri province	Thai rural community-dwelling parents aged ≥ 60 years	1,104 participants Stratified random sampling from 900 sampling units in the province	*Logistic regression (p< 0.001):* a. Being female [OR 2.32, 95% CI: 1.75 - 3.08] b. Unmarried [OR 1.97, 95% CI: 1.51-2.58] c. Being older age [OR 2.36, 95% CI: 1.53 - 3.64] d. Having lower education (no education [OR = 10.58, 95% CI: 4.18 - 26.80] e. Lower socio-economic status [OR = 3.11, 95% CI: 2.04–4.7] f. Not currently working [OR = 1.81, 95% CI: 1.38–2.37] g. Impairment [OR = 2.6, 95% CI: 1.6–4.1] h. Disability [OR = 8.6; 95% CI: 4.9–15.1] Social support deficits [OR = 4.0, 95% CI: 2.3–6.9]	Personal: a. Gender b. Education c. Marital status d. lower socio-economic status e. Currently working f. Impairment Behaviour: Nil Environment: Social support deficits
Charoensakulchai et al. (2019) (24)	Cross-sectional study	Chachoengsao Province	584 older people older people aged ≥60 years in Ban Nayao community, Chachoengsao Province,	433 older people	The prevalence of geriatric depression among older persons was 18.5% *Multivariate logistic regression:* a. female sex [OR = 2.78, 95% CI: 1.54 - 7.49] b. illiteracy [OR = 2.86, 95% CI: 1.19 - 6.17] c. current smoker [OR = 4.25, 95%: CI 2.12–10.18] d. imbalanced family type [OR = 4.52, 95% CI: 2.14 – 7.86]	Personal: a. Gender b. Illiteracy Behaviour: a. Current smoker Environment: a. Imbalanced family type
Anantapong et al. (2017) (25)	Cross sectional study	Songkhla Province	65-99 years of age in Songkhla Province	604 participants -a two stage cluster sampling study.	The prevalence of depression = 12.0%. *Logistic regression analysis (p value < 0.05):* a. Muslims [OR=2.16, 95%CI: 1.58 - 2.94] b. Being alone [OR=1.47, 95%CI: 1.16, 1.87] c. Lower educational level [OR=0.11, 95%CI: 0.03-0.38].	Personal: a. Religion b. Marital status c. Education Behaviour: Nil Environment: Nil
Trongsakul (2021) (26)	Cross sectional study	Chiang Rai province, Thailand	Karen older persons in community aged 60 years old and over with no impairment of communication	174 Karen older persons by a simple random sampling at a primary care clinic in out-patient department of Doi-Luang hospital, a community district hospital.	Prevalence of depressive mood among Karen older people was 11.49% *Binary logistic regression:* Marital status [OR = 6.66, 95% CI: 2.31-19.23, P<0.001]	Personal: a. Marital status Behaviour: Nil Environment: Nil

Table II: Prevalence and factors associated with depression among older persons in Thailand (continued)

Author(s) (year)	Study design	Location of study	Study population	N/ sampling method	Study outcomes	Factors according to SCT constructs
Kosulwit (2012) (27)	Cross-sectional study	Suburban area of northern Bangkok and suburb province of Pathumthani and Ayutthaya province.	Elderly age > 60 years in the elderly club of medical school tertiary care hospital which covers people who live in suburban area of northern Bangkok and suburb province of Pathumthani and Ayutthaya	- 70 participants were included and divided into 2 groups. First group, the 35 participants who join club activity regularly (3 times or over per month), Another group, 35 participants who join club activity irregularly (lower than 3 times per month) were included by systematic random sampling	The prevalence of depression = 5.7% *Bivariate analysis (Independent-Samples t-test):* a. Income – low income had higher mean for depression (P = 0.022)	Personal: a. Income Behaviour: Nil Environment: Nil
Aung et al. (2016) (28)	Cross-sectional study	Chiang Mai Province	10,461 older persons aged ≥ 80 years living in the Chiang Mai Province.	435 community residents multistage sample	The prevalence of depression: Mild = 80% Moderate = 16% Severe = 4% *Multivariate ordinal logistic regression analysis models:* a. Social network [β = -0.18, 95% CI: -0.28 to -0.09] b. Self-impression of health [β = –1.03, 95% CI: -1.58 to -0.49] c. Long-term memory loss [β = - 0.52, 95% CI: -0.93 to -0.12] d. Short-term memory loss [β = -0.62, 95% CI: -1.16 to 0.07]	Personal: a. Self-impression of health b. Long-term memory loss c. Short-term memory loss Behaviour: Nil Environment: a. Social network
Noosorn & Kanokthets (2015) (29)	Cross-sectional study	Phisanulok province	Population over the age of 60 meeting the study criteria and live in Thapo subdistrict, Phisanulok province.	572 older persons	*Logistic regression analysis:* Abandonment [OR 3.42, 95% CI: 1.3 - 5.5]	Personal: Nil Behaviour: Nil Environment: a. Abandonment

disease (19), physical impairment (20), number of impairment (23) long-term and short-term memory loss (28). Moreover, emotional-focused coping, activities of daily living (22), and religion (25). However, the most frequently reported personal factors were gender which were reported in eight studies (13, 18–24), marital status in six studies reviewed (13, 20–21, 23, 25–26), employment status or income in five studies (13, 18–19, 23, 27), and education which were mentioned in four studies (13, 20–21, 23, 25).

Meanwhile, only three articles reviewed reported on behaviour factors which include less frequent exercise (21), and current smoking (24) were found to be a risk factor that associated with the level of depression. On the other hand, the environmental factors that were found to significantly associated with depression among the Thai's older persons were mainly revolved around the presence of social support, which were reported as family relationship (18), imbalanced family type (24), poor family economic status (21), number of live children, children outside district, child living arrangement (20), social network (28), loneliness, social support (22), support from others (20), social support deficits (23) and abandonment (29).

Overall, the review had successfully identified five commonest factors that had significant relationship with depression, which were gender (13, 18–24), social support (18, 20–24, 28– 29), marital status (13, 20–21, 23, 25–26), employment status or income (13, 18–19, 23, 27), and education level (13, 20, 23, 25). Thus, older persons who were female, received poor social support, unmarried or losing spouse, were not employed or had no source of income, which commonly related to not receiving formal education or achieved low education were more likely to have depression compared to opposite.

DISCUSSION

The findings of this review highlighted the high prevalence of depression among the Thai's older persons and the important role of personal factors as reported in all 13 articles reviewed, with less emphasis on behavioural factors. Meanwhile, the environmental factors are mainly revolved around the issue of social support received by the Thai's older persons.

Prevalence of depression

This review found an average prevalence of depression among the Thai's older persons was between 5.7%

and 68%, with an average prevalence approximately 26%. The huge gap of the prevalence of depression was due to the study with the highest prevalence (19) was conducted in semi-urban, semi-rural area where country lifestyle is changing to more urban lifestyle, resulting in basic social issues and psychological issues among people in the society (30). This might lead older persons to have more chance to develop depression. Meanwhile, the study with the lowest prevalence (27) was conducted among community dwelling older persons who were members of an elderly club. There was reported that social participation was a protective factor to reduces depressive symptoms among older persons (31). Therefore, the older persons who join in social activities were less likely to suffer from depression, leading to lower prevalence of depression.

The prevalence of depression among the Thai's older persons in this review was higher than world's older population, which suffer from unipolar depression which was approximately only 7% (32). The reported prevalence is considerably higher compared to other previous studies conducted in others neighboring countries, potentially due to the use of different measuring tools.

The three most common questionnaire used to evaluate the level of depressive among older persons in Thailand were the 30 item Thai Geriatric Depression Scale: TGDS-30 (18, 22, 24, 28), the 15 item Thai Geriatric Depression Scale: TGDS-15 (19, 25, 27), and the 12 item questionnaire of Thai validated Euro-D scale (13, 20, 23), with the 15-item Geriatric Depression Scale or GDS-15 which is the shorter version of the GDS, being the most common questionnaire used to identify the level of depressive among older persons other neighbouring countries such as in Malaysia (33), Myanmar (34), and Vietnam (35). According to Shin (36), the GDS-15 was a useful instrument for dividing stages of geriatric depression into either minor or major depressive disorder. The shorter version was introduced to ease the screening process by reducing the survey's administration time. The different cut-off point used with GDS-15 in different studies, such as ≥5 (19, 33–34) or ≥6 (25, 35), may have contributed towards the different prevalence reported in different studies.

In a related study conducted in Malaysia by Vanoh (33), which was a large-scale cross-sectional survey across four states in Malaysia, the prevalence of geriatric depression disorder was 16.5%. Meanwhile, in another study involving two regions of Myanmar, and Vietnam also reported lower prevalence of depression among older persons, 22.3% and 23.2%, respectively (34–35).

Factors associated with depression

Personal factors

The personal factors that were commonly found to be significantly associated with depression were female gender, marital status, employment status or income, and education levels. The most common factors had a significant association with depression was female gender. It was found that female older persons were more likely to develop depression than male older persons. This is because men and women have different characteristics, which could explain why men and women experience depression differently. Women were more sensitive and use emotion when dealing with a challenging situation. This was supported by Tamres (37) who revealed that females were more likely to use emotional focused coping than males, that put them more at risk towards depression. Thus, female was more likely to have depression than males (3, 11, 38).

Moreover, several studies reported that being married was significantly associated with depression (12, 39–40), with reduced risk towards depression observed among older persons who were married during the studies were conducted. This may be related to the fact that older persons who were married feel that they have someone to take care of them and when they face with difficult situations, there is someone beside them. Marital status is a form of social support which has proven to play a role towards preventing the development of depression, which probably explain the increase likelihood of depression among old women as they age due to the losing spouse (4, 41).

Employment status or income is another personal factor which is also closely linked to social support. Older persons who were still actively employed were less likely to develop depression, which mainly related to the social connectedness with people at workplace (42). However, the opposite relationship has been reported in a conducted among Chinese, with older persons with high pressure of work were more likely to have depressive symptoms than older persons with low or no pressure of work (43), with most older persons who work under time pressure were more likely to have a greater incidence of mental health conditions (44). Additionally, a survey of older person employees in 13 European countries revealed that the older person employees who suffer effort-reward imbalance as well as low job control at work were more likely to develop depressive symptoms (45).

Another important personal factor identified in this review was educational level, with higher risk towards depression was observed among older persons with lower education level. Ten Kate (46 p. 63) pointed out that "education level especially plays a significant role in processes that affect mental health", which was frequently linked to the economic privileges of the higher educated (46). Furthermore, a higher educational achievement is positively related with being embedded in cohesive social structures, and the mental health benefits of this embeddedness are widely approving

(47). However, there was found that overeducation had a decline in mental health as well (48). This might be due to overeducation is linked to more job responsibility, and pressure of work that could be increasing the risk to develop depression.

Behavioural factors

Doing less exercise and smoking status of current smoker were commonly factors under behavioural factors that found to be significant association with depression among older persons in Thailand. Older persons who perform regular exercise were less likely to develop depression due to the fact that exercise could improve physical and mental health. Depressive symptoms were shown to be decreased in older persons who remained physically active throughout time (49). According to Cui (50), apart from high frequency exercise, older persons who engaged in more than one appropriate exercise were more likely to have a lower risk of depressive symptoms. In addition, Zhang (51) pointed out that physical activity has been promoted as a promising non-pharmaceutical treatment for and prevention of depression in older persons. Thus, older person who performing exercise or doing physical activities will be less likely to develop depression.

Additionally, smoking status has been found to be the risk factor to develop depression (52–53). Older persons who smoked were more likely to have depression, due to their perception that smoking can relieve stress and anxiety (54). Moreover, smoking was reported to alter stress, anxiety, and depression response pathways (55). According to Aubin (56), activity of monoamine oxidase is lower in smokers than in non-smokers. As a result, smoking could have depressant activities properties. Thus, smoking older persons were also more likely to develop depression than those who were non-smokers.

Environmental factors

The most common factors under environmental factors that found to significantly associated with depression among the Thai older persons was mainly related to the presence of social support that older persons received form family and others, which were family relationship, imbalanced family type, poor family economic status, number of live children, children outside district, child living arrangement, social network, loneliness, and abandonment. Older persons who received more social support will be more likely to have low level of depression (36, 57–58). The presence of social support provides a sense of love and attention that older persons receive form their families and others as emotions support and practical assistance. According to Miller (58 p. 1), "social support was the strongest predictor of depressive symptoms". Therefore, improving in social support can reduce depression among older persons.

In addition, family relationship is also closely involved to social support that was also reported to have significant relationship with depression. Older persons who have good family relationship will be more likely to have less depression. According to Krsteska (59), dissatisfaction with marital relationships was associated with a higher risk of depression in late life, with patients experiencing late-life depression having significantly more conflictual family relationships, a sense of being ignored and abandoned, and a feeling of not being a loved family member. Family relationships were reported as the strongest social protective factor against geriatric depression among Thai older persons (60).

Furthermore, family economic status was also closely linked to social support that older persons received from their families. Older persons living in poor family economic status will be less likely to receive financial support so their children will migrate to live and work in other district, where they can earn more money to support their families, resulting in abandonment of older persons and make them feel more loneliness. Therefore, older persons who experience loneliness will be more likely to suffer from depression. (61–63).

Meanwhile, social network was another environmental factor that closely connected to social support which, was found to have association with depression. Older persons who still connect to social network will be less likely to develop depression. This would be because the older persons can interact and participate in activities that they enjoy with others who share their interests that encourage them to be productive aging. According to Singh (64), a greater social network of "friends/ neighbours" was found to be a protective factor against depression among older persons in rural areas. Moreover, older person with nonfriends social network will be more likely to have depression due to the fact that they lack the companionship of friends, and also more social isolation. (65). Thus, the older persons who have more social network will be more likely to receive more information support from their connections and less likely to develop depression comparing to those who have less social network.

Limitations

This review involves cross-sectional study that collect the data only one point in time. Since a different period has been selected, the results might have been different. Moreover, there could be self-reporting bias. The older persons might have hidden their feelings that they afraid to expresses their weakness. Due to the nature of Thai older persons being considerate, they tend to reject or say no first. Additionally, there was a lack and dated of previous studies on the depression among community-dwelling older persons. Meanwhile, most of previous studies had focused on older persons who resided in institutions as care home, or long-term care that were risk group to develop depression. This may indicate that the depression among older persons living in communities has been underreported because of their

lower-risk environment.

Recommendations

For the future study, this review recommended that randomised controlled trial should be provided to reduce depression among community-dwelling older persons, especially female older persons, low educated, and unemployed by concentrating on enhancing family and communities' social support as well as improving their self-esteem. Moreover, qualitative study with in-depth interviews among community-dwelling older persons should also be conducted in order to learn more and comprehend the underlying factors of depression.

CONCLUSION

The current review is highlighting the high prevalence of depression among older persons in Thailand, which was mainly associated with personal factors, particularly gender as well as the presence of social support. Female older persons who received poor social support, as well as being single, low educated, unemployed had higher risk of depression and should be screened and targeted early to ensure effective management and to prevent the negative consequences of depression. Additionally, effective approaches to reduce depression among older persons through community-based health promotion projects should be provided by enhancing social support from family and peers, supporting them to be employed. Although the personal factor as gender and education in later life could not be changed, providing a program to improve their self-esteem could reduce their chance to develop depression. Therefore, community-dwelling older persons may encounter less depression, leading them to live with happiness in their later life.

REFERENCES

1. United Nations, Department of Economic and Social Affairs, Statistics Division. World Population Ageing 2020 Highlights [Internet]. Department of Economic and Social Affairs.2022 [cited 2022 April 18]. Available from: https://www.un.org /development/desa/pd/sites/www.un.org.development.desa. pd/files/files/documents/2 020/Sep/un_pop_2020_pf_ageing_10_key_messages.pdf.
2. Foundation of Thai Gerontology Research and Development Institute. Situation of the Thai Elderly 2020. Bangkok: Institute for Population and Social Research, Mahidol University; 2021.
3. A. T, K. S, Neloopant S. Prevalence and factors associated with depression among the elderly in rural areas of Kannur, North Kerala, India: a cross sectional study. International Journal of Community Medicine and Public Health. 2016;3(8):1986-91. doi:10.18203/2394-6040.ijcmph20162184
4. Schoevers R, Beekman A, Deeg D, Geerlings M, Jonker C, Van Tilburg W. Risk factors for depression in later life; results of a prospective community based study (AMSTEL). Journal of Affective Disorders. 2000;59(2):127–37. doi:10.1016/s0165-0327(99)00124-x
5. Adams K, Sanders S, Auth E. Loneliness and depression in independent living retirement communities: risk and resilience factors. Aging & Mental Health. 2004;8(6):475–85. doi:10.1080/13607860410001725054
6. Phainrungruang R, Lueboonthavatchai P. (2015). Interpersonal Problems and Depression of the Elderly at the Elderly Association in Phitsanulok Province. Journal of the Psychiatric Association of Thailand. 2015;60(1):23–34.
7. Department of Mental Health. Statistics of mental health patients in Thailand [Internet]. Department of Mental Health. 2022 [cited 2022 April 18]. Available from: https://www.dmh.go.th/report/report1.asp.
8. Sivertsen H, Bjшrklшf GH, Engedal K, Selbжk G, Helvik AS. Depression and Quality of Life in Older Persons: A Review. Dementia and Geriatric Cognitive Disorders. 2015;40(5-6):311–39. doi:10.1159/ 000437299
9. Koз Z. The investigation of factors that influence self-care agency and daily life activities among the elderly in the northern region of Turkey. Collegian. 2015;22(3):251–8. doi:10.1016/j.colegn.2014.01.002
10. Van Damme-Ostapowicz K, Cybulski M, Galczyk M, Krajewska-Kulak E, Sobolewski M, Zalewska A. Life satisfaction and depressive symptoms of mentally active older adults in Poland: a cross-sectional study. BMC Geriatrics. 2021; 21:466:1–15. doi:10.1186/s12877-021-02405-5
11. Aoonkaew V, Kuhirunyaratn P. The prevalence of depression among the elderly in Ban prow community Hospital. Meuang District, Nong Bua Lam Phu Province. Community Health Development Quarterly KhonKaen University. 2015;3(4): 578-89.
12. Cetin N, Aylaz R, Kargin M. Consideration of the relationship between the self-efficacy levels and the depression in individuals over 65. The Journal of International Social Research. 2018;11: 304–10. doi:10.17719/jisr. 20185639 002
13. Haseen F, Prasartkul P. Predictors of depression among older people living in rural areas of Thailand. Bangladesh Medical Research Council Bulletin. 2011;37:51-6. doi:10.3329/bmrcb.v37i2.8434
14. Inchaiya C, Sangon S, Nintachan P. Factors Predicting Depression in Older Adults in Community. The Journal of Psychiatric Nursing and Mental Health. 2016; 30(1):17–33.
15. Moher D, Liberati A, Tetzlaff J, Altman DG. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. PLoS Med. 2009;6(7): e1000097. doi:10.1371/journal.

pmed.1000097
16. Crowe M, Mgmt MIT, Sheppard L, Campbell A. Comparison of the effects of using the Crowe critical appraisal tool versus informal appraisal in assessing health research: a randomised trial. Int J Evid Based Healthcare. 2011;9(4): 444–9. doi:10.1111/j.1744-1609.2011.00237.x
17. Corrigan FM, Broome H, Dorris L. Epilepsy & behavior a systematic review of psychosocial interventions for children and young people with epilepsy. Epilepsy Behav. 2016; 56:99–112. doi:10.1016/j.yebeh.2016.01. 005
18. Kansri J, Malai C, Boonranarek S, Busabok, A. A Study of Geriatric Depression among Thai Elderly in Chainat Province. Journal of Health and Nursing Research. 2019;35(3):24–33.
19. Olpoc JRS. Factors Affecting the Level of Depression Among Thai Elderly [Internet]. SSRN Electronic Journal. 2016. [cited 2021 December 26]. doi:10.2139/ssrn.2778881
20. Abas M, Tangchonlatip K, Punpuing S, Jirapramukpitak T, Darawuttimaprakorn N, Prince M, Flach C. Migration of Children and Impact on Depression in Older Parents in Rural Thailand, Southeast Asia. JAMA Psychiatry. 2013;70(2):226–34. doi:10.1001/jamapsychiatry.2013.271
21. Ratanasiripong P, Ratanasiripong N, Khamwong M, Jingmark S, Thaniwattananon P, Pisaipan P, et al. The impact of resiliency on mental health and quality of life among older adults in Thailand. Journal Of Health Research [Internet]. 2021. doi:10.1108/jhr-02-2021-0099
22. Piboon K, Subgranon R, Hengudomsub P, Wongnam P, Louise Callen B. A Causal Model of Depression Among Older Adults in Chon Buri Province, Thailand. Issues In Mental Health Nursing. 2012;33(2):118–26. doi:10. 3109/ 01612840.2011.630497
23. Suttajit S, Punpuing S, Jirapramukpitak T, Tangchonlatip K, Darawuttimaprakorn N, Stewart R, et al. Impairment, disability, social support and depression among older parents in rural Thailand. Psychological Medicine. 2010;40(10):1711–21. doi:10.1017/S003329170999208X
24. Charoensakulchai S, Usawachoke S, Kongbangpor W, Thanavirun P, Mitsiriswat A, Pinijnai O, et al. Prevalence and associated factors influencing depression in older adults living in rural Thailand: A cross-sectional study. Geriatrics & Gerontology International. 2019;19(12):1248–53. doi:10.1111/ ggi. 13804
25. Anantapong k, Pitanupong J, Werachattawan N. Prevalence of depression, and its associated factors among the elderly in Songkhla Province, Thailand: Two stage cluster sampling study. Journal Of Clinical Gerontology & Geriatrics. 2017;8(2):58–63. doi:10.24816/jcgg.2017.v8i2.04
26. Trongsakul S. Prevalence and Associated Factors of Depression Among Karen Hilltribe Elderly Population in Thailand. Malaysian Journal of Medicine and Health Sciences. 2021;17(3):166–69.
27. Kosulwit L. Mental Health Status, including Depression and Quality of Life Among Members of an Elderly Club in Suburban Bangkok. J Med Assoc Thai. 2012;95(1): S92-S101.
28. Aung MN, Moolphate S, Aung TNN, Kantonyoo C, Khamchai S, Wannakrairot P. The social network index and its relation to later-life depression among the elderly aged ≥ 80 years in Northern Thailand. Clinical Interventions in Aging. 2016; 11:1067–74. doi:10.2147/CIA.S108974
29. Noosorn N, Kanokthets T. Abandoned elderly and health problem in the Lower Northern Region of Thailand. International Journal of Current Microbiology and Applied Sciences. 2015;4(3):188–94.
30. Puttikankit T. Community Context Under the Semi-Urban, Semi-Rural Society. FEU Academic Review. FEU academic review. 2015; 9(1): 7 -15.
31. Chiao C, Weng L-J, Botticello AL. Social participation reduces depressive symptoms among older adults: An 18-year longitudinal analysis in Taiwan. BMC Public Health. 2011;11(1). doi:10.1186/1471-2458-11-292
32. World Health Organization. Mental health of older adults [Internet]. World Health Organization. 2017 [cited 2022 April 14]. Available from: https://www.who.int/news-room/fact-sheets/detail/mental-health-of-older-adults.
33. Vanoh D, Shahar S, Yahya H, Hamid T. Prevalence and Determinants of Depressive Disorders among Community-dwelling Older Adults: Findings from the Towards Useful Aging Study. International Journal of Gerontology. 2016;10(2):81–5. doi:10.1016/j.ijge.2016.02.001
34. Sasaki Y, Shobugawa Y, Nozaki I, Takagi D, Nagamine Y, Funato M, et al. Association between depressive symptoms and objective/subjective socioeconomic status among older adults of two regions in Myanmar. PLOS ONE. 2021;16(1): e0245489. doi:10.1371/journal.pone.0245489
35. Ishine M, Wada T, Sakagami T, Dung P, Vienh T, Kawakita T, et al. Comprehensive geriatric assessment for community-dwelling elderly in Asia compared with those in Japan: III. Phuto in Vietnam. Geriatrics And Gerontology International. 2005;5(2):115–21. doi:10.1111/j.1447-0594.2005. 00277.x
36. Shin C, Park MH, Lee S, Ko Y, Kim Y, Han K, et al. Usefulness of the 15-item geriatric depression scale (GDS-15) for classifying minor and major depressive disorders among community-dwelling elders. Journal Of Affective Disorders. 2019; 259:370–5. doi: 10.1016/j.jad.2019.08.053
37. Tamres LK, Janicki D, Helgeson VS. Sex Differences in Coping Behavior: A Meta-Analytic Review and an Examination of Relative Coping. Personality

and Social Psychology Review. 2002;6(1):2–30. doi:10.1207/S15327957PSPR0601_1
38. Puttametta M, Soonthornchaiya R. Selected Factors Related to Depression of The Older Persons with Depressive disorder in the Central Region. The journal of Psychiatric Nursing and Mental Health. 2016;30(2):69–82.
39. Carnelley KB, Wortman CB, Kessler RC. The impact of widowhood on depression: findings from a prospective survey. Psychological Medicine. 1999;29(5):1111–23. doi:10.1017/S0033291799008971
40. Yaiyong O, Lueboonthavatchai P. Depression and Grief of the Elderly at the Elderly Associate in Nonthaburi Province. Journal of the Psychiatric Association of Thailand. 2011;56(2):117–28.
41. Wongpoom T, Sukying C, Udomsubpayakul U. Prevalence of Depression among the Elderly in Chiang Mai Province. J Psychiatr Assoc Thailand. 2011;56(2):103–16.
42. Green MJ, Whitley E, Niedzwiedz CL, Shaw RJ, Katikireddi SV. Social contact and inequalities in depressive symptoms and loneliness among older adults: A mediation analysis of the English Longitudinal Study of Ageing. SSM - Population Health. 2021; 13:100726. doi:10.1016/j.ssmph.2021.100726
43. Gao G, Li W, Lee J. Employment, Work, And Depressive Symptoms Among Older Workers. Gerontology &Amp; Geriatric Medicine. 2020;6(5):1–4. doi:10.24966/ GGM-8662/100071
44. Volkoff S, Buisset C, Mardon C. Does intense time pressure at work make older employees more vulnerable? A statistical analysis based on a French survey "SVP50". Applied Ergonomics. 2010;41:754–62. doi:10.1016/j.apergo.2009.12.014
45. Lunau T, Wahrendorf M, Dragano N, Siegrist J. Work stress and depressive symptoms in older employees: impact of national labour and social policies. BMC Public Health. 2013;13:1–10.
46. ten Kate J, de Koster W, van der Waal J. Why are Depressive Symptoms More Prevalent Among The Less Educated? The Relevance of Low Cultural Capital and Cultural Entitlement. Sociological Spectrum. 2017;37(2):63–76. doi:10.1080/02732173.2016.1274248
47. Ferlander S. The Importance of Different Forms of Social Capital for Health. Acta Sociologica. 2007;50(2):115–28. doi:10.1177/0001699307077654
48. Bracke P, Pattyn E, von dem Knesebeck O. Overeducation and depressive symptoms: diminishing mental health returns to education. Sociology of Health & Illness. 2013;35(8):1242–59. doi:10.1111/1467-9566.12039
49. Lampinen P, Heikkinen R, Ruoppila I. Changes in Intensity of Physical Exercise as Predictors of Depressive Symptoms among Older Adults: An Eight-Year Follow-Up. Preventive Medicine. 2000;30(5):371–80. doi:10.1006/pmed.2000.0641
50. Cui Y, Huang C, Gong Q, Guo F, Li W, Zhang L, et al. Physical Exercise Behaviors and Depressive Symptoms Among Elderly Chinese Women: Focus on Exercise Components. Risk Management and Healthcare Policy. 2021; 14:2647–55. doi:10.2147/RMHP.S309949
51. Zhang S, Xiang K, Li S, Pan H. Physical activity and depression in older adults: the knowns and unknowns. Psychiatry Research. 2021;297:113738. doi:10.1016/j. psychres.2021.113738
52. Lam T, Li ZB, Ho SY, Chan WM, Ho KS, Li MP, et al. Smoking and depressive symptoms in Chinese elderly in Hong Kong. Acta Psychiatrica Scandinavica. 2004;110(3):195–200. doi:10.1111/j.1600-0447.2004.00342.x
53. Almeida OP, Pfaff JJ. Depression and smoking amongst older general practice patients. Journal of Affective Disorders. 2005;86(2-3):317–21. doi:10.1016/j. jad.2005. 02.014
54. National Health Service. Stopping smoking for your mental health [Internet]. National Health Service. 2022 [cited 2022 March 12]. Available from: https://www.nhs.uk/ live-well/quit-smoking/stopping-smoking-mental-health-benefits/
55. Picciotto MR, Brunzell DH, Caldarone BJ. Effect of nicotine and nicotinic receptors on anxiety and depression. Neuroreport. 2002;13(9):1097–106. doi:10.1097/00001756 -200207020-00006
56. Aubin HJ, Tilikete S, Barrucand D. Depression and smoking. Encephale. 1996; 22(1):17–22.
57. Greenglass E, Fiksenbaum L, Eaton J. The relationship between coping, social support, functional disability and depression in the elderly. Anxiety, Stress & Coping. 2006;19(1):15–31. doi:10.1080/1465989050043 6430
58. Miller KJ, Mesagno C, McLaren S, Grace F, Yates M, Gomez R. Exercise, Mood, Self-Efficacy, and Social Support as Predictors of Depressive Symptoms in Older Adults: Direct and Interaction Effects. Frontiers in Psychology. 2019;10. doi:10.3389/fpsyg.2019.02145
59. Krsteska R, Pejoska-Gerazova V. Family relationships as a risk factor for late life depression. Prilozi. 2010;31(2):223–35.
60. Thipprakmas R. Social Protective Factors in Depression among the Elderly: The Role of Family, Social and Community Supports. Regional Health Promotion Center 9 Journal. 2021;15(37):339–51. doi:10.14456/rhpc9j.2021.24
61. Singh B, Kiran U. Loneliness among elderly women. International Journal of Humanities and Social Science Invention. 2013;2(2):10–4.
62. Kabátová O, Puteková S, Martinková J. Loneliness as a Risk Factor for Depression in the Elderly. Clinical Social Work and Health Intervention. 2016;7(1):48–52.

63. Aylaz R, Aktьrk b, Erci B, Lzltьrk H, Aslan H. Relationship between depression and loneliness in elderly and examination of influential factors. Archives of Gerontology and Geriatrics. 2012;55(3):548–54. doi:10.1016/j.archger.2012.03.006
64. Singh L, Singh PK, Arokiasamy P. Social Network and Mental Health Among Older Adults in Rural Uttar Pradesh, India: A Cross-Sectional Study. Journal of Cross-Cultural Gerontology. 2016;31(2):173–92. doi:10.1007/s10823-016-9286-0
65. Fiori KL, McIlvane JM, Brown EE, Antonucci TC. Social relations and depressive symptomatology: Self-efficacy as a mediator. Aging & Mental Health. 2006;10(3):227–39. doi:10.1080/13607860500310690