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Depression as comorbidity in Sundanese epilepsy patients

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Abstract

Background: Depressive disorder is a common psychiatric comorbidity in patients with epilepsy (PWE). This health condition is prevalent among the Sundanese who have a calm and polite character, with a tendency to hide their feelings, which is associated with an increased risk of depression. *Methods:* This cross-sectional study aimed to determine the prevalence of major depressive disorder (MDD) and the associated factors among Sundanese PWE. The study was carried out in the neurology outpatient clinic at Hasan Sadikin General Hospital Bandung, consisting of the Sunda ethnic group as the majority of patients. Self-stigma degree was measured using the Indonesian version of Internalized Stigma of Epilepsy (ISEP) questionnaire, while depression symptom was screened through the Indonesian version of Neurological Disorders Depression Inventory for Epilepsy (NDDI-E). Subsequently, patients who had depression symptoms were referred to a psychiatrist to confirm whether their conditions matched the criteria of MDD according to the Diagnostic and Statistical Manual of Mental Disorder-5. *Results:* The prevalence of depressive symptoms in Sundanese epilepsy patients was found to be 18.4%, and MDD was 6.8% among 103 patients included in this study. Many PWE with MDD were not married, had uncontrolled seizures, used polytherapy anti-seizure medication, and exhibited a higher degree of self-stigma.
Conclusion: In this study, the prevalence of MDD was found to be 6.8% among a cohort of Sundanese PWE. A significant relationship was also observed between MDD and several factors, including single status, uncontrolled seizure, polytherapy, and a higher degree of self-stigma.

Keywords: Epilepsy, depressive disorder, self-stigma, seizure, Sundanese

INTRODUCTION

Epilepsy is a brain disorder characterized by recurrent epileptic seizures, associated with a range of neurobiological, cognitive, psychological, and social complications.[1] Among patients with epilepsy (PWE), psychiatric comorbidities include depression, anxiety, autism, interictal dysphoria, interictal behavior syndrome, and psychosis.[2,3] According to a previous study, depression in epilepsy results in uncontrolled seizures, lack of compliance to treatment, higher medical costs, and increased suicide rates.[4-12]

Factors contributing to depression in PWE can be classified into individual, seizure-related, and social factors.[13-15] Epilepsy is still plagued by myths and prejudice, with some public exhibiting negative attitudes toward PWE.[16] The stigma perceived by PWE significantly affects their mood, self-esteem, social interaction, and quality of life.[17,18] There are variations in factors that influence depression in PWE among cultures[14,19,20] due to differences in education and concepts and attitudes, impacting on response to the disease and social life.[21]

Despite the common occurrence of epilepsy in Asia, particularly in Indonesia, there is still limited information on depression among PWE. The Sundanese is one of the ethnic groups in Indonesia, possessing characteristics that tend to suppress their emotion which are associated with an increased risk of depression.[22,23] Therefore, this study aimed to describe the prevalence

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of depression in PWE within the Sundanese ethnic group and identify the related risk factors associated with the depression.

METHODS

This study was carried out at the Neurology Outpatient Clinic of Hasan Sadikin General Hospital, which served as the referral hospital for the whole of West Java region. The inclusion criteria were adult patients of Sundanese ethnicity aged 18 years old and above, diagnosed with epilepsy based on ILAE (2017), and those who consumed at least one anti-seizure medication (ASM). The exclusion criteria were refusal to participate, patients suffering from mental retardation, or any severe cognitive decline that result in the inability to fill out questionnaires. The study was prospectively conducted from April to November 2022. The ethical approval of this study was obtained from the ethics committee of Dr. Hasan Sadikin Hospital Bandung with ethical clearance number LB.02.01/X.6.5/161/2022.

Clinical data collection

The demographic information of participants collected included gender, age, ethnicity, education level, marital status, employment status, and monthly earnings. Seizure characteristics such as type of epilepsy, seizure frequency, duration of epilepsy, and several anti-seizure medications were obtained through the medical records. Subsequently, seizures were classified as uncontrolled when there was any seizure within 1 year of the visit. Subjects were classified as Sundanese after spending their entire life and growing up in West Java with either one of their parents belonging to the Sundanese ethnic group.

Internalized Stigma of Epilepsy (ISEP)

The degree of self-stigma was measured using a valid and reliable Internalized Stigma of Epilepsy (ISEP) Indonesian version.[24] This questionnaire consisted of 5 domains, namely alienation, stereotype endorsement, discriminative experience, social withdrawal, and stigma resistance. Each domain had several items that were scored using a 4-point Likert scale, with 1 indicating strongly disagree and 4 representing strongly agree, except for stigma resistance which was scored in reverse. Self-stigma was categorized as low moderate, and high, with total scores of <51, 51-95, and >95, respectively.

Neurological Disorders Depression Inventory for Epilepsy (NDDI-E)

Depression symptoms were evaluated using the Neurological Disorders Depression Inventory for Epilepsy Indonesian version with a cut-off score above 11, as determined in a previous study.[25] The tool was mainly employed to screen for any depression symptoms in PWE that existed within the last 2 weeks through 6 questions. Scoring was also conducted using a 4-point Likert scale, with 1 indicating the absence of symptoms and 4 representing the frequent occurrence of symptoms.

Psychiatric consultation

Patients who achieved an NDDI-E score of 11 or above were referred to a psychiatric department to further confirm the fulfillment of the criteria for a diagnosis of MDD or any other psychiatric disorders. In this study, all patients were evaluated by one psychiatrist and the diagnosis was made using MDD based on criteria in the *Diagnostic and Statistical Manual of Mental Disorder-5* (DSM-5). Subsequently, subjects who did not receive a classification and diagnosis of MDD were included in the analysis along with patients who were not having MDD.

Statistical analysis

This study adopted an analytical observation approach using a cross-sectional design and was statistically analyzed by chi-square test (SPSS version 25). Demographic data were analyzed using descriptive statistics and presented in frequencies and percentages. Subsequently, several depression-related factors were analyzed by comparing demographic, seizure, ASM-related, and self-stigma degrees between MDD and non-MDD groups.

RESULTS

Demographic characteristics of participants

The total number of participants initially included was 109 patients but after excluding 6 patients due to severe cognitive deficits, the remaining subjects for analysis consisted of 103 patients. In this study, the majority of the subjects were female, with a median age of 30 years, possessed an education above high school, were single, unemployed, and had low income. The majority of patients had suffered from epilepsy for more than 10 years with focal-type seizures, and 78.6% were diagnosed with temporal lobe epilepsy.

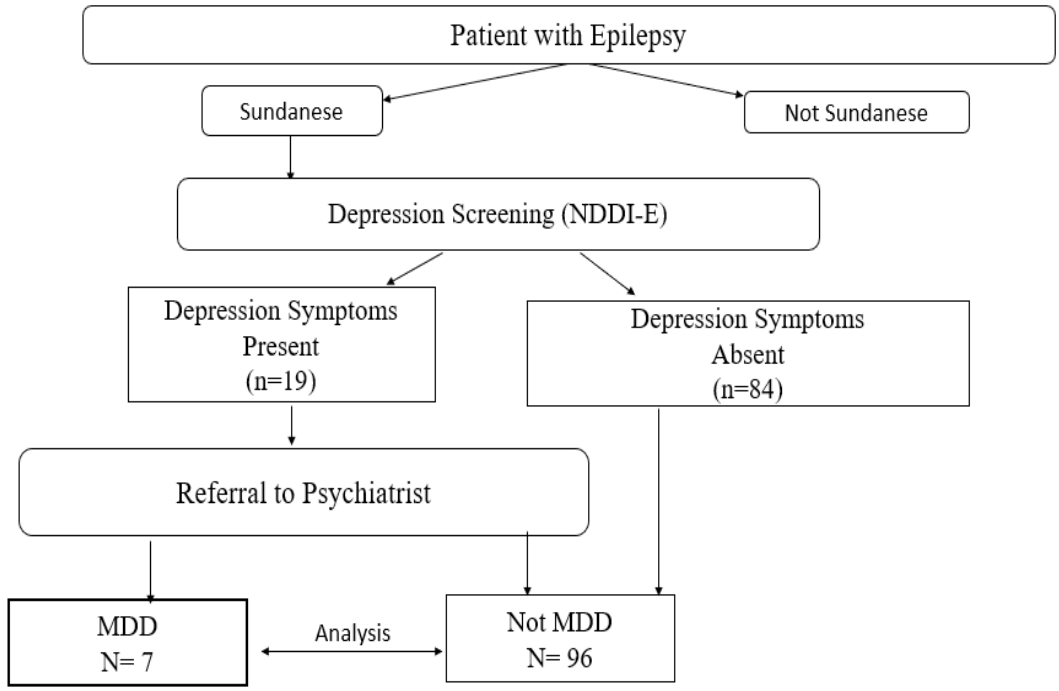

Figure 1. Flow diagram of the study.

A total of 19 subjects (18.4%) with depression symptoms according to the NDDI-E were referred to a psychiatric evaluation, which confirmed that 7 subjects suffered from depressive disorder. The remaining were diagnosed as personality disorder consisting of 4 subjects, anxiety depression (2), organic mental disorders (2), and 4 subjects were not classified to any psychiatric disorders.

Depressive disorder was correlated with marital status, control of seizures, number of ASM consumed, and the degree of self-stigma. The majority of subjects diagnosed with depressive disorder were not married, had uncontrolled seizures, were on ASM polytherapy, and exhibited a higher degree of self-stigma, as shown in Table 2. Meanwhile, gender, educational level, and duration of epilepsy were not statistically associated with depressive disorder.

DISCUSSION

This study was conducted in the Dr. Hasan Sadikin Hospital, Bandung, a referral hospital for the whole of West Java, where most patients belonged to the Sundanese ethnic group. The results showed that the majority of the patients had temporal lobe epilepsy and the most common psychiatric comorbidity associated was depression. Although the exact mechanism of depression in epilepsy was not completely understood, several theories were suggested. These theories included structural abnormalities, change in neurotransmitter particularly serotonin and noradrenalin, reduction in cerebral glucose metabolism, cerebral inflammation, and dysregulation of the hypothalamic pituitary adrenal axis (HPA).[26-28]

The prevalence of depression symptoms assessed using NDDI-E was approximately similar to other studies which ranged from 19 to 22%.[29-31] After the psychiatrist consultation, it was discovered that the prevalence of depressive disorders was 6.8%. Previous investigations reported heterogeneity of tools used to diagnose depression symptoms. However, this study was carried out using DSM-V criteria from a psychiatrist. Several PWEs classified as having depression symptoms were diagnosed with other psychiatric diseases. These included personality, anxiety, and organic mental disorders, which mimicked depression disorder due to similar symptoms.

Depression symptoms were more common in female PWE compared to males. Female gender was identified as a strong depression-predisposing factor in epileptic patients, probably partly due to a decrease in estrogen that increases the likelihood of depression.[32] In this study, it was shown that depression disorder affected females more than males but this was not statistically significant.

Table 1: Clinical profiles of epilepsy patients with and without depressive disorder

Variable	No MDD N=96	MDD* N = 7
Median age (years)	30	26
Gender		
Male	43(95.6%)	2(4.4%)
Female	53(91.4%)	5(8.6%)
Educational level		
No schooling	1(100%)	0(0.0%)
Elementary school	1(100%)	0(0.0%)
Junior high school	6(85.7%)	1(14.3%)
High school	40(90.9%)	4(9.1%)
College	32(94.1%)	2(5.9%)
Marital status*		
Not married/divorced	56(88.9%)	7(11.1%)
Married	40(100%)	0(0.0%)
Epilepsy duration		
<10 years	36(97.3%)	1(2.7%)
≥10 years	60(90.9%)	6(9.1%)
Control of seizure*		
Well-controlled	53(100%)	0(0.0%)
Uncontrolled	43(86.0%)	7(14.0%)
Epilepsy syndrome		
TLE	74(91.4%)	7(8.6%)
IGE	12(100%)	0(0.0%)
Unknown	10(100%)	0(0.0%)
Number of ASM*		
1 (monotherapy)	73(97.3%)	2(2.7%)
≥2 (polytherapy)	23(82.1%)	5(17.9%)
Self-stigma degree*		
Low	54(100%)	0(0.0%)
Moderate	37(94.9%)	2(5.1%)
High	3(37.5%)	5(62.9%)

*p value < 0,05

Table 2: PWE subjects who were confirmed to have depressive disorders

Patient No.	Gender	Educational level	Employment status	Epilepsy duration (years)	Epilepsy Syndrome	Seizures frequency	No of ASM	Self-stigma degree
PS01	M	High School	No	19	TLE	4x/week	2	High
PS08	F	High School	No	10	TLE	4x/week	1	High
PS19	M	Senior Elementary	No	20	TLE	2x/week	2	High
PS45	F	High School	No	3	TLE	2x/month	1	Moderate
PS57	F	College	Yes	11	TLE	4x/month	2	High
PS66	F	High School	No	15	TLE	2x/month	3	Moderate
PS93	F	College	No	10	TLE	1x/month	4	High

M: male; F: female, TLE: Temporal lobe epilepsy

Liu reported that the correlation between gender and depression in PWE was still controversial. This phenomenon occurred because male PWE was more likely to be affected by psychosocial factors, while female was more influenced by seizure-related events.[33] In a population in which male PWE had working restrictions and low socioeconomic status such as reported in this study, the depression tended to increase, which may partly explain the results of this study.

Low educational level was associated with depression in PWE. Subjects with lower educational status struggled to develop effective coping strategies for their illness, leading to social isolation, poor adherence to ASM, and suboptimal psychological adjustment.[34] In this study, low educational level was not correlated with depression. Compared to previous results, this study found that PWEs who had depression possessed higher educational levels. According to self-discrepancy theory, people with higher educational levels exhibited significant expectations for achievements in life which might be hindered by the disease[35], thereby, increasing the risk of depression. However, further studies were required to confirm these explanations.

In this study, there was a significant relationship between marital status and depressive disorder, with all PWE who suffered from depression disorder being unmarried. In some countries, parents were reluctant to marry their children to PWE due to concerns about the potential hereditary transmission of the disease.[36] Wang explained that social support received from marriage partners and family reduced the risk of depression experienced by PWE.[37] However, the social support received other than from married partner was not evaluated in detail in our study.

Although the majority of the PWE had suffered from epilepsy for at least 10 years, which was known to increase the risk of depression, this study did not find a significant correlation. A longer duration of epilepsy might reflect a greater period available to face stressful difficulties posed by the disease.[38] Moreover, PWE with uncontrolled seizures exhibited a higher risk of depression. Frequent seizures negatively affected seizure worry, emotional well-being, and social function. People with uncontrolled epileptic seizures often experience fear due to the unpredictable occurrence of seizures, leading to the avoidance of public places or social events, and isolation from various activities.[39] PWE with severe depression also exhibited more frequent seizures.[40]

Adverse events of ASMs can be increased by depression, leading to patient noncompliance with the treatments. Moreover, depression before the onset of epilepsy was associated with resistance to ASM.[7] In this study, it was shown that depressive disorder affected the majority of PWE who consumed more than 1 ASM. This phenomenon occurred due to uncontrolled seizures of patients which led to additional prescription of ASM. The consumption of more than 1 ASM required extra effort to maintain a drug schedule that could add some difficulties in daily life. The subject in this study was prescribed different types and dosages of ASMs, while the majority of patients in both groups consumed carbamazepine in monotherapy or in polytherapy.

Sundanese are widely recognized as an ethnic group that maintains good manners and tribal harmony. This ethnic group tends to suppress their feelings and negative experiences such as when facing stress from diseases.[22] However, this behavior hinders the Sundanese from social support, a known protective factor against depression. In this context, stigma exponentially increased the likelihood of depression as shown in this study. Patients with higher self-stigma tended to avoid social contact, exhibited poorer coping strategies, and had difficulties in their works, ultimately leading to depression. Furthermore, stigma in PWE was influenced by several factors such as level of education, marital status, employment status, attitudes toward PWE, and frequency of seizures.[41-43]

This study had some limitations, including a relatively small sample size and the opportunistic sampling method used, which might not represent the total Sundanese population. Additionally, several depression-related factors such as sleep quality, daily task limitation, social support beyond family, household income, and employment restrictions, were not analyzed. These limitations occurred due to a lack of validated tools in the Indonesian Language.

In conclusion, this study found that the prevalence of MDD in Sundanese PWE was 6.8%. There were correlations between MDD and several factors among Sundanese PWE, including single status, uncontrolled seizure, ASM polytherapy, and a higher degree of self-stigma.

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