Original Article

Prevalence and Associated Factors of Suicidal Ideation among Patients with Major Depressive Disorder

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Background: Understanding the prevalence and associated factors of suicidal ideation among patients with major depressive disorder (MDD) can help develop strategies to prevent deaths by suicide. However, data in this area for Southeast Asia is limited.

Objective: To investigate the prevalence and factors associated with suicidal ideation and its severity among patients with MDD in Thailand.

Materials and Methods: A cross-sectional study was conducted via a retrospective medical chart review of 329 patients with MDD who visited a psychiatric outpatient clinic. Data about suicidal ideation were collected using the ten-item diagnostic Montgomery-Åsberg Depression Rating Scale (MADRS) that consider risk factors such as patient background, medical conditions, co-morbid psychiatric disorders, and family history. The data was collected from the medical records and was analyzed by using logistic regression and Mann-Whitney U test to determine factors associated with suicidal ideation and factors associated with severity of suicidal ideation, respectively.

Results: The prevalence of suicidal ideation among patients suffering from MDD was 82.1%. Chronic physical illness was associated with an increased risk of suicidal ideation (adjusted odds ratio 1.87, p=0.04) and substance use disorder was a significant predictor of severity of suicidal ideation (p=0.036).

Conclusion: Chronic physical illnesses and substance use disorder can increase risk for suicidal ideation in patients with MDD. Early identification of patients with these risk factors may prevent transition from suicidal ideation to suicide attempt.

Keywords: Suicidal ideation; Major depressive disorder; Chronic illness; Substance use disorder

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Major depressive disorder (MDD) is a common mental disorder that interferes with patients' functional areas and causes marked psychological distress. According to the National Institute of Mental Health, the prevalence of a major depressive episode was 7.1% in American adults aged 18 or older. A previous study demonstrated that MDD is a global disease burden as reported by disability-adjusted life years (DALYs)[1,2]. One of the main symptoms of MDD is suicidal behavior, which begins with suicidal ideation or the thought of ending one's life and is followed by suicide attempt or/the carrying out a self-harm act with intent to die, or suicide, which are lethal self-harm act with intent to die[3]. Suicidal behavior is a serious public health concern as it is the second leading cause of death among adolescents and young adults worldwide[4]. This concern is even more serious in patients with MDD because they are more likely to die via suicide than those without MDD[5]. According to meta-analysis studies conducted in China, the lifetime prevalence of suicidal ideation and suicide attempts among patients with MDD were reported to be as high as 53.1% and 23.7%, respectively[6]. While data regarding the prevalence of suicidal behavior is available, it has been sparsely reported in Southeast Asia.

There are studies revealing the factors that might affect risk of suicide attempt and suicide. Depression, co-occurring with physical illnesses such as chronic obstructive pulmonary disorder, stroke, coronary

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heart disease, and multiple sclerosis are all associated with an increased risk of suicide. Moreover, having psychotic symptoms in a depressive episode has also been demonstrated to be an important risk factor in suicides[3]. Psychiatric conditions such as anxiety and misuse of drugs are also significant factors associated with suicide as well as previous attempts of suicide, severe depression, feeling of hopelessness, and family history of psychiatric disorders[7]. A study in Thailand also showed that factors associated with suicide attempts in Thai patients with MDD were previous suicide attempts, alcohol use, poor treatment adherence, and stressful life events[8]. The previous studies focused on factors related to suicide attempts and suicide, even though most patients had suicidal ideation before attempting suicide.

Suicidal ideation may be the prodrome of suicide attempt and suicide. It has been reported that the risk of transitioning from suicidal ideation to first suicide attempt is especially high in the first year of ideation onset[9]. Therefore, understanding the prevalence and risk factors of suicide ideation among patients with MDD can help guide clinicians to identify patients with suicidal ideation early on and prevent their transition from ideation to suicide attempt or suicide. Since there is limited data about suicidal ideation in patients with MDD in terms of prevalence and risk factors in Southeast Asia, the present study investigated the prevalence and factors associated with suicidal ideation and its severity among patients with MDD in Thailand.

Materials and Methods

The present study was a cross-sectional study conducted by a retrospective medical chart review. The data were reviewed using medical records of 329 patients with MDD that visited the psychiatric outpatient clinic at Siriraj Hospital, a tertiary general hospital in Thailand, between 2013 and 2015. The diagnoses of MDD were made by psychiatrists or resident psychiatrists supervised by consultant psychiatrists. The diagnosis was based on criteria derived from the Diagnostic and Statistical Manual of Mental Disorders fourth edition (DSM-IV-TR) in 2013 and from the fifth edition (DSM-V) in 2014 to 2015.

In clinical settings, suicidal ideation is routinely assessed in patients with MDD and recorded in medical charts. The assessment of suicidal ideation was conducted by psychiatrists or residents through the Montgomery-Åsberg Depression Rating Scale (MADRS). The MADRS is a ten-item questionnaire in which each item received a score from 0 as being normal or not present, to 6 as being extreme, by clinicians to measure changes in severity of depressive symptoms. The tenth item of MADRS represents suicidal thoughts as the patient directly indicates if his or her life is worth living. While a score of 0 indicates no suicidal thoughts, a score of more than 0 indicates the presence of suicidal ideation with higher scores revealing the severity of the problem[10]. For the present study, data about suicide ideation amongst all patients were assessed by MADRS and collected from medical records.

According to literature review, several factors are associated with suicidal ideation. These factors include patient background, medical condition, presence of co-morbid psychiatric disorders, and family history of psychiatric disorders. Data that could provide this insight were also collected from medical records.

To analyze the data, IBM SPSS Statistics, version 21.0 (IBM Corp., Armonk, NY, USA) was used. Meanwhile, descriptive statistics were used to characterize the demographic data of patients and examine the prevalence of suicidal ideation. Normality tests were assessed using the Shapiro-Wilk test, and p-value of less than 0.05 were considered deviated from a normal distribution. Factors potentially associated with suicidal ideation were subjected to a univariate analysis using the chi-square or Fisher's exact test. Afterwards, factors with a value of p-value less than 0.1 were subjected to a multivariate analysis using logistic regression since suicidal ideation was identified as a binary dependent variable as having or not having suicidal ideation. The factors potentially associated with severity of suicidal ideation were subjected to a univariate analysis using the Mann-Whitney U test for non-parametric test, since severity of suicidal ideation measured by the tenth item of MADRS was identified as a continuous variable, which is the score of suicidal intention, and this variable is not normally distributed.

The present study was approved by the Siriraj Institutional Review Board (SIRB), Faculty of Medicine Siriraj Hospital, Mahidol University (CoA No. Si 358/2013).

Results

Characteristics of patients

Three hundred twenty-nine medical charts of patients with MDD were included in the present study. The characteristics of patients are shown in Table 1. The mean age of patients was 45.8±16.4

Table 1. Characteristics of patients (n=329)

	n (%)
Age (years); mean±SD	45.8±16.4
Sex	
Female	256 (77.8)
Male	73 (22.2)
Marital status*	
Single/divorced/widowed	180 (54.7)
Married	137 (41.6)
Occupation**	
Having occupation/student	224 (68.1)
Unemployed	99 (30.1)
Psychotic symptoms	
Yes	16 (4.9)
No	313 (95.1)
Co-morbid psychiatric disorders	
Substance use disorder	24 (7.3)
Anxiety disorders	10 (3.1)
Personality disorders	4 (1.2)
Others†	9 (2.7)
No	282 (85.7)
Family history of psychiatric disorders	
Yes	58 (17.6)
No	271 (82.4)
Chronic physical illnesses	
Having 1 illness or more	167 (50.8)
No	162 (49.2)

SD=standard deviation

* 12 participants (3.7%) had missing data, ** 6 participants (1.8%) had missing data

† Posttraumatic stress disorder, obsessive compulsive disorder, gender dysphoria, psychological factors affecting other medical conditions, and dementia

years and most of the patients were female (77.8%), single/divorced/widowed (54.7%), and employed/studying (68.1%). During a depressive episode, 4.9% of patients demonstrated psychotic symptoms. Meanwhile, the psychiatric co-morbidities observed most frequently were substance use disorder (7.3%), anxiety disorder (3.1%), and personality disorder (1.2%). A family history of psychiatric disorders was also noted in 17.6% of the patients. Moreover, at least 50.8% of the patients had at least one chronic physical illness with the most common being hypertension (n=71), dyslipidemia (n=47), chronic pain (n=40), diabetes mellitus (n=30), cancer (n=15), heart disease (n=12), and HIV infection (n=2).

The prevalence of suicidal ideation

The prevalence of suicidal ideation regardless of severity among patients with MDD was 82.1%. Broken up further, the prevalence of mild, moderate, and severe suicidal ideation was 65.1%, 16.7%, and 0.3%, respectively.

Factors associated with suicidal ideation

Suicidal ideation was defined as having or not having suicidal ideation. In a univariate analysis, factors associated with suicidal ideation ($p<0.1$) were male (odds ratio 0.57, $p=0.08$), chronic physical illness (odds ratio 1.69, $p=0.04$), and anxiety disorder (odds ratio 0.31, $p=0.08$). However, in a multivariate analysis, only chronic physical illness was significantly associated with suicidal ideation (adjusted odds ratio 1.87, $p=0.04$) (Table 2).

Factors associated with severity of suicidal ideation

Severity of suicidal ideation was defined as level of suicidal intention. Factor associated with severity of suicidal ideation ($p<0.05$) was only substance use disorder ($p=0.036$) (Table 3).

Discussion

The present study was the first study of prevalence and factors associated with suicidal ideation in Southeast Asia. The prevalence of suicidal ideation among patients with MDD was demonstrated to be as high as 82.1%. This result corresponds to the previous findings from Finland, which revealed that 58.0% of patients with MDD had suicidal ideation[11]. In addition, a meta-analysis of studies in China revealed similar findings with a lifetime prevalence of suicidal ideation among patients with MDD being 53.1%[6]. These findings reflect the high prevalence of suicidal ideation in many regions, including Europe, Asia, and Southeast Asia. When comparing these studies, the prevalence in the present study was higher than those reported by the previous studies. A reason for this may be that the setting of the present study was a tertiary general hospital where 50.8% of participants had comorbid chronic physical illnesses. Such patients may exhibit a higher severity of depression, which may increase risk of suicidal ideation[12].

Other studies show similar findings to the present study regarding how physical illness is associated with suicidal ideation in patients with MDD. Goodwin et al reported that there is a statistical interaction between physical disorders, especially pulmonary disease and depression, in increasing suicidal ideation[13]. This finding corresponded to findings made by Lutz et al, which indicated that health conditions such as heart problems, chronic lung disease, and diabetes were also associated with suicidal ideation[12]. Feelings of

Table 2. Factors associated with suicidal ideation (having or not having suicidal ideation)

Variables	Univariate analysis†		Multivariate analysis‡	
	Crude OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value
Sex: male	0.57 (0.30 to 1.06)	0.08	0.56 (0.30 to 1.06)	0.08
Age: ≥45 years old	1.40 (0.79 to 2.47)	0.25	-	-
Marital status: married	1.05 (0.59 to 1.87)	0.88	-	-
Unemployed	1.15 (0.61 to 2.16)	0.67	-	-
Chronic physical illness	1.69 (1.01 to 3.18)	0.04	1.87 (1.04 to 3.35)	0.04
Chronic pain	2.05 (0.70 to 6.00)	0.18	-	-
Cancer	1.30 (0.28 to 5.97)	1.00	-	-
Psychotic symptom	3.41 (0.44 to 26.32)	0.32	-	-
Anxiety disorder	0.31 (0.09 to 1.14)	0.08	0.32 (0.09 to 1.19)	0.09
Substance use disorder	1.49 (0.43 to 5.19)	0.78	-	-
Personality disorder	0.65 (0.07 to 6.36)	0.55	-	-
Family history of psychiatric disorder	1.03 (0.49 to 2.18)	0.94	-	-

OR=odds ratio

† Univariate analysis was analysed by chi-square or Fisher's exact test, ‡ Independent variables with p<0.1 from univariate analysis were analysed by logistic regression analysis

Table 3. Factors associated with severity of suicidal ideation (level of suicidal intention)

Variables	Mean±SD	Median [Q1, Q3]	p-value
Sex			0.203
Male	2.31±0.96	2 [2, 3]	
Female	2.15±0.91	2 [2, 2]	
Age			0.674
<45	2.20±0.88	2 [2, 2]	
≥45	2.17±0.97	2 [2, 2]	
Marital status			0.074
Married	2.07±0.96	2 [1.25, 2]	
Single	2.25±0.96	2 [2, 2]	
Occupation			0.417
Employed	2.14±0.93	2 [2, 2]	
Unemployed	2.27±1.01	2 [2, 2]	
Chronic physical illness			0.280
Yes	2.15±1.00	2 [2, 2]	
No	2.22±0.91	2 [2, 2]	
Chronic pain			0.079
Yes	1.92±0.81	2 [1, 2]	
No	2.22±0.97	2 [2, 2]	
Cancer			0.173
Yes	1.92±1.08	2 [1, 2]	
No	2.19±0.95	2 [2, 2]	
Psychotic symptom			0.394
Yes	2.40±1.06	2 [2, 4]	
No	2.17±0.95	2 [2, 2]	
Anxiety disorder			0.057
Yes	1.67±1.21	1 [1, 2.5]	
No	2.19±0.95	2 [2, 2]	
Substance use disorder			0.036
Yes	2.62±1.07	2 [2, 4]	
No	2.14±0.94	2 [2, 2]	
Personality disorder			0.333
Yes	3.00±1.73	4 [2.5, 4]	
No	2.17±0.95	2 [2, 2]	
Family history of psychiatric disorder			0.268
Yes	2.04±0.90	2 [1.25, 2]	
No	2.21±0.97	2 [2, 2]	

SD=standard deviation

burden and the degree of disability may also explain the complex relationship between physical condition and suicidal ideation[12].

The present study also demonstrated that substance use disorder was associated with and was the best predictor of severity of suicidal ideation. This means that when patients have suicidal thoughts, patients with substance issues are more likely to have active intent or explicit plans to go through with suicide. This result is consistent with a previous study that have demonstrated that people with suicidal ideation are more likely to have substance use issues than those without such thoughts[14]. Similarly, Sokero et al also stated that alcohol dependence or abuse was a significant risk factor amongst patients experiencing suicidal ideation[11]. An explanation for this correlation is that patients with substance use disorder are more likely to have psychological distress

from complex psychosocial problems. In addition, their coping skills towards psychological distress may be less because of cognitive impairment. Hence, high psychological distress coupled with poor coping skills may lead to the high severity of suicidal ideation. Another explanation is that patients with substance use disorder are more likely to engage in impulsive behavior and this can increase the risk of transitioning from suicidal ideation to active plans for suicide[15].

The implication of the present research is that the two significant risk factors for suicidal ideation, chronic physical illness, and substance use disorder, should be routinely included in risk assessments among patients with MDD. If these risk factors were identified, a patient's suicidal ideation should be assessed and closely monitored. Early detection of suicidal ideation in these patients can prevent transition from ideation to suicide attempt. Another implication of these findings is the need for integration of screening for depression and suicidal ideation into primary care settings, especially for patients with chronic physical illnesses and alcohol or tobacco abuse. In primary care settings, the prevalence of suicide attempt was 6.9%[16] and 91.0% of patients who committed suicide had visited primary care physicians within one year of the death by suicide[17]. Therefore, primary care physicians may require training on how to screen for depression, assess suicidal ideation, and provide initial treatment before referring patients to mental health services to prevent suicide attempt in primary care settings, especially among patients with chronic physical illnesses and substance abuse.

As the present study is a retrospective medical chart review, data about potential risk factors, which were not recorded in the medical charts, could not be included in the present study. Hence, a further study should be conducted to investigate other factors that may affect suicidal ideation such as feelings of hopelessness, personality traits, and stressful life events.

Conclusion

Chronic physical illness and substance use disorder are significant risk factors of suicidal ideation in patients with MDD. These results may guide physicians to identify patients with substantial risk of suicidal ideation. Early identification may prevent transition from suicidal ideation to suicide attempt.

What is already known on this topic?

Factors associated with suicide attempts in Thai patients with major depressive disorder were previous suicide attempts, alcohol use, poor treatment adherence, and stressful life events. However, there was limited data about suicidal ideation and its related factors even though most patients had suicidal ideation before attempting suicide.

What this study adds?

This study shows the prevalence of suicidal ideation in patients with major depressive disorder and significant associated factors, including chronic physical illnesses and substance use disorder, suggesting physicians to increase the awareness of assessing these risk factors.

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Authors' contributions

KW, WR, CS, and PP contributed to the conceptual design of the study. All authors contributed to the conduction of study and data collection. KW, CS, and PP contributed to the interpretation of data. KW, WR, and PP contributed to write-up and submission of the study. All authors reviewed and agreed with the content of the article.

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Conflicts of interest

The authors declare no conflict of interest.

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