*Original Article*

# The Prevalence and Associated Factors of Major Depressive Episode in the Surgical Inpatients at a University Hospital in Bangkok, Thailand

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***Objective:*** To determine the prevalence and associated factors of major depressive episode in the surgical wards inpatients at a university hospital in Thailand.

***Materials and Methods:*** The present study was a descriptive cross-sectional study. Participants were 174 inpatients who were admitted to the surgical wards during January and November 2015. Baseline demographic and clinical characteristics were collected. The patients were assessed for depressive symptoms by using the Thai version of the Two-question screening for depression and Mini International Neuropsychiatric Interview, Thai version [MINI] modules for Major Depressive Episode and Suicide ideality.

***Results:*** The prevalence of major depressive episodes in the surgical inpatients was 5.7%. Associated factors of depression were psychoactive drugs use (adjusted OR 9.63, 95% CI 1.27 to 72.99) and diagnosis in certain infectious and parasitic diseases (adjusted OR 21.38, 95% CI 1.60 to 285.26).

***Conclusion:*** The prevalence of depression at 5.7% in surgical inpatients was higher than that in the general Thai population. The associated factors of depression were psychoactive drug use and diagnosis of certain infectious and parasitic diseases.

***Keywords:*** Prevalence, Depression, Associated factors, Surgical wards, Inpatients

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Major depression is a serious, recurrent disorder linked to the diminishing of role functioning and quality of life, medical morbidity, and mortality[1]. The World Health Organization [WHO] has ranked depression as the 4th leading cause of disability worldwide[2]. Depression is a common illness that affects 350 million people worldwide[3] and is predicted to become the second leading cause of disability as measure by disability-adjusted life years [DALYs] by the year 2020[3]. In Thailand, the result from the Epidemiology of Mental Disorders National Survey 2008 revealed that the prevalence of major depression was 2.7 percent among Thai people aged 15 years or more[4].

Comorbidity of depression among the physically ill patients also affects the length of hospital stay and health care cost[5]. Several studies found that depressive disorders were more prevalent among general hospital inpatients than in the general population[5-9]. Among surgical inpatients, previous researchers reported various prevalence of depression from 13 to 34.07%[8,9]. Knowing the prevalence of depression in certain medical settings would provide the care team with essential information to design an appropriate plan of management and, as a result, improve the quality of life among patients. However, there has been no study about the prevalence of depression in surgical inpatients in Thailand.

## Objective

The purpose of the present study was to

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determine the prevalence of depression and its associated factors among the surgical inpatients in a University Hospital.

## Materials and Methods

At the surgical wards of a university hospital in Thailand, 174 patients admitted during January and November were invited to the present study using simple random sampling technique. They were all screened for depression with 'The Two-question screening for depression (Thai-version)', which was the questionnaire used to screen for depression by trained interviewers in this study by ward nurses[10]. In the patients who answered "yes" for at least one question of two question screening for depression were considered to be at risk for depression[10]. Subsequently, a psychiatric resident (Panlapat Noithi, MD) would use Mini International Neuropsychiatric Interview [MINI], Thai version 5.0.0 Revised 2007) modules to assess major depressive episodes and suicide ideality[11]. Statistical analyses were performed using PASW version 18.0. Associated factors of depression were analyzed by using univariate analysis and multiple logistic regression.

### *Ethical consideration*

This study was approved by Siriraj Institutional Review Board [SIRB] COA No. 711/2557 (EC4).

## Results

Among 174 patients (mean age, 56 years; SD, 16.1), 29 of them (16.7%) had positive results from the two-question screening for depression. Ten patients (5.7%) were diagnosed as Major Depressive Episode tested with MINI. In addition, 2 patients (1.1%) had recurrent major depressive episode and 9 patients (5.2%) had suicidal ideation.

Table 1 demonstrated that socio-demographic characteristics of the participants were associated with depression. The level of significance of correlation between variables analyzed by univariate analysis showed that there was a statistically significant difference among groups with marital status and occupation. The widowed or divorced status and unemployed variables were related with higher prevalence of depression. On the other hand, there was no significant difference among groups with gender, level of education, income, and age. There was no statistically significant difference between the age of the patients with depression group and the patients outside the depression group which were 53.5 years and 56.2 years, respectively.

Table 2 showed that there was a statistically

**Table 1.** Socio-demographic characteristics of the participants and depression (n = 174)

| Characteristics | Number (%) | | Crude OR (95% CI) |
|---|---|---|---|
| | Depression (n = 10) | No depression (n = 164) | |
| Gender | | | |
| Male | 2 (2.3) | 84 (97.7) | 1 |
| Female | 8 (9.1) | 80 (90.9) | 4.20 (0.87 to 20.38) |
| Marital status | | | |
| Married | 3 (2.7) | 107 (97.3) | 1 |
| Widow/divorce | 6 (18.2) | 27 (81.8) | 7.93 (1.86 to 33.75) |
| Single | 1 (3.2) | 30 (93.8) | 1.19 (0.12 to 11.85) |
| Level of education | | | |
| No education and primary school | 6 (6.1) | 92 (93.9) | 1 |
| Secondary school and vocation school | 2 (3.6) | 53 (96.4) | 0.58 (0.11 to 2.97) |
| University | 2 (9.5) | 19 (90.5) | 1.61 (0.30 to 8.62) |
| Occupation | | | |
| Employed/in school | 1 (1.0) | 104 (99.0) | 1 |
| Unemployed | 9 (3.0) | 60 (87.0) | 15.60 (1.93 to 126.16) |
| Income (baht/month) | | | |
| <5000 | 6 (9.1) | 60 (90.9) | 1 |
| ≥5,000 | 4 (3.7) | 104 (96.3) | 0.38 (0.10 to 1.42) |

significant difference among groups with patients who had taken psychoactive drugs, which were associated with a higher prevalence of depression. Also, diagnoses with certain infectious and parasitic diseases and mental and behavioral disorders were also associated with higher prevalence of depression. On the other hand, smoking cigarettes was associated with lower prevalence of depression. Other factors such as having a history of mental disorders and family history of mental disorders, previous attempted suicide, and history of substance use disorder, were not statistically significant or associated with depression.

Multiple logistic regression was performed for the prediction of the probability of depression occurrence by controlling the statistically significant variables from univariate analysis, which were marital status, occupation, smoking cigarettes, psychoactive drug use and certain infectious and parasitic diseases. Mental and behavioral disorders were not entered in multiple logistic regression analysis because the participants already were already diagnosed with major depressive episodes. The statistically significant predictors included in the multiple logistic regression analysis were psychoactive drugs and diagnosis of infectious disease. As shown in Table 3, patients who had taken psychoactive drugs, had statistically significant association with depression 9.63 (95% CI: 1.27 to 72.99) times more than patients who did not take psychoactive drugs. Patients, who were diagnosed as infectious disease had statistically significant association with depression 21.38 (95% CI: 1.60 to 285.26) times more than patients who did not have infectious disease.

## Discussion

Our study found that 16.7% of the surgical

**Table 2.** Associated factors and depression (n = 174)

| Characteristics | Number (%) | | Crude OR (95% CI) |
|---|---|---|---|
| | Depression (n = 10) | No depression (n = 164) | |
| History of attempted suicide | | | |
| No | 9 (5.3) | 161 (94.7) | 1 |
| Yes | 1 (25.0) | 3 (75.0) | 5.96 (0.56 to 63.19) |
| Mental disorder | | | |
| No | 9 (5.3) | 160 (94.7) | 1 |
| Yes | 1 (20.0) | 4 (80.0) | 4.44 (0.45 to 43.97) |
| Family history of mental disorder | | | |
| No | 10 (6.5) | 143 (93.5) | |
| Yes | 0 (0.0) | 21 (100.0) | |
| Cigarette smoking | | | |
| No | 9 (9.5) | 86 (90.5) | 1 |
| Yes | 1 (1.3) | 78 (98.7) | 0.12 (0.02 to 0.99) |
| Drinking alcohol | | | |
| No | 7 (7.1) | 91 (92.9) | 1 |
| Yes | 3 (3.9) | 73 (96.1) | 0.53 (0.13 to 2.14) |
| Other substance use | | | |
| No | 9 (5.5) | 154 (94.5) | 1 |
| Yes | 1 (9.1) | 10 (90.9) | 1.71 (0.20 to 14.88) |
| Psychotic drug use | | | |
| No | 6 (3.6) | 161 (96.4) | 1 |
| Yes | 4 (57.1) | 3 (42.9) | 35.78 (6.51 to 196.71) |
| Infectious, parasitic disease | | | |
| No | 8 (4.8) | 160 (95.2) | 1 |
| Yes | 2 (33.3) | 4 (66.7) | 10.0 (1.59 to 62.96) |
| Mental, behavioral disorder | | | |
| No | 8 (4.7) | 164 (95.3) | |
| Yes | 2 (100.0) | 0 (0.0) | |

**Table 3.** Associated factors of depression analyzed by multiple logistic regression

| Characteristics | Crude OR (95% CI) | Adjusted OR (95% CI) |
|---|---|---|
| Marital status: widow/divorce* | 7.93 (1.86 to 33.75) | 5.30 (0.70 to 40.27) |
| Occupation: unemployed | 15.60 (1.93 to 126.16) | 8.98 (0.68 to 118.05) |
| Cigarette smoking: no | 8.16 (1.01 to 65.90) | 2.84 (0.26 to 30.65) |
| Psychotic drug use: yes | 35.78 (6.51 to 196.71) | 9.63 (1.27 to 72.99) |
| Infectious, parasitic disease: yes | 10.0 (1.59 to 62.96) | 21.38 (1.60 to 285.26) |

* Reference was married

inpatients had positive screening for depression by the two-question method and 5.7% of the patients met the criteria for Major Depressive Episode by the interview with a psychiatrist using MINI modules for major depressive episode and suicide ideality. This prevalence of depression at 5.7% was higher than the prevalence of depression in Thai general population at 2.7%[4]. Depression in surgical inpatients might result from stressor having physical illness and poor quality of life when compared with that in general population[12]. The prevalence of depression in this study was less than the prevalence studied by Vaeroy et al which the prevalence of depression was 13% assessed with the Structural Clinical Interview for DSM-III R, non-patient version [SCID-NP] to established psychiatric diagnosis in general surgical inpatients in Nordic countries[8]. The prevalence of depression in this study was also less than the prevalence studied in general hospital surgical inpatients in Iran by Ghoreishizadeh et al which was 34.1% assessed with Self-report inventories Beck Depression Inventory Version 2 [BDI-II][9]. These might be caused by the differences in race, religion, and socioeconomic factors and the instruments used for diagnosing depression. Furthermore, the type of wards may affect the prevalence of depression as showed in the study in general hospital inpatients by Hosaka et al using DSM-IV interview, where the prevalence of depression was 21.5%[5]. Similar to the study in general hospital inpatients by Fava et al, using Center for Epidemiologic Studies Depression Scales [CES-D] which was a self-reported scale, the prevalence of depression was as high as 58%[6].

After controlling for marital status, work employment, smoking cigarettes, and the contraction of certain infectious and parasitic diseases, the patients who had used psychoactive drugs had higher risks of being diagnosed with major depressive disorder 9.63 times more than the patients who had never used psychoactive drugs. The adjusted odd ratio was 9.63 (95% CI: 1.27 to 72.99). Psychoactive drugs in this study included hypnotic drugs and antidepressants. Patients who took hypnotic drugs usually had psychiatric problems more than the general population which is similar to previous studies[12,13]. It may be explained by insomnia as one of the symptoms of depression. Some patients diagnosed with depression in this study had never been diagnosed elsewhere. One of the two patients who took antidepressants, one had depression, and another patient took nortriptyline for pain relief and sedation.

Moreover after controlling for marital status, work employment, and psychoactive drugs use, the study found that patients who contracted certain infectious and parasitic diseases had higher risk of depression 21.38 times more than patients who did not at a statistical significance; adjusted odd ratio was 21.38 (95% CI: 1.60 to 285.26). Similarly, the study by Golden et al reported incidence of depression in hepatitis patients group was 28%[14] and the study by Keskin et al reported an incidence of severe depression that was measured by BDI in chronic hepatitis B patients group was 40.6%[15]. In addition, the study by Mojgan et al also reported incidence of depression in hepatitis patients group was 19.8%[16]. This association could be explained by the fact that hepatitis infection may reduce the quality of life of the patients when compared with the general population[14]. Depression in hepatitis patients may be associated with chronic emotional stress which increased plasma cortisol and impaired serotonin uptake that could lead to depression[17].

Nine out of 10 patients had a suicidal idea considered a high ratio that predicted higher risk of suicide in the depressive disorder patients in the surgical wards. Thus, an emphasis on diagnosing depression is significant in order to prevent suicide attempts.

The strength of this research is that it was the first study of prevalence of depression in the surgical

inpatients in a university hospital, a hospital with 2,062 bed-teaching hospital in Thailand. The limitation of this research was the population studied was on inpatients in general surgical wards and did not include neurosurgery, and orthopedics wards. Furthermore, depression diagnosis in this study was diagnosed by using MINI modules for major depressive episode and suicide ideality; it did not include dysthymia, depressive disorder otherwise specify or adjustment disorder with depressed mood, which may affect the treatment of physical illness as well[18]. The authors did not use MINI modules for manic episodes and hypomanic episodes; therefore, the patients with bipolar depression were not excluded.

This study found that the prevalence of depression in the patients admitted in surgical wards was higher than in general population, and they also had higher risks of suicidal ideation. These patients were admitted into the surgical wards for one to three days which made it difficult for doctors and nurses to observe signs and symptoms of depression. These may lead to high risks of suicide attempts without prevention in these patients. Thus, a special attention must be attended to this population and screened for depression and preventing suicide. Patients who have one of the associated factors of depression such as psychotropic drugs use, and having certain infectious and parasitic diseases especially hepatitis B infection, should be screened for depression by using the Two-question screening for depression. It is easy to use and reliable[10]. If the result is positive, the doctor should consult a psychiatrist to further assess and treat depression, as well as prevention of suicide attempt.

Further studies should focus on the prevalence of depression in the neurosurgery and orthopedics wards, a study of other types of depression such as depressive disorder otherwise specify or adjustment disorder with depressed mood, and a study about impact of depression on outcome of treatment such as length of stay, and re-admission.

## Conclusion

The prevalence of depression and major depressive episodes among the surgical wards inpatients was higher than the general Thai population. Associated factors of depression were psychoactive drugs use and diagnosis in certain infectious and parasitic diseases.

## What is already known on this topic?

The prevalence of depression and major depressive episodes among the surgical ward inpatients in other countries was higher than that among general population.

## What this study adds?

The prevalence of major depressive episodes in the surgical inpatient wards in Thailand was 5.7%. The associated factors of depression were psychoactive drug use (adjusted OR 9.63, 95% CI 1.27 to 72.99) and diagnosis of certain infectious and parasitic diseases (adjusted OR 21.38, 95% CI 1.60 to 285.26).

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## Potential conflicts of interest

None.

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