

Prevalence of Depression and Suicidal Thoughts in Thai Older Adults Attending a Geriatric Clinic during the COVID-19 Pandemic: A Cross-Sectional Survey

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Objective: To examine the prevalence of depression and suicidal thoughts, and their associated factors, among Thai older adults during the COVID-19 pandemic.

Materials and Methods: A cross-sectional telephone survey was conducted between June 20 and July 25, 2021, targeting patients aged 60 years and older who attended a tertiary-care geriatric clinic at Ramathibodi Hospital within the past two years. The Thai version of the Patient Health Questionnaire-9 (PHQ-9) was used to assess depression levels, with the ninth item specifically evaluating suicidal risk. Demographic and clinical data were collected through structured interviews. Data was analyzed using Wilcoxon rank-sum tests, multiple linear regression, and ordered logistic regression models.

Results: Out of 283 individuals, 271 with complete data were included in the analysis. The participants median age was 73 years and 71.6% were female. The prevalence of depression was 14.1%, with 11.9% experiencing mild depression and 2.2% moderate depression. No participants had severe depression. Suicidal thoughts were reported by 1.5% of the participants. Linear regression analysis showed that a higher number of hospitalizations ($B=0.75$, 95% CI 0.18 to 1.3, $p=0.010$) and a history of musculoskeletal disease ($B=0.81$, 95% CI 0.24 to 1.4, $p=0.006$) were associated with higher PHQ-9 scores. Consistently, logistic regression indicated that hospitalizations (OR 2.91, 95% CI 1.23 to 6.87, $p=0.015$) and musculoskeletal disease (OR 3.38, 95% CI 1.14 to 10.0, $p=0.028$) were significant predictors of depressive symptoms.

Conclusion: During the COVID-19 pandemic, addressing depression and suicidal risk has emerged as a critical clinical concern, particularly among older adults. Clinicians must prioritize mental health care for older adults, with special attention to those with high rates of hospital admissions and musculoskeletal complaints.

Keywords: Geriatric medicine; COVID-19; Depression; Suicidal ideation; Prevalence; Older adults

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Depression is a significant mental health condition affecting the older adult population, with varying prevalence rates reported in Thailand ranging from 17.5% to 82.3% in different older adult groups and contexts⁽¹⁻⁴⁾. The prevalence of depression in

this population is influenced by a variety of factors, including temporal variations, differences among older adult groups, discrepancies in measurement tools, and social structures. Notably, suicidal ideation is associated with depression, particularly in older adults. A review of the literature confirms that depression is a significant predictor of suicide among older adults, demonstrating a direct correlation between depression and death by suicide⁽⁵⁾.

In Thailand, suicide among the older adults has emerged as an important yet underexamined public health concern. Prior studies have reported a considerable prevalence of suicidal ideation among older Thai adults. For example, research in tertiary-care hospital settings found current suicidal risk as high as 20.4%, often accompanied by depression⁽⁶⁾. In long-term care facilities, approximately one-third

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of residents (32.1%) reported some degree of suicide risk, despite most being classified as low risk⁽⁷⁾. These findings highlight that suicidal thoughts are prevalent among Thai older adults and strongly intertwined with depressive symptoms, yet they have not been comprehensively studied during the coronavirus disease 2019 (COVID-19) pandemic.

In December 2019, the emergence of a novel virus causing a range of symptoms from mild respiratory infection to severe acute respiratory distress in Wuhan, China sparked global concern⁽⁸⁾. This virus, known as COVID-19 or SARS-CoV-2, rapidly spread worldwide, leading to its declaration as a pandemic on March 11, 2020. In response, governments implemented a range of isolation and protective measures, including physical distancing, face mask usage, hand hygiene practices, stay-at-home policies, and restrictions on social gatherings, to mitigate the spread of the virus^(9,10).

The older adult population was recognized as the most vulnerable group to develop SARS-CoV-2 infection, with their decreased immune function increasing the severity of illness⁽¹¹⁾. The severity of illness was further increased in older adults as they had decreased immune function. Although the risk of death in the general population infected with the virus was relatively low, it increased exponentially with age, with a mortality rate as low as 0.1% in children and as high as 14.8% in older adults, representing a more than 100-fold increased across the lifespan⁽¹¹⁾.

Furthermore, the COVID-19 pandemic had been associated with decreased social life and fewer in-person social interactions, which had been linked to reduced quality of life and increased depression. Other reported consequences of the pandemic included difficulties in accessing services, sleep disturbances, and reduced physical activity⁽¹²⁾. Research from the United Kingdom had highlighted the impact of COVID-19 on the mental wellbeing of older adult individuals, with levels of depression among older adults in the U.K. significantly worsening following the pandemic⁽¹³⁾. A study conducted in Thailand revealed that the older adult population residing in long-term care facilities had experienced considerable impact from the COVID-19 pandemic, particularly in terms of financial well-being. The study found that a notable percentage of participants, specifically 5.5%, reported symptoms of post-traumatic stress, 7% reported depression, and 12% reported anxiety. Furthermore, the research indicated that heightened psychological stress resulting from COVID-19 and the manifestation of respiratory tract infection symptoms

were significantly and independently linked to the development of post-traumatic stress, depression, and anxiety among the older adults⁽¹⁴⁾. According to a previous study conducted in an urban area of Thailand, the prevalence of depression was reported to be 20.5%. Furthermore, individuals classified as “non-workers” were found to be 3.5 times more likely to exhibit symptoms of depression⁽¹⁵⁾. Interestingly, a study conducted in Greece reported that during the COVID-19 pandemic, older adults and those in middle age exhibited lower rates of depression, at 11% and 12%, respectively, compared to the 28% observed in young adults. Despite these lower depression rates, the same older and middle-aged groups demonstrated higher suicide risks, recorded at 15% and 12%, respectively, when compared to young adults⁽¹⁶⁾. However, during the COVID-19 pandemic, the investigation into suicidal thoughts among the older adult population, particularly in Thailand, had been notably limited.

To date, although COVID-19 is no longer a major public health concern in Thailand as of 2025, during the pandemic period, it had a significant impact on the mental health of the older adult population. The present study examined the prevalence of depression and suicidal thoughts among Thai seniors during that unique time.

Material and Methods

Setting and study design

A cross-sectional telephone survey was conducted between June 20 and July 25, 2021, targeting patients aged 60 years and over who had visited the geriatric clinic at Ramathibodi Hospital within the past two years. The contact information of these patients was obtained from the hospital database, and they were invited to participate in the survey via telephone.

Due to the COVID-19 pandemic and the logistical challenges associated with obtaining written informed consent and managing physical documents, a telephone-based survey was conducted with verbal informed consent. The verbal informed consent protocol was approved by the Human Research Ethics Committee of the Faculty of Medicine, Ramathibodi Hospital, Mahidol University, and all participants provided recorded verbal consent. Trained interviewers conducted the survey in the Thai language.

Sociodemographic characteristics and medical history

Participants' sociodemographic characteristics,

including age, gender, ethnicity, marital status, education, employment status, current residence, monthly income, and income loss due to COVID-19, were collected. Additionally, participants were asked to report their medical history, including weight, height, ambulation, hearing and vision problems, smoking and alcohol consumption habits, underlying diseases such as endocrinological disease, renal disease, respiratory disease and cardiovascular disease, subjective cognitive complaints and depression, hospitalization in the past year, and overall health perception.

Assessment of depression and suicidal risk

The Thai version of the Patient Health Questionnaire-9 (PHQ-9)⁽¹⁷⁾ was utilized to measure the level of depression. The PHQ-9 is a widely used self-report tool that consists of nine questions corresponding to the diagnostic criteria for major depressive disorder outlined in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5)⁽¹⁸⁾. The questionnaire covers various aspects of depression, including mood, sleep, appetite, concentration, energy levels, self-esteem, and suicidal ideation. Participants rated the frequency of each symptom on a scale ranging from 0 (not at all) to 3 (nearly every day), and the individual item scores were summed to obtain a total score ranging from 0 to 27. Higher scores indicated a higher level of depression, with score ranged defining various levels of depression severity of 0 to 4 (no or minimal depression), 5 to 9 (mild depression), 10 to 14 (moderate depression), 15 to 19 (moderately severe depression), and 20 or higher (severe depression).

The ninth item of the PHQ-9 specifically assessed the frequency of passive thoughts of death or self-injury within the past two weeks and was used to evaluate suicidal risk. The response options ranged from “not at all” at 0 to “nearly every day” at 3. For the main analysis, a positive screen on the PHQ-9 suicide item was defined as any non-zero value, while cases without a positive screen were classified as having a negative screen.

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Inclusion and exclusion criteria

The inclusion criteria were (i) age 60 years old and older, (ii) visited the geriatric clinic at Ramathibodi Hospital within the past two years, and (iii) patients answered by themselves or with

caregiver assisting. Exclusion criteria were missing information after questionnaires were done.

Statistical analysis

All analyses were performed using R Statistical Software (v4.3.2, R Core Team, 2023) and related packages.

Nominal data was summarized descriptively using numerical counts and percentages. Continuous data was reported using either the mean and standard deviation (SD) or the median and interquartile range, depending on the normality of the data distribution. PHQ-9 score was analyzed as continuous variable using independent t-test or Wilcoxon rank-sum test for suicidal thoughts and PHQ-9 scores. The factors affecting PHQ-9 score were analyzed using multiple linear regression. While the factors influencing depression were examined through ordered logistic regression, the factors influencing suicidal risks were examined through binary logistic regression analysis. A p-value of less than 0.05 was considered statistical significance.

Ethical approval

The present study obtained approval from the Human Research Ethics Committee of the Faculty of Medicine, Ramathibodi Hospital, Mahidol University (COA. MURA 2024/467). The research adhered to the principles outlined in the Declaration of Helsinki and Good Clinical Practice guidelines.

All participants provided verbal informed consent, which was recorded according to the verbal informed consent protocol approved by the Human Research Ethics Committee of the Faculty of Medicine, Ramathibodi Hospital, Mahidol University. The authors did not obtain written informed consent because it was inconvenient for participants to travel to sign written informed consent and handle documents during the pandemic.

Results

Participant selection and demographic characteristics

Two hundred eighty-three individuals were interviewed. Twelve were excluded as per the exclusion criterion, which resulted in 271 patients with adequate information for analysis. The median age of the participants was 73 years, with a majority being female, at 71.6%. Data on their demographic and clinical characteristics is presented in Table 1.

Table 1. Demographic and clinical characteristics

Characteristic	n=271
Age (years); median (Q1, Q3)	73 (67, 78)
Sex; n (%)	
Male	77 (28.4)
Female	194 (71.6)
Weight of patient (kg); median (Q1, Q3)	58 (51, 66)
Height of patient (cm); median (Q1, Q3)	156 (151, 162)
BMI; median (Q1, Q3)	23.5 (21.2, 25.7)
Ethnic; n (%)	
Thai	262 (96.7)
Chinese	9 (3.3)
Marital status; n (%)	
Single	50 (18.4)
Married	171 (63.1)
Divorced	10 (3.7)
Widow	40 (14.8)
Address; n (%)	
Bangkok	181 (66.8)
Others	90 (33.2)
Education; n (%)	
Not educate	3 (1.1)
Elementary	36 (13.3)
High school	42 (15.5)
College degree	190 (70.1)
Above college degree	-
Employment; n (%)	
Unemployed	93 (34.3)
Part-time job	23 (8.5)
Full-time job	23 (8.5)
Retired	132 (48.7)
Income; n (%)	
10,000 or less	52 (19.1)
10,001 to 20,000	50 (18.5)
20,001 to 30,000	44 (16.2)
30,001 or more	66 (24.4)
Unknown	59 (21.8)
Perceived income loss, not actual loss; n (%)	
Same	221 (81.6)
Less than 50% loss	18 (6.6)
Over 50% loss	19 (7.0)
No income	13 (4.8)
Ambulation; n (%)	
Normal	259 (95.6)
Gait aid	12 (4.4)
Bedbound	0 (0.0)

Characteristic	n=271
Hearing; n (%)	
Normal	256 (94.5)
Hearing impairment	15 (5.5)
Vision; n (%)	
Normal	171 (63.1)
Glasses	100 (36.9)
Vision loss	0 (0.0)
Smoking; n (%)	
Never smoking	234 (86.3)
Current smoking	6 (2.2)
Past smoking	31 (11.5)
Alcohol drinking status; n (%)	
Never drinking	247 (91.2)
Social drinking	21 (7.7)
Regular drinking	3 (1.1)
Dementia diagnosis; n (%)	
No	254 (93.7)
Yes	10 (3.7)
Not sure	7 (2.6)
Self-percept cognition; n (%)	
Normal	115 (42.4)
Minor cognitive problem	154 (56.8)
Major cognitive problem	2 (0.8)
Number of hospitalization; n (%)	
0	229 (84.5)
1	35 (12.9)
2	5 (1.9)
3	2 (0.7)
Self-perceived health; n (%)	
Worst	1 (0.4)
Bad	6 (2.2)
Average	111 (40.9)
Good	130 (48.0)
Best	23 (8.5)
Neurological disease; n (%)	34 (13.0)
Cardiovascular disease; n (%)	219 (81.0)
Respiratory disease; n (%)	21 (7.7)
Gastrointestinal disease; n (%)	56 (21.0)
Renal disease; n (%)	22 (8.1)
Endocrinological disease; n (%)	60 (22.0)
Musculoskeletal disease; n (%)	100 (37.0)
Cancer history; n (%)	23 (8.5)
Allergy; n (%)	75 (28.0)

Prevalence of depression and suicidal thoughts: analysis of PHQ-9 scores and Question 9

The median PHQ-9 score was 1 (0, 3), with significant differences observed between individuals

reported suicidal thoughts and those who did not (Table 2). Specifically, the median PHQ-9 score for individuals with suicidal thoughts was 7, compared to 1 for those without. The prevalence of suicidal

Table 2. PHQ-9 item responses, depression severity and suicidal thoughts (n=271)

Findings	n=271	Findings	n=271
PHQ-9 1st item; n (%)		PHQ-9 6th item	
0	186 (68.6)	0	253 (93.4)
1	78 (28.8)	1	15 (5.5)
2	6 (2.2)	2	3 (1.1)
3	1 (0.4)	3	0 (0.0)
PHQ-9 2nd item; n (%)		PHQ-9 7th item	
0	212 (78.2)	0	249 (91.9)
1	56 (20.7)	1	20 (7.3)
2	3 (1.1)	2	1 (0.4)
3	0 (0.0)	3	1 (0.4)
PHQ-9 3rd item		PHQ-9 8th item	
0	170 (62.7)	0	253 (93.4)
1	65 (24.0)	1	15 (5.5)
2	23 (8.5)	2	2 (0.7)
3	13 (4.8)	3	1 (0.4)
PHQ-9 4th item		PHQ-9 9th item	
0	207 (76.4)	0	267 (98.5)
1	47 (17.3)	1	4 (1.5)
2	13 (4.8)	2	0 (0.0)
3	4 (1.5)	3	0 (0.0)
PHQ-9 5th item		PHQ-9 interpretation; n (%)	
0	221 (81.5)	Normal	233 (85.9)
1	37 (13.7)	Mild depression	32 (11.9)
2	8 (3.0)	Moderate depression	6 (2.2)
3	5 (1.8)	PHQ-9 score; median (Q1, Q2)	1 (0, 3)
		Percent of older adult with suicidal thoughts; n (%)	4 (1.5)

PHQ-9=Patient Health Questionnaire-9

thoughts was 1.5%, while the overall prevalence of depression was 14.1%, consisting of 11.9% mild depression and 2.2% moderate depression. The Wilcoxon rank-sum test confirmed a statistically significant difference in PHQ-9 scores between these groups ($p=0.003$). Detailed responses to each PHQ-9 question are provided in Table 2.

The association between sociodemographic characteristics, medical history, and PHQ-9 scores

The relationships between sociodemographic characteristics, medical history, and PHQ-9 scores were examined using a multiple linear regression model. The results underscored the significant predictive value of several variables on the PHQ-9 total score (data not shown). Specifically, the number of hospitalizations was a significant predictor, with a regression coefficient (B) of 0.75 (95% CI 0.18 to 1.3, $p=0.01$). Additionally, a positive history of gastrointestinal disease was associated with an increase in PHQ-9 scores (B=1.0, 95% CI 0.34 to 1.7,

$p=0.003$), and a positive history of musculoskeletal disease was also a significant predictor (B=0.81, 95% CI 0.24 to 1.4, $p=0.006$). Other factors included in the model were not statistically significant predictors of PHQ-9 scores.

The association between sociodemographic characteristics, medical history, depression, and suicidal risk

The associations between the categorized PHQ-9 score for normal, mild depression, and moderate depression, and its related factors were analyzed using an ordered logistic regression model. The results identify several significant predictors of depression and suicidal risk (data not shown). An uncertain dementia diagnosis significantly increased the likelihood of higher depression categories (OR 11.0, 95% CI 1.08 to 112, $p=0.043$). The number of hospitalizations was also a significant predictor (OR 2.91, 95% CI 1.23 to 6.87, $p=0.015$). Musculoskeletal disease was associated with increased odds of higher

depression categories (OR 3.38, 95% CI 1.14 to 10.0, $p=0.028$). Conversely, individuals with a good self-perception of their health had significantly lower odds of being in higher depression categories (OR <0.0001 , 95% CI 0.00 to 0.52, $p=0.026$), as did those with the best self-perceived health (OR <0.0001 , 95% CI 0.0 to 0.89, $p=0.045$). Other factors included in the model were not statistically significant predictors of categorized PHQ-9 scores.

Due to the low numbers reported for suicidal thoughts, with only four cases out of 271 participants, there was a limitation in conducting statistical analysis on this specific outcome. Such a small sample size leads to reduced statistical power, increasing the likelihood of Type II errors and unreliable estimates. This limitation highlights the need for larger, more comprehensive studies to accurately assess the association between suicidal thoughts and related factors. The present study served as a preliminary investigation, underscoring the necessity for future research with larger samples to validate these findings.

Discussion

The present study revealed the prevalence of 14.1% of depression in the study participants, with the majority being mild for 11.9% as opposed to moderate for 2.2%. There were no reports of severe depression in the study participants. The present study findings are aligned with those reported by a local study exploring similar populations, with a total prevalence of 20.5% using the Thai version of Geriatric Depression Scale-15 (TGDS-15) as the criteria for depression symptoms⁽¹⁵⁾. Similarly, in a study that explored U.S. populations specifically in adults over the age of 60, a prevalence of 16% was reported⁽¹⁹⁾. On the contrary, there were also the presence of multiple studies that reported much higher prevalence of depression in older adults, with a study done in India showing a prevalence of 68.2% (95% CI 61.8 to 74.2) among adults 60 years and older⁽²⁰⁾, while another study done in Malaysia before COVID showed a prevalence of 59.1%⁽²¹⁾. Outside of Asia, a pre-COVID study done in Ethiopia also showed similar findings with a prevalence of 45.9% (95% CI 42.3 to 49.4)⁽²²⁾.

In terms of suicidal thoughts, the present study found a prevalence of 1.5%. In comparison, a 2022 study of all ages in Shanghai reported a prevalence of 3.8%⁽²³⁾ for suicidal thoughts, which is similar to the 1.5% found in the present study. Additionally, a study from Slovakia included participants of all ages found

that 9.3% experienced thoughts about death⁽²⁴⁾. This is lower compared to the 16.6% prevalence reported in a study focusing on older adults in China⁽²⁵⁾.

Other interesting findings from this analysis highlight a crucial insight, suicidal thoughts are not confined to the most severe cases of depression. The significant difference in PHQ-9 scores between the groups with suicidal thoughts and those without, may indicate that the suicidal ideation group is associated with higher median scores. However, the authors can see that even individuals with less severe depression can experience suicidal thoughts. This challenges the common assumption that suicidal thoughts are only present in the most severely depressed individuals. Suicidal thoughts can occur across the spectrum of depression severity. This underscores the importance of screening for suicidal ideation in all individuals experiencing depressive symptoms, regardless of severity. Recognizing that suicidal thoughts can emerge at any level of depression severity highlights the need for early intervention and support for all individuals reporting depressive symptoms. Mental health interventions should be holistic, addressing not only the severity of depression but also specific symptoms like suicidal thoughts. This approach can lead to more effective prevention and treatment strategies.

The present study exhibits notable strengths. The authors employed multiple statistical tests, including multiple linear regression and ordered logistic regression, which enhances the internal validity of the findings by providing a robust and comprehensive analysis of the factors influencing depression and suicidal thoughts.

The present study has limitations that should be considered. First, the cross-sectional nature of the study restricts the ability to establish causation and determine temporal relationships between variables. Second, telephone-based data collection may have excluded older adults without reliable phone access, introducing selection bias. In addition, self-reported sociodemographic and medical history data are subject to recall and reporting bias, and caregiver-assisted responses may have influenced the accuracy of information. Third, the use of the PHQ-9 alone, without triangulation from other validated instruments or clinical interviews, may not fully capture the complexity of depression and suicidal risk in older adults. Furthermore, the short data-collection period may not reflect seasonal or long-term fluctuations in depression prevalence and is reflected in few events, which for variables

including uncertain dementia yield wider confidence intervals and reduced precision. Findings should be interpreted accordingly. Fourth, the external validity of the findings is limited, as the sample was restricted to patients from a single tertiary-care hospital, who were well-educated, urban, and ambulatory. This may limit generalizability to broader or more diverse populations. Finally, the exclusion of participants with incomplete questionnaires may have underestimated the true prevalence of depression and suicidal ideation, while interviewer bias cannot be entirely ruled out since all surveys were conducted via telephone by trained staff. Future studies should aim to address these limitations by including more diverse populations and longitudinal designs to better understand the causal and temporal relationships in depression and suicidal ideation.

Conclusion

During the COVID-19 pandemic, addressing depression and suicidal risk have emerged as a critical clinical concern, particularly among the older adults. Clinicians must prioritize mental health care for older adults, with special attention to those with high rates of hospital admissions and musculoskeletal complaints. Recognizing and addressing these factors can significantly enhance the well-being and quality of life for this vulnerable population, ensuring comprehensive care that encompasses both physical and mental health needs.

What is already known about this topic?

Depression is a common mental health issue among the older adults, with varying prevalence rates in Thailand, and is strongly linked to suicidal ideation. The COVID-19 pandemic has exacerbated mental health challenges in older adults due to social isolation, reduced access to services, and increased psychological stress. However, data on the prevalence of depression and suicidal thoughts among Thai seniors during the pandemic remain scarce.

What does this study add?

This study provides new data on the prevalence of depression, which was at 14.1%, and suicidal thoughts, which was at 1.5%, among Thai older adults during the COVID-19 pandemic. These rates appear lower than prior Thai reports, which was as high as 20.5% in an urban study, but consistent with findings from certain international cohorts, underscoring the variability in prevalence across settings and instruments. Importantly, beyond

confirming hospitalization as a risk factor, this study identifies musculoskeletal disease as an underrecognized contributor to depressive symptoms in this population.

These findings have practical implications for healthcare delivery and policy. Routine depression screening in geriatric settings should be prioritized, with particular attention to individuals with frequent hospitalizations and chronic musculoskeletal conditions. Policies promoting post-discharge follow-up and integrating mental health assessment into chronic disease management may help reduce the burden of depression and suicidal ideation among older adults in Thailand.

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Authors' contributions

All authors have contributed to the work reported, including conception, study design, execution, data acquisition, analysis, and interpretation. They participated in drafting, revising, or critically reviewing the article, approved the final version to be published, agreed on the journal submission, and are accountable for all aspects of the work.

Data availability

The data from the present study is available from the corresponding author upon reasonable request.

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Conflicts of interest

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