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THEORY-BASED STUDIES

Stress management behaviors to prevent depression among the elderly in Thailand: a structural equation modeling analysis based on Self-Efficacy and Social Support Theories

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Abstract

The world is experiencing a rapid demographic shift towards an aging population, with every country undergoing a significant transition to an aging society. As a result, understanding and promoting effective stress management behaviors among older adults has become important to support their mental health. This cross-sectional study aimed to develop and validate a structural equation model of stress management behaviors for preventing depression among elderly in the community. The model was grounded in Self-Efficacy Theory and Social Support Theory. The sample consisted of 345 individuals aged 60 years and above residing in Samut Songkhram Province, Thailand. Simple random sampling was employed to minimize selection bias, using a computer program to generate random numbers. The study instruments included measures of general demographic information, self-efficacy, social support, stress management behaviors, the Suanprung Stress Test (SPST-20) for assessing stress, and The Thai Geriatric Depression Scale (TGDS-15) for assessing depression. Data were analyzed using descriptive statistics and structural equation modeling via Jamovi software version 2.5. The findings indicate that stress management behavior has a direct negative effect on stress (β=-0.87, $p < 0.05$) and an indirect negative effect on depression through stress (β=-0.71, $p < 0.05$). Furthermore, behavioral competence and social support have direct positive effects on stress management behavior in preventing depression among elderly people in the community (β=0.52; β=0.45; $p < 0.05$). Depression in older adults impairs daily functioning, worsens chronic conditions, and increases suicide risk. Therefore, community nurses should implement programs focusing on stress management skills, self-efficacy enhancement, and social support to sustain the mental well-being of the elderly.

Keywords: Elderly, prevention of depression, self-efficacy, social support, stress management behavior, structural equation modeling

Introduction

The current global situation shows that all countries worldwide are facing rapid social changes, especially in terms of demographic structure (Gu et al., 2021). The world is experiencing a rapid demographic shift towards an aging population, with every country undergoing a significant transition to an aging society (Hong et al., 2023). Thailand ranks second among ASEAN countries for its elderly population and is fully transitioning into an aging society (Silawan et al., 2024). This demographic change will lead Thailand to reach the highest level of aging society by 2031 which will impact social and economic aspects, particularly in elderly care. Elderly people are more prone to physical health problems and mental health issues (Kang & Kim, 2022). Depression is a major mental health problem frequently found among the elderly worldwide (Jalali et al., 2024). Depression is a common condition among older adults worldwide and a leading cause of health problems (Cai et al., 2023). In 2021, depression accounted for approximately 56.3 million years lived with disability reflecting a 36.5% increase from 2010 (The Lancet Psychiatry, 2024). Meanwhile, depression is a major public health issue in Thailand, ranking fourth in the country (Tangthong & Manomaipiboon, 2023). The prevalence of depression in the elderly ranges from 17.5% to 82.36% (Zenebe et al., 2021). In Samut Songkhram province, the rate of depression among the elderly is 187.3 per 100.000 people indicating the highest depression rates in Thailand (Setaputra & Chaisongkram, 2021).

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Studies above indicated that depression is a growing mental health concern among older adults which often triggered by increased dependency and chronic stress. Untreated depression in the elderly can be as debilitating as other major diseases (Lorenzo et al., 2023). Moreover, depression with mild and moderate symptoms often go unnoticed that resulting in inadequate support or intervention.

The care for depression among the elderly in the community is primarily provided by nurses and Village Health Volunteers (Brasileiro et al., 2024). This community-based care focuses mainly on promoting general health behaviors, including physical exercise, nutrition, interpersonal relationships, and spiritual development (Devita et al., 2022; Reynolds et al., 2022). The follow up for elderly individuals with depression is conducted through home visits by nurses and Village Health Volunteers **(Figure 1)**. However, these strategies may not be entirely suitable for the primary prevention of depression among older adults within the community setting. Moreover, limitations in terms of manpower, financial resources, materials, and management capacity necessitate a strategic focus on the most influential determinants. Prioritizing such key factors will enhance the efficiency and sustainability of depression prevention efforts among the elderly in community settings (Department of Mental Health, 2021). Studies have identified stress as one of the key factors contributing to depression in the elderly, making it a significant psychosocial factor (Cristóbal-Narváez et al., 2022; Dejanipont et al., 2023). Stress triggers biological changes in the brain that contributing to the development and persistence of depression in older adults (Godoy et al., 2018). Psychological stress activates both the autonomic nervous system and the endocrine system leading to an increased release of cortisol and catecholamines such as adrenaline and noradrenaline in the body (Goldstein, 2021).

Figure 1. Home visits by nurses and Village Health Volunteers. (Courtesy of www.flickr.com, Licensed by WHO Thailand).

Sustained elevation of these stress hormones contributes to chronic low-grade inflammation and disruptions in neurotransmitter systems, especially serotonin and dopamine (Petrinović et al., 2023). This directly impairs brain regions involved in emotional regulation, including the prefrontal cortex and amygdala. These neurobiological changes are strongly associated with the development of depression (Miller & Raison, 2016). Depression, in turn, has a significant impact on health-related behaviors. It is commonly associated with poor dietary habits, physical inactivity, and inadequate sleep, as well as physiological changes such as elevated blood pressure (hypertension) and abnormal lipid profiles (dyslipidemia) (Wang et al., 2021; Khalfan et al., 2023). These combined behavioral and physiological consequences increase the risk of non-communicable diseases (NCDs), particularly cardiovascular diseases (CVDs), Stroke and disorders related to lipid metabolism (Li et al., 2023; Ashraf et al., 2024). According to mental health reports from proactive screening, 7.84% of the elderly experience high stress, 9.21% are at risk for depression, and 5.24% are at risk of suicide (Department of Mental Health, 2024). The increasing stress levels among the elderly result in a higher incidence of depression and greater suicide risk (O'Connor et al., 2023). Stress management strategies have been proposed to help reduce the risk of depression. These strategies include problem focused coping, which involves planning and taking action to solve problems, and emotion focused coping, which involves accepting situations, finding the positive aspects in events, and avoiding problems or obstacles (Bjørkløf et al., 2016; Galiana et al., 2020; Kida et al., 2020; Kim et al., 2016; Orzechowska et al., 2022). These behaviors can help manage stress, control it, and reduce the risk of depression. This approach is consistent with preventive health care practices used to prevent the progression of depression (Doyle et al., 2023).

The key factors that have a significant influence on stress management behavior to prevent depression in elderly individuals in the community include self-efficacy, expectations of positive outcomes from behavior, emotional support, and informational support (Bakan & Inci, 2021; Chen et al., 2019; Du et al., 2024). These factors are well explained through an integrated application of Self-Efficacy Theory and Social Support Theory. Self-efficacy provides a foundation for understanding how individual's beliefs in their capabilities affect their motivation to engage in stress management behaviors (Linge et al., 2021). In contrast, social support enhances such behaviors through emotional reinforcement and the dissemination of relevant coping information (Feeney & Collins, 2015). The Self-Efficacy Theory highlights individuals' belief in their capabilities to perform actions, influencing motivation, persistence, and health behaviors like stress

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management (Bandura, 1997). The Social Support Theory emphasizes emotional and informational support from social relationships that enhance coping and promote health behaviors (House, 1987). Together, these theories explain internal and external factors influencing stress management behaviors to prevent depression among the elderly, forming a strong foundation for the study's structural equation model.

Additionally, this study explained their interconnection as follows: The Self-Efficacy Theory emphasizes individuals' beliefs in their capabilities to organize and execute the courses of action required to manage prospective situations. In the context of health behavior, self-efficacy influences how people think, feel, and act. Higher self-efficacy enhances motivation and persistence in engaging in health-promoting behaviors, such as stress management, even in the face of difficulties. It particularly affects behavioral initiation, effort, and resilience, which are essential for maintaining stress management behaviors to prevent depression in the elderly. The Social Support Theory focuses on the supportive interactions individuals receive from their social networks. Social support is categorized into emotional support (expressions of empathy, love, trust, and care) and informational support (advice, guidance, and information). These supports enhance coping capacities, reduce perceived stress, and encourage the adoption of health-promoting behaviors. In this study, emotional and informational support were found to strengthen elderly individuals' self-efficacy and foster better engagement in stress management behaviors. Thus, these two theories complement each other in explaining both internal (self-efficacy) and external (social support) factors that influence health-related behavior change. Their integration provided a strong theoretical framework for the development of the structural equation model in this research, offering robust predictive power for understanding stress management behaviors that help prevent depression among the elderly. Furthermore, these theories offer a complementary framework that clarifies how internal and external factors interact to influence health related behavior change. In community-based care, existing interventions often rely on promoting general health behaviors, which may not sufficiently address the specific stress related challenges that contribute to depression in the elderly (Kheirabadi et al., 2021). Therefore, it is important to explore alternative and more strategies, such as psychoeducation to elderly populations (Singh et al., 2020). These approaches may offer more sustainable outcomes in preventing depression. Nurses and Village Health Volunteer play a crucial role in this context. As frontline providers in primary care and mental health services, they are responsible for screening psychological risk factors, delivering stress management interventions, coordinating with families and local healthcare teams, and offering continuous psychosocial support (Hurley et al., 2022). Their involvement is essential in individual care planning, supporting community engagement and promoting sustainable mental well-being among elderly.

However, existing approaches at the primary care level in community settings have mainly focused on promoting general health behaviors, with limited attention to the psychological and social determinants of stress management specifically related to depression prevention. Consequently, many older adults remain unable to effectively manage stress and prevent depression. To address this gap, this study aims to develop and validate a structural equation model (SEM) of stress management behavior for preventing depression among elderly individuals in the community. SEM is selected as the analytical method due to its ability to examine complex relationships between observed and latent variables within a theoretical framework (Zhang, 2017). It allows for the simultaneous analysis of multiple dependent and independent variables, making it highly suitable for testing causal pathways between psychological constructs such as self-efficacy, social support, and stress management behaviors (Bollen et al., 2022). Moreover, SEM provides a robust framework for evaluating model fit with empirical data, enabling researchers to confirm theoretical assumptions and refine models based on statistical evidence (Tarka, 2018). The model developed in this study integrates both individual level and social level predictors and emphasizes practical application by nurses and Village Health Volunteers to design more effective, evidence based, and contextually relevant strategies for promoting mental health among older adults. The study aimed to develop and validate a structural equation model of stress management behaviors for preventing depression among elderly in the community. It is fervently hoped that the study's findings will empower community nurses to tackle depression among the elderly with greater precision and compassion which revolutionizing the delivery of mental health care.

Method

This research is a cross-sectional study using SEM to investigate the model of stress management behavior to prevent depression among elderly in Thailand. A literature review of documents, textbooks, theories, and related research was conducted. Additionally, a systematic literature review was performed based on the methodology of the Joanna Briggs Institute (JBI) to identify the components of stress management behaviors for preventing depression among the elderly. The aim was to synthesize empirical knowledge related to key behavioral components through a structured review process. The literature search was guided by the PICO framework, using the keywords “Stress management,” “Stress

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coping," "Depression," and "Elderly." Studies published between 2013 and 2023 were screened, and a total of 10 research articles that met the inclusion and quality criteria were selected for data extraction and synthesis (Bjørkløf et al., 2016; Galiana et al., 2020; Kida et al., 2020; Kim et al., 2016; Lembas et al., 2017; Muansutha et al., 2022; Orzechowska et al., 2022; Su et al., 2018; Wakeel et al., 2023; Wu et al., 2022).

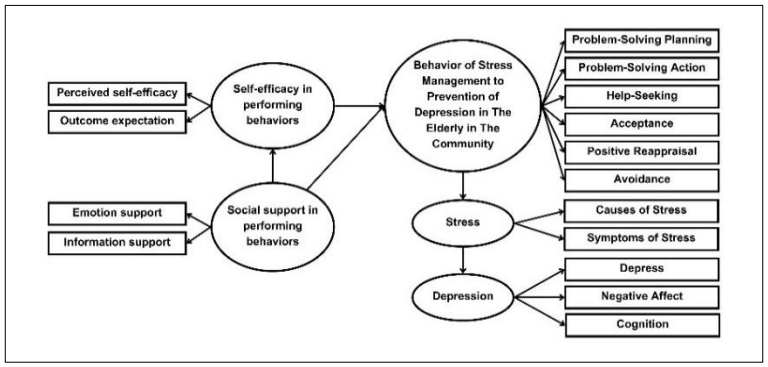

Figure 2. The conceptual framework of the study (Documented by authors).

The most frequently cited behavioral components appearing in more than half of the studies were problem focused coping such as planning and taking action to solve problems, emotion focused coping, involving acceptance, positive reappraisal, and avoidance strategies. To further explore causal components influencing stress management behaviors, an additional search was conducted using the keyword "factor," yielding 5 high quality studies (Bakan & Inci, 2021; Chen et al., 2019; Du et al., 2024; Geng et al., 2018; Guo et al., 2018). The frequently cited influencing factors appearing in more than half of these studies were self-efficacy in performing behaviors (e.g. perceived self-efficacy and outcome expectation) and social support in performing behaviors (e.g. emotional support and informational support). These components were reviewed and validated by five experts in health promotion, behavioral sciences, and community psychiatric nursing from various universities in Thailand. These findings were then used to develop the conceptual framework of the study **(Figure 2)**. Data were collected over two months started from October to November 2024. The study population consisted of elderly individuals aged 60 and above, both male and female, residing in Samut Songkhram Province, Thailand. The sample size was determined based on the principles of data analysis and was appropriate for the SEM (Hair et al., 2019). The minimum sample size required is based on the number of latent variables, which in this case includes 5 latent variables and 15 observed variables. For under identified latent variables, a minimum sample size of 300 individuals is required. Therefore, the sample size for this study was set at a minimum of 300 individuals. To account for potential missing data, the sample size was increased by 15% (45 individuals), bringing the total to 345 participants. Sampling was conducted using probability sampling, specifically simple random sampling, with the aid of a computer program that randomly selected 345 individuals. The inclusion criteria required participants to be fully conscious, capable of self-care, and willing to participate. The participants need to provide informed consent, complete the questionnaire, and fully understand the research process. Exclusion criteria applied to individuals with severe preexisting conditions or those at risk of disease exacerbation, including heart disease, respiratory diseases, severe hypertension with critical symptoms, and kidney disease.

This study employed validated questionnaires to ensure reliable data collection. The instruments included a 10-item demographic questionnaire, a 36 item self-efficacy questionnaire, and a 36-item social support questionnaire. The self-efficacy questionnaire was utilized to assess two constructs perceived self-efficacy and outcome expectation. The social support questionnaire assessed emotional support and informational support. All instruments were developed based on existing theories and prior research (Bakan & Inci, 2021; Bandura, 1997; Chen et al., 2019; Du et al., 2024; Geng et al., 2018; House, 1987; Guo et al., 2018). An 18-item stress management behavior questionnaire was also developed to assess strategies for preventing depression in the elderly. It measured problem-focused coping (e.g. planning and taking action to solve problems) and emotion-focused coping (e.g. accepting situations, identifying positive aspects of events, and avoiding problems) (Bjørkløf et al., 2016; Galiana et al., 2020; Kida et al., 2020; Kim et al., 2016; Lazarus & Folkman, 1984; Lembas et al., 2017; Muansutha et al., 2022; Orzechowska et al., 2022; Su et al., 2018; Wakeel et al., 2023; Wu et al., 2022). Additionally, two standardized tools were used. The Suanprung Stress Test-20 (SPST-20) which consisting of 20 items to measure stress levels (Mahattanirankul et al., 1998). The Thai Geriatric Depression Scale (TGDS-15) which consisted of 15 items to assess depressive symptoms (Wongpakaran & Wongpakaran, 2012). The research tools used in this study were validated for content validity by five experts in health promotion, behavioral sciences, and community psychiatric nursing from various universities in Thailand. The questionnaires on self-efficacy in performing behaviors, social support, and stress management behavior to prevent depression in elderly individuals in the community had an Index of Item Objective Congruence (IOC) value ranging from 0.6 to 1.0. The reliability of the tools was tested using Cronbach's Alpha Coefficient, which yielded reliability values of 0.94, 0.92, and 0.97 for the self-efficacy, social support, and stress management questionnaires. For the SPST-20 and TGDS-15, the reliability coefficients were 0.89 and 0.93.

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Figure 3. Data collection process (Documented by authors).

This research study was approved by the Research Ethics Committee for Human Studies, Samut Songkhram Provincial Public Health Office, under approval number COA3/2568. The researchers ensured the protection of participants' rights by clearly explaining the study objectives and informing them of their rights, including the right to refuse to answer questions, the right to withdraw at any time, and the assurance of data confidentiality **(Figure 3)**. All raw data will be destroyed upon completion of data analysis. Participants who consented to join the study were required to sign an informed consent form as confirmation of their voluntary participation. Following ethical approval, the researcher coordinated with community leaders to explain the data collection process and arrange schedules for the sample group at least one week in advance. Data collection was conducted personally by the researcher, who explained the study's objectives, benefits, and procedures while addressing participants' concerns. Each session lasted approximately 45–60 minutes, with the researcher verifying data completeness. If any information was missing, participants were asked to provide the necessary details to ensure accuracy.

This study conducted data analysis using statistical software to perform descriptive statistics, including frequency, percentage, mean, and standard deviation. Assumptions for statistical analysis were assessed by testing the normality of data distribution using the One-Sample Kolmogorov Smirnov Test and examining homogeneity of variance with the Test of Homogeneity of Variance. The SEM of stress management behavior for depression prevention in elderly individuals was analyzed using Jamovi software (The jamovi project, 2024) and SEM techniques (Rosseel, 2012), ensuring robust statistical evaluation and model fit. Jamovi was selected due to its open-source nature, user friendly interface, and strong capability in handling SEM, especially for researchers with limited access to commercial software.

Results

The demographic characteristics of the sample group revealed that the majority were female (70.43%), with an average age of 65.89 years (SD=4.95). Most participants (91.88%) were aged between 60-69 years. A majority of the sample were married (61.16%), with an education level of primary school (80.87%) **(Table 1)**. Approximately 46.09% of the participants had no chronic diseases, and 53.33% had 1-2 family members. Prior to retirement, 48.12% were farmers, and 47.25% generated income through their current occupation (either self-employed or with a spouse) **(Table 2)**. Regarding income, 56.23% had an income of less than 10.000 baht, and 82.03% reported insufficient income **(Table 3)**. In terms of self-efficacy in performing behaviors, most participants were at a moderate level (77.68%), as were their levels of social support (67.54%) and stress management behaviors for preventing depression (42.03%). Among the stress management behaviors, problem solving management was most reported at a low level (38.55%), while emotion focused management was at a moderate level (46.38%). Regarding stress, 45.22% of the sample experienced severe stress, and the majority (64.93%) were at a moderate level of depression **(Table 4)**. The distribution of observed variables was examined by looking at the skewness and kurtosis values. The skewness values ranged from -0.33 to 0.52, with the highest skewness observed for perceived self-efficacy in performing behaviors (SEF1) at 0.52. The kurtosis values ranged from -1.01 to 0.12, with the highest kurtosis observed for outcome expectation (SEF2) at 0.12. Since the values did not exceed the threshold limits (Skewness ≤ 3.00 and Kurtosis ≤ 8.00). The data distribution was normal that meeting the threshold limits for skewness and kurtosis (Kline, 2016). For this reason, the data was suitable for SEM analysis.

The normal distribution of variables was tested using the Shapiro Wilk test at a significance level of 0.05. The results showed that all observed variables followed a non-normal distribution. Therefore, the correlation between variables was tested, revealing 105 significant pairs with correlation coefficients ranging from -0.49 to 0.84. Among these, 56 pairs showed a positive correlation, with the strongest positive correlation between Causes of Stress (STR1) and Symptoms of Stress (STR2) (r=0.84, $p < 0.05$). The weakest positive correlation was between Symptoms of Stress (STR2) and Cognition (DEP3) (r=0.36, $p < 0.05$). Additionally, 49 pairs had negative correlations, with the strongest negative correlation between Problem Solving Planning (BEH1) and Symptoms of Stress (STR2) (r=-0.49, $p < 0.05$). The weakest negative correlation was between

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Avoidance (BEH6) and Cognition (DEP3) (r=-0.23, $p < 0.05$). These correlation results indicate that the observed variables are suitable for further analysis, as no pairs had correlation values exceeding 0.85, which could indicate (Multicollinearity) (Kline, 2016). The parameter estimates for the weights of the relevant variables in the SEM for stress management behaviors to prevent depression in elderly individuals showed that: Self-efficacy in performing behaviors (SEF) consists of Perceived self-efficacy (SEF1) (β=0.86, $p < 0.05$) and Outcome expectation (SEF2) (β=0.82, $p < 0.05$). Social support in performing behaviors (SS) consists of Emotion support (SS1) (β=0.84, $p < 0.05$) and Information support (SS2) (β=0.87, $p < 0.05$). Behavior of Stress Management to Prevention of Depression in The Elderly in The Community (BEH) consists of Problem Solving Planning (BEH1) (β=0.72, $p < 0.05$), Problem Solving Action (BEH2) (β=0.71, $p < 0.05$), Help Seeking (BEH3) (β=0.76, $p < 0.05$), Acceptance (BEH4) (β=0.61, $p < 0.05$), Positive Reappraisal (BEH5) (β=0.62, $p < 0.05$) and Avoidance (BEH6) (β=0.64, $p < 0.05$). Stress (STR) consists of Causes of Stress (STR1) (β=0.76, $p < 0.05$) and Symptoms of Stress (STR2) (β=0.75, $p < 0.05$). Depression (DEP) consists of Depress (DEP1) (β=0.69, $p < 0.05$), Negative Affect (DEP2) (β=0.61, $p < 0.05$) and Cognition (DEP3) (β=0.66, $p < 0.05$) **(Table 5)**.

From the SEM analysis, the model for the causal relationship of stress management behavior to prevent depression in the elderly in the community showed that the absolute fit index had the following results Chi-square (χ^2=97.48, df=80, p=0.08, SRMR=0.02, RMSEA=0.02, GFI=0.99). The incremental fit indices are NFI=0.96, TLI=0.99, CFI=0.99. The parsimony fit indices are AGFI=0.99, PNFI=0.73, χ^2/df=1.21. These fit indices indicate that the model is in good alignment with empirical data, confirming that the model for stress management behavior to prevent depression in elderly individuals is consistent with the data and supports the hypotheses **(Table 6)**. The direct, indirect, and total effects of the independent and dependent variables in the model were analyzed. The model explains 66% of the variance in depression in the elderly. The results revealed the following: Direct negative effect through stress (β=-0.71, $p < 0.05$) Direct positive effect of stress on depression (β=0.81, $p < 0.05$). The ability to perform behaviors and social support have a direct positive influence on stress management behaviors to prevent depression among the elderly in the community. (β=0.52; β=0.45, $p < 0.05$). Additionally, in addition, social support has an indirect positive influence on stress management behaviors to prevent depression among the elderly in the community through the ability to perform behaviors (β=0.35, $p < 0.05$). These results confirm that the model can explain stress management behaviors and depression in the elderly, with the relationships consistent with theoretical expectations. The findings suggest that the model provides a robust framework for understanding the complex interplay between stress, coping mechanisms, and depressive symptoms in older adults. Furthermore, the consistency of the relationships between variables supports the model's validity and reliability in predicting depression outcomes. **(Figure 4)**.

Table 1. Sex, age, marital status, and education level of participants.

Variables	Frequency (n)	Percentage (%)
Sex		
Male	102	29.57
Female	243	70.43
Age		
60-69 years	317	91.88
70-79 years	18	5.22
80-89 years	8	2.32
90 years and over	2	0.58
Marital status		
Single	36	10.43
Married	211	61.16
Divorced (separated from spouse)	12	3.48
Widowed (spouse has passed away)	86	24.93
Education Level		
No formal education	28	8.12
Primary education	279	80.87
Secondary education/vocational certificate	20	5.80
Diploma/high vocational certificate	15	4.35
Bachelor's degree	2	0.58
Higher than bachelor's degree	1	0.29

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Table 2. Underlying disease, family members, and occupation profile.

Variables	Frequency (n)	Percentage (%)
Underlying diseases		
No underlying disease	159	46.09
Having underlying disease		
Hypertension	111	32.17
Diabetes	64	18.55
Hyperlipidemia	7	2.03
Cancer	4	1.16
Number of family members (still alive and living together)		
No family members	25	7.25
1-2 family members	184	53.33
3-4 family members	121	35.07
5 or more family members	15	4.35
Primary occupation before retirement (before age 60)		
Government officer/state enterprise employee	14	4.06
Private company employee	35	10.14
Daily wage worker	88	25.51
Farmer	166	48.12
Housewife/househusband	16	4.64
Merchant/self-employed	26	7.54

Table 3. Income profile.

Variables	Frequency (n)	Percentage (%)
Current primary source of income		
Financial support from children	38	11.01
Pension or retirement benefits	14	4.06
Current employment (self-employed or spouse's income)	163	47.25
Inheritance or past savings	24	6.96
No income (receiving only the government living allowance)	106	30.72
Average monthly income		
No income	130	37.68
Income not exceeding 10.000 Baht	194	56.23
Income between 20.000-30.000 Baht	14	4.06
Income of 30.001 Baht and above	7	2.03
Income sufficiency		
Sufficient	62	17.97
Insufficient	283	82.03

Discussion

The SEM of stress management behavior to prevent depression in elderly people in the community is consistent with empirical data and can explain the theoretical relationships between variables. The finding explains that 66% of stress management has a direct negative impact on stress levels and an indirect negative impact on depression through stress levels. This is in line with previous studies, which found that stress management behavior has a direct negative effect on stress levels and results in the best reduction of stress levels (Galiana et al., 2020). Additionally, the study of the causal relationship between stress and depression in elderly people revealed that stress directly impacts depression (Kim et al.,2022). This indicates that stress management behavior has a direct influence on stress levels, and stress, in turn, has a direct influence on depression. Stress is a psychosocial factor that can lead to depression (LeMoult, 2020). Continuous and chronic stress has a positive effect on the development of depression (Griep et al., 2023). The transition from stress to depression has been explained through pathological physiology (Yaribeygi et al.,2017). The mechanism shows that individuals experiencing chronic stress can have abnormalities in their brain mechanisms, such as changes in hormone

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production, which may lead to depression (Mariotti, 2015; Roberts & Karatsoreos, 2021). Changes in neurotransmitter levels in the brain, such as cortisol, norepinephrine, serotonin, and dopamine, can contribute to biological changes that are associated with the onset of depression (Hasler, 2010).

Table 4. Behavior profile.

Variables	Frequency (n)	Percentage (%)
Self-efficacy		
Low	8	2.32
Moderate	268	77.68
High	69	20.00
Social support		
Low	67	19.42
Moderate	233	67.54
High	45	13.04
Stress management behaviors		
Needs improvement	110	31.88
Moderate	145	42.03
Good	90	26.09
Problem solving management		
Needs improvement	133	38.55
Moderate	131	37.97
Good	81	23.48
Focused management		
Needs improvement	94	27.25
Moderate	160	46.38
Good	91	26.38
Stress level		
Low	7	2.30
Moderate	37	10.72
High	145	42.03
Severe	156	45.22
Depression level		
Mild	28	8.12
Moderate	224	64.93
Severe	93	26.96

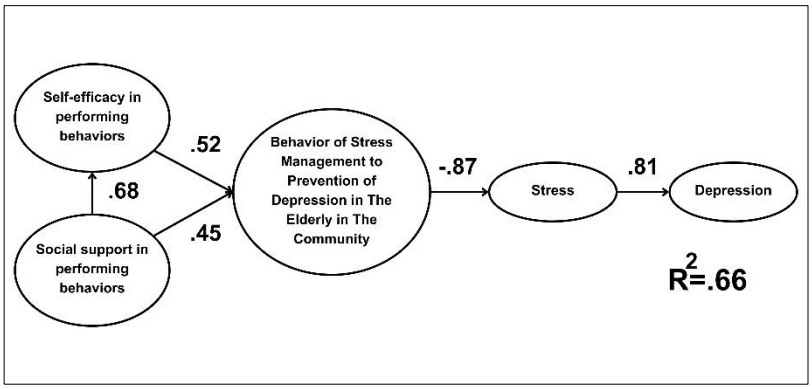

Figure 4. SEM analysis (Documented by authors).

Furthermore, the Diathesis-Stress model explains that unmanaged stress, combined with inadequate coping strategies and care, can lead to depression (Arnau-Soler et al., 2019). Therefore, managing stress effectively and practicing appropriate stress management behaviors will reduce stress levels and help prevent depression (Nixdorf et al., 2020). Community nurses play a vital role in identifying and managing depression (Heaslip et al., 2023). They are often the primary point of contact for older adults in community settings that allowing them to detect early signs of depression and intervene promptly (Klein, 2024). Community nurses can conduct regular screenings, provide emotional support, and educate patients and their families about

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depression (Albougami et al., 2021). They can also facilitate access to mental health services, coordinate care with other healthcare professionals, and develop personalized care plans to address the unique needs of elderly patients. Community nurses in Thailand play a vital role in depression care through early detection using screening tools, especially among at risk groups. They provide health education, basic counseling, emotional support, and coordinate referrals when needed. Their duties also include conducting regular home visits to monitor mental health status, empowering the community to recognize and address mental health issues, facilitating support groups to promote peer connection and resilience, and advocating for mental health policies at the community level. These multifaceted interventions strengthen the mental health care network for elderly individuals and enhance the sustainability of depression prevention efforts within community settings (Aekwarangkoon et al., 2024). For self-efficacy in performing behaviors, it was found that it has a direct positive impact on stress management behavior to prevent depression in elderly people in the community, consistent with previous studies (Bakan & Inci, 2021; Geng et al., 2018).

Table 5. Parameter estimates for the element weights of variables.

Variables	Element weight				
	E	Standardized Coefficient (β)	SE	t	R^2
Self-efficacy (SEF)					
Perceived self-efficacy (SEF1)	0.96	0.86*	0.05	16.22	0.75
Outcome expectation (SEF2)	1.00	0.82*			0.68
Social support (SS)					
Emotion support (SS1)	0.98	0.84*	0.05	16.71	0.71
Information support (SS2)	1.00	0.87*			0.76
Behavior of stress management					
Problem Solving Planning (BEH1)	0.93	0.72*	0.06	13.47	0.52
Problem Solving Action (BEH2)	0.90	0.71*	0.05	15.36	0.50
Help Seeking (BEH3)	1.00	0.76*			0.58
Acceptance (BEH4)	0.70	0.61*	0.06	11.22	0.38
Positive Reappraisal (BEH5)	0.67	0.62*	0.06	11.29	0.38
Avoidance (BEH6)	0.68	0.64*	0.05	11.66	0.40
Stress (STR)					
Causes of Stress (STR1)	1.00	0.75*			0.57
Symptoms of Stress (STR2)	0.92	0.76*	0.04	21.82	0.59
Depression (DEP)					
Depress (DEP1)	1.00	0.69*			0.47
Negative Affect (DEP2)	0.94	0.61*	0.10	9.12	0.38
Cognition (DEP3)	0.97	0.66*	0.10	9.62	0.44

*Statistically significant at the level 0.05.

Table 6. SEM analysis.

Variable	SEF			BEH			STR			DEP		
	DE	IE	TE	DE	IE	TE	DE	IE	TE	DE	IE	TE
SS	0.68*		0.68*	0.45*	0.35*	0.80*		-0.39*	-0.70*			-0.57*
SEF				0.52*		0.52*		-0.45*	-0.45*			-0.37*
BEH							-0.87*		-0.87*		-0.71*	-0.71*
STR										0.81*		0.81*

*Statistically significant at the level 0.05; DE=Direct effect, IE=Indirect effect, TE=Total effect.

Self-efficacy in performing behaviors has a direct positive influence on stress management behavior through perceived self-efficacy and outcome expectation by using self-regulation, planning, and goal setting activities. This finding is consistent with previous studies that demonstrated that self-efficacy significantly predicts self-management behaviors among older adults, highlighting the crucial roles of self-regulation, planning, and goal setting in promoting positive behavior change (Geng et al., 2018). In addition, a study found that general self-efficacy mediates the relationship between health self-management behaviors and psychological stress, supporting the importance of enhancing perceived

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self-efficacy and outcome expectations to strengthen stress management behaviors (Du et al., 2025). The approach uses positive role models, stress management analysis, and goal-setting to help individuals effectively utilize their potential (Wu et al., 2022).

Additionally, adapting recommendations and interventions to individuals will help them perform stress management behaviors which will reduce stress levels and prevent depression (Churchill et al., 2022). This idea is in line with Bandura's Self-Efficacy Theory, a concept in cognitive social learning theory, which states that a person's ability to perform behaviors depends on perception and expectations of positive outcomes (Bandura, 1997). This internal factor influences motivation for health behavior. If a person has high self-confidence and high expectations, they are more likely to successfully achieve their goals (Geng et al., 2018). The recent findings indicate that social support in performing behaviors has a direct positive influence on stress management behaviors among elderly. This aligns with previous study that shown that social support (e.g. emotion and information support) plays a key role in promoting effective stress management behaviors (Chen et al., 2019). This is achieved through group processes and active participation, where activities are designed to foster positive relationships among group members (Riedl et al., 2022). Additionally, involving family members can empower individuals to perform behaviors that contribute to skill development and behavior promotion (Ong et al., 2021). Furthermore, social support in performing behaviors indirectly influences stress management behaviors through the Self-Efficacy Theory (McLean et al., 2021). This concept is consistent with House's Social Support Theory which suggests that interpersonal interactions that offer emotional and informational support, as well as acceptance, care, and validation, contribute to an individual's ability to respond to stressors effectively (House, 1987). These interactions enhance individuals' readiness and capacity to engage in behaviors that promote their well-being and health.

This study presents several notable strengths. First, it employed a theory-driven framework by integrating the Self-Efficacy Theory (Bandura, 1997) and the Social Support Theory (House, 1987) to explain the mechanisms underlying stress management behaviors for depression prevention among the elderly. Second, the use of SEM allowed for the analysis of complex causal pathways among latent and observed variables that enhancing the robustness, validity, and explanatory power of the model. Third, validated measurement tools with high reliability were employed to ensure the quality and consistency of the data. Additionally, the sample was sufficiently large and randomly selected, which strengthens the generalizability of the findings to community-dwelling elderly populations in Thailand. Nevertheless, this study is not without limitations. The research was conducted within a single province, which may restrict the external validity of the results and their applicability to other regions with differing socio-cultural or healthcare environments. Furthermore, despite the use of standardized instruments, the reliance on self-reported questionnaires may lead to biases such as recall bias or social desirability bias, which are common in elderly populations.

Conclusion

The model demonstrated strong predictive power that explaining variance in stress management behaviors. Key findings highlight that self-efficacy and social support improve stress management, which in turn reduces stress levels and lowers the risk of depression. The present findings offer a solid foundation for developing evidence-based approaches to elderly mental health care. The results underscore stress as a critical mediator that reinforcing the importance of effective stress management in depression prevention. Strengthening self-efficacy and social support networks through community-based interventions can promote sustainable mental well-being in aging populations. Future research should investigate the long-term effects and integrate innovative digital health strategies for stress monitoring and intervention delivery. To address study limitations above, future studies should consider employing mixed-method designs, such as in-depth interviews or ethnographic observation, to capture the complexity and depth of elderly individuals' experiences in managing stress and preventing depression.

Author's declaration

All authors contributed to the manuscript writing process and approved the final version.

AI statement

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Authors' insight

Key points

- The study centers on stress management behaviors aimed at preventing depression specifically among the elderly population in Thailand.
- The analysis is grounded in two important psychological theories (Self-Efficacy Theory and Social Support Theory) which explain how personal belief and social networks influence behavior.
- Utilizes SEM provided a robust statistical framework for understanding factors affecting depression prevention among elderly.

Emerging nursing avenues

- What specific stress management behaviors are most effective in preventing depression within elderly population in Thailand?
- How do self-efficacy and social support individually and jointly influence stress management behaviors among the elderly?
- How can findings from this analysis inform community health programs or interventions for elderly mental health in Thailand?

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