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Predictors of depression and social support among community-dwelling older adults living alone in Thailand

Surasak Mulsrisuk¹, Pisan Pachachoo^{2*}, Wanich Suksatan³, Piyanan Suwan² and Pongkwan Posri²

*Correspondence:

Pisan Pachachoo
pisan.p@ptu.ac.th

¹Department of Emergency
Medicine, Faculty of Medicine Siriraj
Hospital, Mahidol University, Salaya,
Thailand

²Department of Adult and
Gerontological Nursing, Faculty of
Nursing, Pathumthani University,
Pathum Thani, Thailand

³Department of Behavioral Science
and Health Equity, College of Public
Health and Social Justice, Saint
Louis University, St. Louis, USA

Abstract

Background Rapid population aging and changing family structures have led to an increasing number of older adults living alone, placing them at elevated risk for mental health problems and social isolation. Evidence from semi-urban Thai contexts remains limited. This study examined physical and mental health status, perceived social support, and health needs among community-dwelling older adults living alone in Pathum Thani Province, Thailand, and identified predictors of depression and social support.

Methods A cross-sectional study was conducted among 395 adults aged ≥ 60 years using multi-stage random sampling. Standardized instruments included the Thai Geriatric Depression Scale (TGDS-15), Revised UCLA Loneliness Scale (RULS-6), ADL, IADL, and a multidimensional Social Support Scale.

Results Multiple linear regression was performed. Over half (54.2%) experienced mild to moderate depressive symptoms, and 98.0% reported moderate to high loneliness. Social support was predominantly moderate (66.8%). Longer duration of living alone ($\beta = 0.419, p < .001$) and lower contact frequency ($\beta = -0.127, p = .023$) were associated with higher depression scores (Adjusted $R^2 = 0.257$). Having children ($\beta = 0.326, p < .001$), frequent contact ($\beta = 0.541, p < .001$), and caregiver availability ($\beta = 0.158, p < .001$) were associated with higher perceived social support (Adjusted $R^2 = 0.478$).

Conclusion Older adults living alone in semi-urban Thailand face substantial psychosocial vulnerability. Strengthening family engagement and structured community support systems may reduce depression and enhance perceived support.

Keywords Aged, Loneliness, Depression, Social support, Health education

1 Introduction

Population aging is one of the most profound demographic transformations of the 21st century, reshaping health systems, social structures, and economic policies worldwide. According to the United Nations [1], the global population aged 65 years and older is projected to more than double by 2050, reaching 1.6 billion. The World Health Organization [2] further emphasizes that rapid aging is occurring fastest in low- and



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middle-income countries, where health and social systems may be insufficiently prepared to address the complex needs of older adults. Concurrently, demographic transitions, including urbanization, declining fertility rates, the migration of younger family members, and shifting cultural norms, have led to a substantial increase in the number of older adults living alone [3].

Thailand exemplifies this demographic shift. The country officially entered an “aged society” in 2021, with individuals aged 60 years and older comprising approximately 20% of the population [4]. Recent national surveys indicate that more than one in ten Thai older adults now live alone, a proportion that continues to rise as traditional multi-generational households decline [5]. Similar trends are observed across East and South-east Asia, where rapid socioeconomic transformation has altered intergenerational living arrangements [6]. Living alone in later life does not inherently imply vulnerability; however, accumulating evidence suggests that older adults who live alone may experience heightened risks of social isolation, depressive symptoms, unmet care needs, and delayed healthcare access [7, 8].

Social isolation and loneliness are increasingly recognized as major public health concerns among older adults. A large meta-analytic review found that loneliness and social isolation are associated with a 26% to 29% increased risk of premature mortality [9]. More recent longitudinal evidence confirms that persistent loneliness significantly predicts depressive symptoms, cognitive decline, and functional deterioration in later life [10]. Depression among older adults living alone has been reported at rates substantially higher than in the general older population, particularly in Asian contexts undergoing rapid demographic change [11]. These findings underscore the interconnection between living arrangements, perceived social support, and mental health outcomes.

Given the close relationship between social isolation, loneliness, and mental health outcomes, the protective role of social support has been widely emphasized in gerontological research. Guided by the stress-buffering hypothesis proposed by Cohen and Wills [12], this study conceptualizes social support as a protective psychosocial resource that may mitigate the adverse psychological effects of prolonged solitary living and social isolation. Within this framework, family contact, caregiver availability, and perceived emotional and instrumental support may influence depressive symptoms among older adults living alone. Langford et al. [13] conceptualized social support as comprising emotional, informational, instrumental, and appraisal dimensions, each of which contributes uniquely to well-being. Contemporary evidence further suggests that family contact, caregiver availability, and intergenerational relationships significantly influence perceived social support and depressive symptoms among older adults [14, 15]. However, despite growing evidence from urban and rural populations, limited research has specifically examined the psychosocial experiences of older adults living alone in rapidly transitioning semi-urban areas of Thailand. These communities may experience unique demographic and social changes related to urban migration, weakening family structures, and uneven access to formal and informal support systems. Consequently, important gaps remain in understanding the determinants of depression and perceived social support among older adults living alone within these transitional contexts.

Pathum Thani Province is a rapidly urbanizing area adjacent to Bangkok and represents a transitional setting between urban and semi-urban communities in Thailand. The province has undergone substantial demographic and socioeconomic changes associated

with urban expansion, labor migration, and evolving family structures. Many working-age family members relocate to Bangkok or nearby industrial areas, potentially reducing intergenerational co-residence and increasing social isolation among older adults. These contextual characteristics make Pathum Thani an important setting for examining mental health and perceived social support among older adults living alone. Understanding the psychosocial experiences of older adults in such transitional communities is essential for informing community-based nursing practice and public health policy. Therefore, this study aimed to examine the physical and mental health status of community-dwelling older adults living alone; assess perceived social support and health needs; and identify factors associated with depressive symptoms and perceived social support within this population. This study contributes to the literature by examining demographic, family-related, and psychosocial factors associated with depressive symptoms and perceived social support among older adults living alone in a semi-urban Thai context.

2 Methods

2.1 Study design

This cross-sectional descriptive study was conducted between November 2024 and February 2025 in Pathum Thani Province, Thailand. The study design enabled the assessment of mental health and social support among older adults living alone across multiple communities within the study period. Due to the observational nature of the design, causal relationships between study variables cannot be established. The study followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines for cross-sectional studies [16].

2.2 Participants

The required sample size was calculated using Yamane's formula for a finite population with a 95% confidence level and a 5% margin of error [17], yielding a target sample of 395 participants. The final sample consisted of 395 participants, which exceeded the commonly recommended minimum ratio of 10–20 participants per predictor variable for multiple regression analysis, supporting sufficient statistical power and model stability.

A multi-stage random sampling method was used. Pathum Thani Province was stratified into urban, semi-urban, and rural districts, from which districts, communities, and eligible individuals were randomly selected. Eligible participants were community-dwelling adults aged ≥ 60 years who had lived alone for at least six months, resided in the province for at least one year, were able to communicate in Thai, and provided informed consent. Individuals with diagnosed dementia, severe communication impairment, or severe psychiatric disorders were excluded. Cognitive function was screened using the Mini-Cog; participants scoring < 3 were excluded to ensure adequate cognitive capacity for reliable self-reporting. Individuals with active psychosis, severe bipolar disorder, or current psychiatric hospitalization were also excluded. Of 429 eligible individuals approached, 395 agreed to participate, resulting in a participation rate of 92.1%. The remaining individuals declined participation primarily due to time constraints or health-related fatigue. Although participation rates were high, the possibility of selection bias cannot be excluded, particularly among older adults with severe physical or psychological vulnerability.

2.3 Instruments

Depressive Symptoms were assessed using the Thai Geriatric Depression Scale (TGDS-15) [18], a 15-item dichotomous (Yes/No) self-report instrument developed for older adults. Total scores range from 0 to 15, with higher scores indicating greater depressive symptom severity. Scores are categorized as follows: 0–4 (no depression), 5–10 (mild depression), and 11–15 (moderate to severe depression). The Thai version has demonstrated good construct validity and sensitivity for detecting major depressive disorder. Internal consistency in the present study was acceptable (Cronbach's $\alpha = 0.75$).

Loneliness was measured using the 6-item Revised UCLA Loneliness Scale (RULS-6) [19], validated for Thai populations. Items are rated on a 4-point Likert scale (1 = never to 4 = often). Total scores range from 6 to 24, with higher scores reflecting greater perceived loneliness. Scores are interpreted as low (6–10), moderate (11–17), and high (18–24) loneliness. The Thai version has demonstrated good psychometric properties based on Rasch analysis. In this study, Cronbach's α was 0.80.

Functional Status was assessed using the Activities of Daily Living (ADL) scale [20], comprising seven items evaluating self-care activities (e.g., bathing, dressing, toileting). Items are scored on a 4-point scale, with higher scores indicating greater independence (range: 0–21).

Instrumental functional status was measured using the Instrumental Activities of Daily Living (IADL) scale [21], consisting of eight items assessing more complex daily activities (e.g., medication management, financial management, transportation). Items are scored on a 3-point scale (range: 0–16), with higher scores indicating greater independence. Internal consistency coefficients in this study were 0.82 (ADL) and 0.78 (IADL), indicating acceptable reliability.

Perceived Social Support was measured using a 12-item multidimensional scale developed based on Cohen, Wills [12] theoretical framework. The instrument assesses four domains: emotional, informational, instrumental, and appraisal support (three items per domain). Items are rated on a 4-point Likert scale (1 = never to 4 = always), yielding total scores ranging from 12 to 48, with higher scores indicating greater perceived support. Scores are categorized as low (12–24), moderate (25–36), and high (37–48) social support. The scale demonstrated excellent internal consistency in this study (Cronbach's $\alpha = 0.89$).

Content validity was evaluated by a panel of five experts in gerontological nursing, community health nursing, and geriatrics, yielding Item-Objective Congruence (IOC) values ranging from 0.80 to 1.00. Pilot testing with 30 community-dwelling older adults confirmed satisfactory internal consistency (Cronbach's α ranging from 0.75 to 0.89), supporting the reliability of the instruments in the target population.

2.4 Data collection

Data were collected through structured face-to-face interviews conducted at participants' homes by two trained research assistants who were registered nurses with at least two years of experience in community geriatric care. Each interview lasted approximately 45–60 min. To minimize interviewer bias, research assistants completed standardized training sessions that included interview simulations, questionnaire familiarization, and communication techniques for older adults. Regular supervision meetings were conducted throughout the data collection period to maintain procedural

consistency. Inter-rater reliability was assessed prior to data collection and demonstrated excellent agreement (Cohen's $\kappa = 1.00$). Completed questionnaires were reviewed for completeness, and data were double-entered and cross-checked to ensure accuracy.

2.5 Data analysis

Data were analyzed using IBM SPSS Statistics version 26.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics (frequencies, percentages, means, and standard deviations) were used to summarize participant characteristics and key study variables. Multiple linear regression was selected because depression and social support scores were analyzed as continuous variables to preserve statistical variability and maximize analytical sensitivity. Alternative categorical approaches, such as logistic regression, may be explored in future studies. Prior to modeling, normality was assessed using histograms, Q-Q plots, skewness, and kurtosis values. Homoscedasticity and linearity were evaluated through residual scatterplots, while multicollinearity was assessed using variance inflation factor (VIF) and tolerance statistics. Independence of residuals was examined using the Durbin–Watson statistic. Standardized beta coefficients (β) and adjusted R^2 values were reported. Statistical significance was set at $p < .05$ (two-tailed).

3 Results

3.1 Participant characteristics

Of the 395 participants, 63.3% were female, and the mean age was 71.81 years (SD = 7.17; range, 60–93). Most participants were aged 60–79 years, widowed (65.6%), and had a monthly income of $\leq 6,000$ baht (62.3%). Nearly half (50.1%) had lived alone for more than five years. The most commonly reported reasons for living alone were widowhood (44.8%), children relocating for work (20.5%), and divorce (17.5%) (Table 1).

3.2 Health status

Participants reported multiple chronic conditions, with hypertension, dyslipidemia, and diabetes being the most common. Mean ADL and IADL scores indicated relatively high functional independence. More than half of participants had mild to moderate depressive symptoms, while most reported moderate to high loneliness levels. Perceived social support was primarily moderate among participants (Table 2).

3.3 Factors associated with depression and social support

Multiple linear regression analyses were conducted to identify factors associated with perceived social support and depressive symptoms. In Model 1, having children ($\beta = 0.326$, $p < .001$), more frequent contact with relatives ($\beta = 0.541$, $p < .001$), having a caregiver ($\beta = 0.158$, $p < .001$), and lower depression scores ($\beta = -0.137$, $p = .001$) were significantly associated with higher perceived social support. The model explained 47.8% of the variance (Adjusted $R^2 = 0.478$, $F = 28.76$, $p < .001$), with contact frequency showing the strongest association.

In Model 2, longer duration of living alone ($\beta = 0.419$, $p < .001$), lower social support ($\beta = -0.195$, $p = .001$), female gender ($\beta = 0.128$, $p = .004$), lower income ($\beta = -0.096$, $p = .030$), less frequent contact ($\beta = -0.127$, $p = .023$), and having a caregiver ($\beta = 0.093$, $p = .041$) were significantly associated with depressive symptoms. The model accounted for

Table 1 Demographic and living characteristics of participants

Characteristic	n	%	M (SD)
Gender			
Male	154	38.99	
Female	241	61.01	
Age (years)			71.81 (7.17)
60–69	166	42.03	
70–79	180	45.57	
≥80	49	12.41	
Marital status			
Widowed	248	62.78	
Divorced	74	18.73	
Single	37	9.37	
Separated	36	9.11	
Education			
≤Primary	279	70.63	
Secondary	75	18.99	
≥Higher education	41	10.38	
Monthly income (baht)			
≤6000	247	62.53	
6001–12,000	113	28.61	
>12,000	35	8.86	
Duration living alone			
<1 year	54	13.7	
1–5 years	145	36.7	
>5 years	196	49.6	
Having children			
No	84	21.3	
Yes	311	78.7	
Contact frequency			
Daily	65	16.5	
Weekly	137	34.7	
Monthly	129	32.7	
Rarely	64	16.2	
Having caregiver			
No	134	33.9	
Yes	261	66.1	
Number of chronic diseases			2.59 (1.47)
0	28	7.1	
1–2	156	39.5	
≥3	211	53.4	
Activities of Daily Living (ADL)	10.31	21.00	17.25 (2.11)
Instrumental Activities of Daily Living (IADL)	10.02	16.00	13.41 (1.41)

25.7% of the variance (Adjusted $R^2 = 0.257$, $F = 11.46$, $p < .001$), with duration of living alone showing the strongest association (Table 3).

4 Discussion

This study examined mental health and social support among community-dwelling older adults living alone in a rapidly aging Thai province. The findings reveal substantial psychosocial vulnerability, with more than half of participants experiencing mild to moderate depressive symptoms and nearly all reporting moderate to high loneliness. These findings are consistent with evidence suggesting elevated psychological distress among older adults living alone compared with the general older population [22, 23].

Table 2 Mental health status and social support of older adults living alone

Variable	n	%
Depression (TGDS-15), M = 4.87, SD = 1.98		
Normal (0–4)	181	45.8
Mild depression (5–9)	208	52.7
Moderate to severe (≥ 10)	6	1.5
Loneliness (RULS-6), M = 17.31, SD = 2.31		
Low (< 12)	8	2.0
Moderate (12–18)	273	69.1
High (> 18)	114	28.9
Social Support, M = 24.85, SD = 5.05		
Low (< 20)	87	22.0
Moderate (20–28)	264	66.8
High (> 28)	44	11.1

Table 3 Multiple regression analysis of factors associated with social support and depression

Variable	Model 1: Social Support			Model 2: Depression		
	B (SE)	β	p	B (SE)	β	p
Female (vs. Male)	0.396 (0.387)	0.038	0.307	0.519 (0.179)	0.128	0.004
Age	-0.025 (0.026)	-0.035	0.348	0.009 (0.012)	0.031	0.491
Education: Secondary	0.651 (0.483)	0.051	0.179	0.111 (0.227)	0.022	0.625
Education: Higher	-0.491 (0.619)	-0.030	0.428	-0.131 (0.290)	-0.020	0.651
Income	-0.000 (0.000)	-0.054	0.146	-0.000 (0.000)	-0.096	0.030
Duration living alone	0.047 (0.035)	0.054	0.184	0.142 (0.015)	0.419	< 0.001
Has children	4.057 (0.464)	0.326	< 0.001	-0.201 (0.238)	-0.041	0.397
Contact frequency	2.809 (0.197)	0.541	< 0.001	-0.259 (0.114)	-0.127	0.023
Has caregiver	1.647 (0.389)	0.158	< 0.001	0.379 (0.185)	0.093	0.041
Chronic diseases	0.153 (0.147)	0.039	0.297	0.066 (0.069)	0.043	0.337
ADL score	-0.162 (0.089)	-0.068	0.068	-0.019 (0.042)	-0.020	0.652
IADL score	-0.059 (0.132)	-0.016	0.653	0.024 (0.062)	0.017	0.693
Depression score	-0.349 (0.108)	-0.137	0.001	–	–	–
Social support	–	–	–	-0.077 (0.024)	-0.195	0.001
R ²	0.495			0.281		
Adjusted R ²	0.478			0.257		
F-statistic	28.756			11.464		

ADL: Activities of Daily Living; IADL: Instrumental Activities of Daily Living; B: unstandardized coefficient; SE: standard error; β : standardized coefficient

The high prevalence of loneliness is particularly concerning, as loneliness has been identified as a major public health risk factor associated with depression, cognitive decline, and increased mortality [24, 25].

Duration of living alone showed the strongest association with depressive symptoms, may reflect the potential psychosocial burden associated with prolonged social isolation. This is consistent with the stress-buffering hypothesis [12], which posits that insufficient social support intensifies vulnerability to psychological distress. Prolonged solitary living may reduce opportunities for emotional exchange, perceived security, and daily social engagement, thereby increasing susceptibility to depression [26]. Longitudinal evidence further supports that persistent social isolation predicts worsening depressive symptoms over time [10]. Importantly, while social support significantly predicted lower depression in this study, the variance explained indicates that depression among older adults

living alone is multifactorial, likely influenced by unmeasured factors such as coping style, physical frailty, financial insecurity, and life stressors.

Family-related variables demonstrated strong predictive power for perceived social support, with contact frequency emerging as the most influential factor. This finding underscores the continuing importance of family networks in Asian cultural contexts, even amid demographic transitions and urban migration [15]. Regular communication, regardless of physical proximity, appears to sustain perceived support and may mitigate the negative psychological effects of living alone. Emerging research suggests that digital communication and technology-mediated contact can effectively reduce loneliness and improve well-being among older adults when appropriately supported [27, 28]. These findings highlight the potential value of integrating digital literacy training and tele-support initiatives into community-based programs.

Female gender and lower income were also associated with higher depressive symptoms, consistent with global evidence that older women and economically vulnerable individuals face disproportionate mental health burdens [29]. Economic strain may exacerbate stress related to healthcare access, caregiving costs, and daily living expenses, thereby compounding psychological risk [30]. These structural determinants emphasize that social isolation and depression among older adults living alone are not solely interpersonal issues but are embedded within broader socioeconomic contexts.

Notably, having a caregiver was associated with both higher social support and slightly higher depression. This finding may reflect reverse causality, whereby individuals experiencing poorer mental health or greater vulnerability are more likely to require caregiving assistance. It also suggests that caregiving presence alone does not necessarily eliminate emotional distress, highlighting the importance of quality and emotional dimensions of support rather than mere availability. Collectively, these findings reinforce that living alone in later life constitutes a complex psychosocial condition shaped by duration of isolation, family dynamics, economic resources, and gendered vulnerabilities. Interventions should therefore move beyond individual screening to incorporate structural and relational strategies that enhance sustained social engagement.

Several psychosocial mechanisms may explain these findings. Prolonged solitary living may reduce opportunities for meaningful social interaction and perceived social belonging, thereby increasing emotional distress and vulnerability to depressive symptoms. Behavioral pathways may also contribute, as socially isolated older adults may participate less frequently in community activities, physical activity, and health-seeking behaviors. Future studies may benefit from examining potential interaction effects among demographic, psychosocial, and family-related variables to better understand the complex pathways influencing depression and social support among older adults living alone.

The findings support the need for proactive, community-based screening for depression and loneliness among older adults living alone, particularly those with prolonged solitary living and limited family contact. Community health nurses may play a critical role by implementing proactive home-visiting programs, routine mental health screening, caregiver education, and referral pathways for socially isolated older adults. Local health systems should consider integrating psychosocial monitoring into existing chronic disease and long-term care services to strengthen early identification and intervention. Interventions should prioritize strengthening family engagement, facilitating

regular communication (including digital platforms), and enhancing access to community-based support networks. At the policy level, integrated models linking health services, local administrative organizations, and social welfare programs are essential to address both psychosocial and socioeconomic determinants of mental health in aging populations.

Several limitations should be acknowledged. The cross-sectional design precludes causal inference, and bidirectional relationships between depression and social support cannot be excluded. Although Pathum Thani reflects broader demographic patterns in Thailand, findings may not generalize to rural or highly urbanized regions. Self-reported measures and face-to-face interviews may have introduced recall and social desirability bias. Additionally, because participation was voluntary, selection bias may have occurred if older adults with severe psychological distress or functional impairment were less likely to participate. Potentially important variables such as social network size, digital literacy, coping strategies, and life events were not assessed.

5 Conclusion

Community-dwelling older adults living alone experienced substantial psychosocial vulnerability characterized by depressive symptoms, loneliness, and multiple chronic conditions. Longer duration of living alone and lower frequency of family contact were associated with depressive symptoms, whereas family-related factors and caregiver availability were linked to greater perceived social support. These findings emphasize the importance of maintaining social connectedness and family engagement among older adults living alone in rapidly aging communities. In practice, primary care providers and community health nurses may incorporate routine screening for depression and loneliness into home visits, chronic disease management programs, and community-based older adult services. Community-based strategies such as caregiver education, family communication support, peer-support activities, and referral pathways for socially isolated older adults may help strengthen psychosocial support systems. Future longitudinal studies are needed to further examine the temporal relationships among social support, living arrangements, and mental health outcomes in later life. .

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Author contributions

Conceptualization, S.M., PPr., W.S., PS., and P.Po.; methodology, S.M., PPr., W.S., and P.Po.; software, S.M., PPr., and P.Po.; validation, S.M., and W.S.; formal analysis, S.M., W.S., PS., and P.Po.; investigation, S.M., and W.S.; writing—original draft preparation, S.M., PPr., and W.S.; writing—review and editing, S.M., PPr., W.S., PS., and P.Po. All authors have read and agreed to the published version of the manuscript.

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Data availability

The datasets generated during and/or analyzed during the current study are not publicly available due to ethical and privacy restrictions related to human participant data, but are available from the corresponding author on reasonable request (pisan.p@ptu.ac.th), subject to institutional approval.

Declarations

Ethics approval and consent to participate

This study was approved by the Institutional Review Board of Pathumthani University (PTU-IRB-CERT-2025-076). All procedures performed in this study involving human participants were conducted in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Written informed consent was obtained from all participants prior to participation in the study.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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