Psychiatric and Behavioral Problems in Patients with Epilepsy in Phramongkutklao Hospital: A Retrospective Survey

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ABSTRACT

Background: Psychiatric and behavioral problems, either from disease itself or treatment related, affect quality of life and treatment compliance for patients with epilepsy.

Objectives: To survey the prevalence and risk factors of psychological and behavioral problems among patients in our Neurological clinic.

Materials and Methods: This was a retrospective cross-sectional study conducted in 2023. The data including patient characteristics, HAM-A, PHQ-9, EQ-5D-5L, ESS, and the Distress Thermometer were collected and analyzed.

Results: Total of 52 participants (mean age 46.79 years, relatively high educational levels, well seizure controlled) were included. The average duration of epilepsy and ASMs treatment was 11 years. By using PHQ-9, 3.8% of patients had a score of ≥ 10 representing depression. Eight percent of patients having anxiety detected by HAM-A score. The EQ-5D showed 34.62% reported utility score problems. It was found that anxiety and depression were correlated with poor Utility score, $p = 0.011$. Only one patient experienced excessive daytime sleepiness, notably in the patient with anxiety. There was no associated between psychiatric/behavioral problems and demographic data.

Conclusion: The prevalence of psychological and behavioral problems in patients with epilepsy was 8% for anxiety and 4% for depression. Anxiety and depression affected quality of life.

Keywords: Epilepsy, Psychiatric and behavioral problem, Antiseizure medication

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Introduction

Epilepsy is a neurological disorder characterized by recurrent abnormal excessive brain activity. Tiamkao S, et al. 2000,[1] found that the prevalence rate of epilepsy in Thailand was 7.2 per 1,000 population (approximately 500,000 individuals with epilepsy). The consequences of epilepsy are not only seizure complications but also psychiatric and behavioral issues.[2] Moreover, it is widely recognized that epilepsy is associated with various personal problems, in particular stigma and depressive disorders.[3]

It is crucial that the use of antiseizure medications (ASMs) commonly cause some adverse events including psychiatric and behavioral side effects (PBSEs). These effects range from minor behavioral changes to severe depressive symptoms, leading to significant daily impairments. Nevertheless, individual patients, their relatives and treating physicians may not be aware of these effects, causing unattended conditions.[4-7] Additionally, several patients taking polytherapy (multiple ASMs) may have higher risk for developing PBSEs.[8,9]

Both recurrent seizures and adverse events from medications would likely adversely impact personal daily life, potentially leading to non-compliance or discontinuation of medications. To identify psychological and behavioral issues is challenging. Early detection might be helpful in improving epilepsy care. It is predicted that some factors, such as age, gender, psychiatric history, and genetic differences, may pose risks for developing psychiatric side effects.[2,10] Understanding the characteristics and knowing the prevalence and risk factors of psychological issues from our center would be beneficial as a guidance for physicians to provide better medical care. The aims of our survey were to identify psychological problems and their associated risk factors.

Material and Methods

1. Participants

Our study was a retrospective cross-sectional study drawn from outpatient neurology clinic of Phramongkutklao Hospital. Data was collected from January 2023 to December 2023. The inclusion and exclusion criteria for patient selection were as follows:

Inclusion Criteria:

- ☐ Patients diagnosed with epilepsy at Phramongkutklao Hospital and receiving antiseizure medications for at least 1 year
- ☐ Age 18 years or older
- ☐ Patients who could communicate, reading, and writing in Thai

Exclusion Criteria:

- ☐ Patients diagnosed with pre-existing psychiatric conditions such as schizophrenia, depressive disorder, or generalized anxiety disorders
- ☐ Individuals with severe disability or advanced dementia
- ☐ History of substance abuse including chronic alcoholism

2. Measurement

We collected the results of routine clinic surveys on psychiatric and behavioral screens. The routine instruments including Hamilton Anxiety Rating Scale (HAM-A)[11], Patient Health Questionnaire-9 (PHQ-9)[12], EuroQol-5 Dimension-5 Level (EQ-5D-5L)[13,14] and Epworth Sleepiness Scale (ESS)[15] were used for detecting anxiety, depression, quality of life, and hypersomnolence, respectively. In addition, Distress Thermometer (DT)[16] was rated

for individual's stress. The details of those psychiatric batteries were shown in the appendix.

3. Ethical consideration and statistical analysis

This retrospective study was approved by the Institutional Review Board Royal Thai Army Medical Department (R184h/66).

Demographic characteristics were described as mean with standard deviation (SD), number, and percent. Discrete data and continuous data were compared using chi-square test and t-test, respectively. The statistical analyses were computed by SPSS version 27.0 for Windows. The *p*-value of less than 0.05 indicated statistical significance.

Results

Total of 52 participants, male was 26 (50%) and the average age was 46.79 years (SD 17.8). There were 24 (46.2%) participants with epilepsy who graduated with a bachelor's degree or higher levels. Approximately 25% were employed. Most individuals 36 (69.2%) had focal epilepsies. Forty-seven (90.4%) had seizure free at least 3 months before the survey. The mean duration of epilepsy with anti-seizure medication (ASM) treatment was approximately 11 years. The demographic characteristics were summarized in Table 1.

Table 1. Demographic characteristics (n=52)

Variables	Number (%)
Age (yeas): mean ± SD	46.79±17.8
Male gender	26 (50%)
Marital status: couple	18 (34.6%)
Education: bachelor degree or above	24 (46.2%)
Occupation: employed	13 (25%)
Known focal epilepsies	36 (69.2%)
Known frontal or temporal epilepsies	17 (47.2%)
Controllable epilepsies	47 (90.4%)
Duration of epilepsies (years): mean ± SD	11.21±10.6
Known medication comorbidity	23 (44.2%)
Known CNS comorbidity	17 (32.7%)
History of brain operation	8 (15.4%)
Number of ASMs >1	27 (51.9%)
Visual analog scale: mean ± SD (range)	87.31±15.7
Distress thermometer: mean ± SD (range)	1.63±2.3
PHQ-9: mean ± SD	2.13±3.3
HAM-A: mean ± SD	3.98±7.3
• Mobility	1.34±0.8
• Self-care	1.04±0.2

Variables	Number (%)
• Usual activities	1.19±0.6
• Pain/discomfort	1.31±0.7
• Anxiety/depression	1.33±0.9
• Utility	0.93±0.1

ASM= antiseizure medication, PHQ-9 = *Patient Health Questionnaire, HAM-A = Hamilton Anxiety Rating Scale -Anxiety*

A small proportion of our participants [n=2 (3.8%)] exhibited depression (PHQ-9≥10), Table 2. The analysis revealed several associations with depression: [1] younger age: mean age with depression was 24.5 years while without depression was 47.7 years, (p-value = 0.003), [2] anxiety was observed as a significant co-morbidity among individuals with depression, (50% of patients with anxiety vs. 6% of patients without anxiety having depression, p-value 0.022), [3] Impact of epilepsy on Health-Related Quality of Life: it was significantly associated between depression and utility problems indicating non-satisfaction (p-value = 0.047). All individuals with depression (n = 2, 100%) had problem evaluated by Utility indicating non-satisfaction, while only 16 (32%) individuals without depression had problem evaluated by Utility. This suggests that depression is linked to challenges in overall health-related quality of life, Table 2.

Table 2. Depression

Variables	No depression (PHQ-9<10) N=50	Depression (PHQ-9≥10) N=2	p-value
Age (yeas): mean ± SD	47.68 ±17.6	24.50 ±3.5	0.003*
Male gender	24 (48%)	2 (100%)	0.245
Marital status: couple	18 (36%)	0 (0%)	0.432
Education: Bachelor's degree or above	23 (46%)	1 (50%)	0.958
Occupation: employed	12 (24%)	1 (50%)	0.441
Known focal epilepsies	35 (70%)	1 (50%)	0.525
Known F or T epilepsies	16 (32%)	1 (50%)	0.472
Controllable epilepsies	46 (92%)	1 (50%)	0.185
Duration of epilepsies (years): mean ± SD	11.04±10.6	15.50±13.4	0.563
Known medication comorbidity	23 (46%)	0 (0%)	0.303
Known CNS comorbidity	17 (34%)	0 (0%)	0.449
History of brain operation	7 (14%)	1 (50%)	0.287
Number of ASMs > 1	26 (52%)	1 (50%)	0.735
Anxiety (HAM-A≥18)	3 (6%)	1 (50%)	0.022*
Problem/non-satisfactory (Utility<1)	16 (32%)	2 (100%)	0.047*

ASM= antiseizure medication, PHQ-9 = Patient Health Questionnaire, HAM-A = Hamilton Anxiety Rating Scale -Anxiety, * = p-value<0.05

There were four participants (7.7%) are classified as experiencing anxiety (HAM-A score >17). Similarly, anxiety was significantly associated with depression (p-value 0.022) and Problem defined by Utility test (p-value 0.011), Table 3

Table 3. Anxiety

Variables	No anxiety (HAM-A 0-17) N=48	Anxiety (HAM-A >17) N=4	p-value
Age (yeas): mean ± SD	47.15 ±18.2	42.50 ±14.5	0.621
Male gender	25 (52.08%)	1 (25%)	0.305
Marital status: couple	18 (37.5%)	0 (0%)	0.171
Education: bachelor degree or above	23 (47.91%)	1 (25%)	0.569
Occupation: employed	12 (25%)	1 (25%)	0.743
Known focal epilepsies	34 (70.83%)	2 (50%)	0.360
Known frontal or temporal epilepsies	17 (35.41%)	0 (0%)	0.271
Controllable epilepsies	44 (91.66%)	1 (25%)	0.341
Duration of epilepsies (years): mean ± SD	11.29± 10.9	10.25 ± 4.9	0.852
Known medication comorbidity	22 (45.83%)	1 (25%)	0.398
Known CNS comorbidity	15 (31.25%)	2 (50%)	0.396
History of brain operation	7 (14.58%)	1 (25%)	0.499
Number of ASMs > 1	25 (52.08%)	2 (50%)	0.665
Depression (PHQ-9≥10)	1 (2.08%)	1 (25%)	0.022*
Problem (Utility<1)	14 (29.16%)	4 (100%)	0.011*

ASM= antiseizure medication, PHQ-9 = Patient Health Questionnaire, HAM-A = Hamilton Anxiety Rating Scale -Anxiety, HAM-A Scale: 0-17 = no anxiety, 18-24 = mild anxiety, 25-34 = moderate anxiety, >35 = marked anxiety, * = p-value<0.05

There were 18 participants (34.62%) rated as people with problem evaluated by the EQ-5D utility score (Utility < 1), Table 4. It was shown that depression and anxiety among patients with epilepsy were statistically significant associated with Utility<1 indicating non-satisfaction.

Table 4. EQ-5D-5L

Variables	Utility =1 (No problem) N =34	Utility <1 (Presence of problem) N =18	p-value
Age (years): mean ± SD	45.21±17.7	49.78±18.2	0.384
Male gender	19 (55.88%)	7 (38.89%)	0.191
Marital status: couple	12 (35.29%)	6 (33.33%)	0.569
Education: bachelor's degree or above	15 (44.12%)	9 (50%)	0.792
Occupation: employed	9 (26.47%)	4 (22.22%)	0.507

Variables	Utility =1 (No problem) N =34	Utility <1 (Presence of problem) N =18	p-value
Known focal epilepsies	22 (64.70%)	14 (77.78%)	0.259
Known frontal or temporal epilepsies	11 (32.35%)	6 (33.33%)	0.470
Controllable epilepsies	31 (91.18%)	16 (88.89%)	0.572
Duration of epilepsies (years): mean ± SD	11.38±12.1	10.89±7.2	0.875
Known medication comorbidity	13 (38.231%)	10 (55.56%)	0.183
Known CNS comorbidity	10 (29.41%)	7 (38.89%)	0.384
History of brain operation	3 (8.82%)	5 (27.78%)	0.072
Number of ASM> 1	16 (47.05%)	11 (61.11%)	0.251
Depression (PHQ-9≥10)	0 (0%)	2 (11.11%)	0.047*
Anxiety (HAM-A>=18)	0 (0%)	4 (22.22%)	0.004*

ASM= antiseizure medication, PHQ-9 = Patient Health Questionnaire, HAM-A = Hamilton Anxiety Rating Scale -Anxiety, * = p-value<0.05

Among 52 participants, there was only one exhibiting excessive daytime sleepiness (EDS), Epworth sleepiness scale (ESS) score≥10, Table 5. The one with EDS had anxiety as a comorbidity.

Table 5. Hypersomnolence rated by Epworth sleepiness scale (ESS)

Variables	No EDS (ESS score<10) N=51	EDS (ESS score≥10) N=1	p-value
Age (yeas): mean ± SD	46.82±18.0	45.0±0	0.920
Male gender	26 (50.98%)	0 (0%)	0.500
Marital status: couple	18 (35.29%)	0 (0%)	0.654
Education: bachelor degree or above	24 (47.06%)	0 (0%)	0.601
Occupation: employed	13 (25.49%)	0 (0%)	0.750
Known focal epilepsies	36 (70.59%)	0 (0%)	0.308
Known frontal or temporal epilepsies	17 (33.33%)	0 (0%)	N/A
Controllable epilepsies	46 (90.20%)	1 (100%)	0.904
Duration of epilepsies (years): mean ± SD	11.31±10.6	6.00±0	0.623
Known medication comorbidity	23 (45.10%)	0 (0%)	0.558
Known CNS comorbidity	16 (31.37%)	1 (100%)	0.327
History of brain operation	7 (13.73%)	1 (100%)	0.154
Number of ASMs > 1	26 (50.98%)	1 (100%)	0.519
Depression (PHQ-9≥10)	2 (3.92%)	0 (0%)	0.962
Anxiety (HAM-A >=18)	3 (5.88%)	1 (100%)	0.010*
Problem (Utility<1)	17 (33.33%)	1 (100%)	0.346

EDS= excess daytime sleepiness, ESS = The Epworth Sleepiness Scale, ASM= antiseizure medication, PHQ-9 = Patient Health Questionnaire, HAM-A = Hamilton Anxiety Rating Scale -Anxiety, * = p-value<0.05

Discussion

From our series, it was recognized that there was only 3.8% with depression and 7.7% with anxiety among 52 participants that were relatively well seizure controlled. Depression was associated with younger age, presence of comorbidity especially with anxiety, and the presence of utility problems. Moreover, for Utility from EQ-5D, the non-satisfaction or Problems case (Utility<1) were identified more in the group with depression and anxiety. Therefore, early detection for psychological and behavioral problems among patients with epilepsy is necessary. The screening tests for anxiety, depression and hypersomnolence might be required for regular services, although it was found that only one patient in our series recognized hypersomnolence.

Baibing Chen et al.[17], 17.2% reported psychological and behavioral problems related to adverse events from antiseizure medications (PBSE). In two prototype studies[17,18], it was found that levetiracetam (LEV) and zonisamide were related to the occurrence of PBSE. Compared to ours, 3.8% psychological and behavioral issues were found in overall group which were not found the correlation according to number of medications. The types of ASMs could not determine the relationship as the number of sample size was small. Several studies[19,20] were conducted to determine quality of life among their patients with epilepsy. It was found that not only seizure control but quality of life as well as psychiatric and behavioral conditions were warranted. Our low prevalence of EDS suggested that number of ASMs used in our series might not affect daytime sleepiness, contrast to findings from other series.[21,22]

In clinical impression, mental health assessment and intervention in epilepsy care are challenging. A comprehensive, patient-centered approach is crucial for addressing the complex interplay between epilepsy, mental health, and overall quality of life. The strength of our study was to identify problems apart from seizure control by using standard screening tools. The weaknesses of our study were 1) single center, 2) retrospective in nature and 3) small sample size. Further larger research, especially a longitudinal prospective cohort study, would be required to explore the underlying factors contributing to mental health issues and utility problems in epilepsy population.

Conclusion

The prevalence of psychological and behavioral problems in patients with seizure controllable epilepsy at Phramongkutklao Hospital was not high with 8% anxiety and 4% depression. Anxiety and depression had affected individuals' wellbeing.

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