Influences of socio-demographics on depression and anxiety in patients with complex partial and tonic-clonic seizures

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ABSTRACT

Aim To compare the levels of anxiety and depression in patients with milder epilepsy characterized by complex partial seizures versus more severe epilepsy comprised of generalized tonic-clonic seizures.

Methods A total of 60 patients aged between 18 and 80 admitted with seizures were prospectively enrolled. Patients with history of any psychiatric disorders were excluded. Imaging studies were performed to rule out any organic brain lesions that might be responsible for seizures. Patients were divided into two groups according to the type of the seizures: group 1 (n=30) with complex partial seizures without focal and generalized tonic-clonic seizures, and group 2 (n=30) with generalized tonic-clonic seizures. Structured Clinical Interviews for DSM-IV Axis I disorders (SCID-I/NP) were performed in all patients. Additionally, Hamilton Depression Rating Scale (HAM-D) and Hamilton Anxiety Rating Scale (HAM-A) were administered to the patients where appropriate. All the parameters were statistically compared.

Results Mean age of the patients was 29.66±10.33 years, 38 (63.3%) were females. Both groups were comparable in terms of age, educational status, marital status, occupational status, age of epilepsy onset, and Hamilton scores. Mean HAM-D score (2.11) and mean HAM-A total score (2.31) of the patients employed during the last 6 months were different than the mean HAM-D score (4.76) and mean HAM-A total score (5.66) of the patients unemployed during last 6 months. Patients with no reliable employment within the past 6 months demonstrated significantly higher depression and anxiety scores (p<0.05).

Conclusion This study clearly demonstrated a relationship among the features of epileptics and levels of depression and anxiety. There was a relationship between employment and depressive and anxiety symptoms of epileptic patients. Also, unemployment may be indicative for treatment compliance.

Keywords: epilepsy, treatment, compliance
INTRODUCTION

It was once thought that those afflicted with epileptic seizures were cursed or witches. Although people with epilepsy no longer face such extreme stigmatization, it is evident that psychosocial problems are highly prevalent in these patients (1). It has been recognized for many years that patients with epilepsy have higher rates of cognitive and behavioral disorders in comparison to the general population (2). In fact, epilepsy is one of the most popular medical conditions to study in the fields of neurology, psychiatry, neurosurgery and pediatrics. During 1957 Pond described the psychiatric disorders that are comorbid with epilepsy, and this classification scheme is still in use today. Psychiatric disorders are frequently observed in epileptics, yet these conditions often go undiagnosed and patients do not receive proper therapy to control their psychiatric symptoms (3). Inadequate psychiatric treatment may contribute to the high rates of suicidal ideation and suicide attempts in epileptic patients. Furthermore, anxiety and depression are the most common psychiatric disorders in patients with epilepsy, and in comparison to the general population, rates of these disorders are greater for epileptics (4-9).

Development of psychopathology in epileptics may be related to seizure type, frequency, duration, and age of onset; quality of seizure control; number of medications; and presence of organic central nervous system disease. Further variables that might impact the psychological health of these patients are other psychosocial factors and sociodemographic characteristics such as age, sex and employment status (10). Even the type of epilepsy may affect how these patients function in and are perceived by the society, which is likely to have resounding psychological implications.

This study investigated the relationship between the levels of anxiety and depressive symptoms in epileptic patients that demonstrated either complex partial seizures or generalized tonic-clonic seizures, which are generally perceived as milder or more severe forms of epilepsy, respectively. The aim of this study was to describe the need for an assessment of the relationship between epilepsy and psychiatric disorders such as anxiety and depressive disorders, thus treatment protocols of epilepsy may consider the psychosocial state of the patients such as employment.

PATIENTS AND METHODS

Study participants were selected from 60 consecutive admissions for seizures to the Bakırköy Prof. Dr. Mazhar Osman Mental Health and Neurological Diseases Training and Research Hospital epilepsy clinic. These patients were 18 to 80 years old and only had epilepsy as a previous medical diagnosis. As such, the study subjects lacked a history of psychiatric disorders including mental retardation, psychoactive drug use, and any trauma resulting in loss of consciousness. Patients were divided into two groups based on the seizure type that they experienced over the last year: complex partial seizures without other focal or generalized tonic-clonic seizures (n=30) and generalized tonic-clonic seizures (n=30). Brain imaging techniques, including magnetic resonance imaging (MRI) and computed tomography (CT), were utilized to rule out whether patients had lesions that may have caused epilepsy. If an organic cerebral lesion was identified the patient was subsequently excluded from the study.

After each patient received a neurological evaluation, their socio-demographic data and history of epilepsy were recorded. The Turkish translation of the Structured Clinical Interview for DSM-IV Axis I disorders (SCID-I/NP) was performed to determine whether subjects had comorbid psychiatric conditions. If the patients exhibited depressive symptoms, the severity of those symptoms was measured with the Hamilton Depression Rating Scale (HAM-D). Furthermore, the Hamilton Anxiety Rating Scale (HAM-A) was performed to determine the range and magnitude of anxiety symptoms. This study was reviewed and approved by the Ethics Committee of Bakırköy Prof. Dr. Mazhar Osman Mental Health and Neurological Diseases Training and Research Hospital.

First developed in 1997, the SCID-I was utilized to diagnose patients with Axis I disorders. In 1999 SCID-I was translated into Turkish by Çorapçuoğlu and colleagues. After the studies confirmed reliability of this translation, the manual was released and called the SCID-I/NP (11). The Hamilton Depression Rating Scale (HAM-D) was developed by Hamilton in 1961 and then revised in 1967 to examine the severity of patient’s depressive symptoms. In 1996 Akdemir and colleagues confirmed validity and reliability of the HAM-D Turkish translation (12). Utili-
zing a 17-question form, we rated the severity of patient’s depressive symptoms on a scale of 0 (no symptoms) to 4 (severe symptoms). A total score ranging from 0 to 7 indicated no depression, a score ranging from 8 to 15 indicated mild depression, and a score of 16 or higher was designated as major depression.

This study also used the Hamilton Anxiety Rating Scale (HAM-A), which was developed by Hamilton in 1959, and is utilized to measure the severity of depressive symptoms and psychological and somatic anxiety. The validity and reliability of the HAM-A Turkish translation was confirmed by Yazıcı and colleagues in 1998 (13). Presence and severity of symptoms were rated based on the interviewer’s discretion and each symptom was scored separately on a scale from 0 (no symptoms) to 4 (severe symptoms). The total score for HAM-A ranged from 0 to 56, but a cutoff score was not calculated for this Turkish study.

The chi-squared test was applied to evaluate relationships between qualitative data, and Student’s t-test was utilized to determine the difference between means of continuous variables. The Kruskal-Wallis test was applied to compare more than two groups of continuous variables. To determine whether the differences among groups were statistically significant a post hoc analysis was performed. A p-value less than 0.05 was considered statistically significant.

RESULTS

Having performed an analysis of the types of seizures that the study participants exhibited over the past year, it was found that 50% of them had complex partial seizures while the remaining 50% had generalized tonic-clonic seizures. The age was distributed as the minimum age of 18 and the maximum age was 54, and the mean age was 29.66±10.33 for all sixty participants. Furthermore, 22 (36.7%) patients were males with a mean age distribution of 28.68±18.7 years, and 38 (63.3%) were females with a mean age distribution of 30.24±11.24 years. There was no significant difference between the mean age distribution between epileptic males and females.

Basic clinical histories for epilepsy were collected to determine at what age and how long patients had this condition. The earliest age that epilepsy was diagnosed was at 2 years, and the latest age when a patient was diagnosed was at 48 years of age. The mean age distribution that patients were first diagnosed with epilepsy was 18.37±10.08 years. Out of all patients in the study population, the shortest life with epilepsy was 2 years whereas the longest was 37 years. The mean time distribution that patients lived with epilepsy was 11.18±7.78 years.

Demographics were also obtained for the study population to get a sense of each patient’s family life, level of education, and type of employment. It was determined that 29 (48.3%) participants were married while 31 (51.7%) of them were unmarried. Out of all the participants only two (3.3%) were literate (but did not attend school), 18 (30%) graduated from primary school, 14 (23.3%) graduated from junior high school, 17 (28.3%) graduated from high school, and 9 (15%) graduated from a higher education institution. Demographics regarding occupation demonstrated that six (10%) participants were unemployed, 14 (23.3%) were housewives, 19 (31.7%) were employed, three (5%) were civil servants, three (5%) were craftsmen, three (5%) were tradesmen, two (3.3%) were retired, and 10 (16.7%) were students.

To measure the range of severity of the patient’s anxiety and depression the HAM-D and HAM-A were performed. When comparing all the subjects, the minimum HAM-D score was 0 and the maximum was 16 with a mean distribution of 3.5±4.24. The HAM-A scores ranged from 0 to 7 indicated no depression, a score ranging from 8 to 15 indicated mild depression, and a score of 16 or higher was designated as major depression.

<table>
<thead>
<tr>
<th>Score type</th>
<th>Complex partial</th>
<th>Generalized tonic-clonic</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAM-D Score</td>
<td>3.27±4.36</td>
<td>3.73±4.18</td>
</tr>
<tr>
<td>HAM-A Total Score</td>
<td>4.73±4.93</td>
<td>0.514</td>
</tr>
<tr>
<td>HAM-A Psychic Subscale Score</td>
<td>2.13±2.41</td>
<td>0.399</td>
</tr>
<tr>
<td>HAM-A Somatic Subscale Score</td>
<td>1.96±2.77</td>
<td>0.960</td>
</tr>
</tbody>
</table>

Table 1. Scores according to seizure type

<table>
<thead>
<tr>
<th>Score type</th>
<th>Working during last 6 months</th>
<th>Number of patients MEAN±SD</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAM-D</td>
<td>YES</td>
<td>29</td>
<td>2,3±1,2</td>
</tr>
<tr>
<td>HAM-A Total Score</td>
<td>NO</td>
<td>31</td>
<td>4,7±5,15</td>
</tr>
<tr>
<td>HAM-A Psychic</td>
<td>YES</td>
<td>29</td>
<td>3,1±3,98</td>
</tr>
<tr>
<td>Subscale score</td>
<td>NO</td>
<td>31</td>
<td>5,6±5,04</td>
</tr>
<tr>
<td>HAM-D</td>
<td>YES</td>
<td>29</td>
<td>1,8±2,46</td>
</tr>
<tr>
<td>HAM-A Total Score</td>
<td>NO</td>
<td>31</td>
<td>3,1±3,16</td>
</tr>
<tr>
<td>HAM-A Psychic</td>
<td>YES</td>
<td>29</td>
<td>1,2±1,93</td>
</tr>
<tr>
<td>Subscale score</td>
<td>NO</td>
<td>31</td>
<td>2,7±2,87</td>
</tr>
</tbody>
</table>

Table 2. Scores according to employment stability
to 18 and demonstrated a mean distribution of 4.3±4.69. HAM-A Psychic Subscale scores ranged from 0 to 11 and averaged 2.45±2.88, whereas for the HAM-A Somatic Subscale scores, the minimum was 0 and the maximum was 10 with a mean distribution of 1.98±2.54. Overall, there were no significant differences among HAM-D scores and HAM-A total, Psychic Subscale and Somatic Subscale scores between complex partial seizures and generalized tonic-clonic seizures groups.

There were no significant differences among HAM-D and HAM-A total, Psychic Subscale and Somatic Subscale scores according to the sex.

There were no significant differences among HAM-D and HAM-A total, Psychic Subscale and Somatic Subscale scores according to educational level.

There were significant differences noted among HAM-D scores, HAM-A total scores, and HAM-A Somatic Subscale scores when comparing whether participants were securely employed or not (p<0.05). However, no significant difference was observed for HAM-A Psychic Subscale scores.

There were no significant differences among HAM-D and HAM-A total, Psychic Subscale and Somatic Subscale scores according to marital status.

**DISCUSSION**

It is reported that comorbid psychiatric disorders such as depression and anxiety are diagnosed more often in sick individuals than in healthy individuals (5,8). Because psychiatric conditions often have multifactorial etiologies, it is not unusual to observe comorbid psychiatric disorders in patients with health problems such as epilepsy. Accordingly, patients with epilepsy or other neurological diseases demonstrate more psychopathology when compared to the general population (2). There are cases in which comorbid psychiatric disorders surface even before epilepsy is diagnosed, yet these disorders are observed following or during the diagnosis of epilepsy as well (15).

As Torta and Keller revealed in 1999, comprehending the clinical, psychosocial and biological factors that contribute to developing psychiatric disorders is helpful when trying to elucidate the relationship between disease and comorbid psychiatric conditions (19). Furthermore, the literature data suggest that anxiety and depression are the most common psychological disorders in adult and pediatric patients (4,5,16). Following Torta and Keller’s example, we aimed to determine whether the severity of epilepsy and certain socio-demographic traits affect the severity of anxiety and depression for these patients. However, there were no such correlations observed in our study.

Interestingly, in this research there were no differences in anxiety and depressive symptoms between male and female epileptics. This is in contrast with previous findings that suggest that females without epilepsy demonstrate depression and anxiety disorders more often than males (17). However, there have been other reports that male epileptics have greater rates of depression as compared to females (18). It still remains unclear why other studies have found greater levels of depression in male epileptics. Perhaps this difference may be attributed to the high expectations that Turkish society places on males in addition to the stigma attached to epilepsy, which altogether may be so stressful that males are more frequently depressed.

Even though there were no correlations between the intensity of epileptic seizures, socio-demographic traits and the severity of comorbid psychiatric conditions, many subjects demonstrated anxiety and depression despite lacking a history of prior psychiatric diagnoses. While it may be challenging to detect cognitive and behavioral changes in epilepsy patients, it is paramount to do so during routine follow-up examinations. Care providers must keep in mind that patients might exhibit psychiatric symptoms that are not severe enough to qualify for a formal psychiatric diagnosis. It is proposed that one of the most serious limitations of the DSM-IV is that it does not address how to approach subclinical symptoms that might represent psychopathology (14). In such cases it is important to monitor these symptoms over time to detect exacerbations that may need therapeutic intervention. This is especially important for epileptic patients, because they have high rates of suicidal ideation and suicide attempts (9). As such, care providers must be vigilant in screening for and detecting comorbid psychiatric conditions to give patients optimal, holistic health care. However, this may not always be feasible if patients cannot access health care due to lack of steady employment.
In developing countries such as Turkey there are shortcomings in social support systems as the unemployed have limited access to resources. If the paucity of assistance for the unemployed remains uncorrected, it may be difficult to quell the loss of workers looking for better opportunities elsewhere. This study identified a significant increase in anxiety and depression for epileptics without regular employment as compared to patients with a secure job over a six-month period. In order to further support these patients from a health care perspective, a comprehensive approach must be adopted to identify psychiatric disorders when these patients seek care for epilepsy.

In conclusion, this study investigated the relationship among the features of epileptics and levels of depression and anxiety. One of the main limitations in our study was the lack of statistical power in our analyses due to an insufficient sample size. In the future, prospective investigations with larger study populations are needed to further investigate the relationship between comorbid psychiatric disorders and epilepsy. Another interesting avenue of study would be to investigate how social stigma towards epileptics affects their treatment. Such research may reveal possible solutions that might reduce the influence of stigmatization on treatment outcomes and patient well-being. By elucidating the relationship between epilepsy and psychiatric disorders such as depression and anxiety, it may be possible to improve long-term health outcomes in patients with chronic diseases such as epilepsy. Our study clearly demonstrated that there is a relationship among the features of epileptics and levels of depression and anxiety. Although vast majority of the features and Hamilton scores of the patients were comparable between patients with complex partial seizures and generalized seizures, the history of unemployment was a significant parameter increasing the depression and anxiety scores. The history of unemployment may indicate the well-being and the treatment compliance of the epileptic patients.

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**TRANSPARENCY DECLARATION**

Competing interests: None to declare.

**REFERENCES**