Psychiatric Comorbidities in Epileptic Patients: The Role of Age, Gender and Duration of Epilepsy in North of Iran

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Abstract

Introduction: Psychiatric disorders in epileptic patients have an important role on the clinical approach and therapeutic options that are often neglected and treated poorly. The present study aimed to determine the role of psychiatric comorbidity in epileptic patients of Babol, north of Iran.
Method: This descriptive-analytical study was conducted in 2017 with a simple random sampling method on patients with epilepsy who admitted to the neurology department of Ayatollah Rouhani Hospital of Babol. The demographic checklist and SCL90 questionnaire were used. The Chi-square, T-test, Mann-Whitney, Pearson correlation coefficient and test-retest were used in SPSS V18 and P<0.05 was considered as statistically significant.
Results: Among the 150 examined patients, 88 (58.7%) were female and 63(42%) had epilepsy more than 10 years. The most common psychiatric disorder among epileptic patients was depression (68 patients = 45.3%) and anxiety (65 patients = 43.3%) patients. Also, the lowest prevalence was related to paranoid ideation and psychotic disorders. There was a significant relationship between age with somatic disorders (P=0.02) and phobia (P=0.01).
Conclusion: Anxiety and depression were the most common symptoms in epileptic patients. With an increase in age, the frequency of somatic disorders and phobias was significantly increased.

Keywords: Comorbidity, Epilepsy, Seizure, Psychiatry, Anxiety

Introduction

Epilepsy is one of the most common neurological diseases with an incidence of 0.5 to 2% in the general population that is caused by a frequent produce of seizure impulses by the brain [1]. The incidence of epilepsy varies from country to country and ranges from 45 per 100,000 per year in high-income countries to 81.7 per 100,000 people in low-income countries [2].

There are various treatments for epilepsy including medication, surgery, vagal nerve stimulation and having a ketogenic diet. However, the major drawback in treating epileptic patients is the non-compliance with the therapeutic guidelines, which is named as the therapeutic gap in the treatment of epilepsy [3]. Health system factors such as cost, distance,

medication availability and lack of medical personnel skills affect the therapeutic gap of epilepsy. On the other hand, the patient's related factors include lack of compilation and inappropriate use of traditional therapy instead of medical treatment, which leads to significant costs [4].

Generally, traditional beliefs and negative attitudes toward medical care, distance from health facilities, costs, learning inabilities, prolonged epilepsy and having focal seizures are among the most common causes of medical treatment failure [5].

Prolonged seizure activity can affect all aspects of a person's life, including immunity, memory, cognition, mood, and consequently the various aspects of the quality of life [6]. In addition, these patients suffer from other psychiatric disorders such as anxiety, depression, psychosis, and aggression, which is very common and varies from 19% to 62% [7]. Various studies have suggested the possibility of psychiatric disorders before, along and after epilepsy. However, researchers have found a strong link between epilepsy and psychiatric illnesses, but the nature of this relationship has not been determined accurately [8]. The most common psychiatric disorder in these individuals was reported major depressive disorder and obsessive compulsive disorder. Also, the rate of suicide in these patients was reported 8.1% [9].

Psychiatric comorbidities in patients with epilepsy have a key role in the clinical and therapeutic approach of these patients that affects different aspects of quality of life in epileptic patients [10]. On the other hand, psychiatric comorbidities are often neglected in patients with epilepsy and are treated improperly and lead to poor quality of life [11]. Studies in Iran also show the necessity of producing more high quality research on epilepsy and its related factors [9].

Lack of information in this issue can have an adversely effect on client life, because of the key role of psychiatric disorders in epileptic patients that finally lead to poor treatment. The aim of this study was to determine the most common psychiatric comorbidities in epileptic patients of Babol, North of Iran, to early diagnosis and treatment of them. Hopefully, the results of this study will be effective in planning and policy making.

Method

This descriptive-analytical study was performed in 2017 with a simple random sampling method. For this purpose, 150 patients with epilepsy who had admitted to the neurology department of Ayatollah Rouhani Hospital of Babol were included in this study. Also, patients with a history of other neurological diseases such as dementia, neuro-degenerative diseases, brain developmental disorders, hydrocephalus, etc., asthma, diabetes, cardiovascular disease, hypertension, mental retardation, and any motor disability were excluded from the study.

The data collecting tools included a demographic checklist and SCL90 questionnaire. The checklist of demographic features includes age, sex, marital status, education, and duration of epilepsy. The SCL-90 test firstly introduced by Derogatis, includes 90 questions (for evaluating the psychological symptoms) and 9 dimensions (Somatization, Obsessive-Compulsive, Interpersonal Sensitivity, Hostility, Phobic Disorder, Paranoid Ideation, Psychoticism, Depression and Anxiety). Grading and analyzing this test was based on 3 general indicators including Global Severity Index, Positive Symptom Distress Index and Positive Symptom Total [12].

Data collection was performed after the approval of the Ethics Committee of Babol University of Medical Sciences, Babol, Iran (no: MUBABOL.REC.1396.36).An informed consent was inquired before completing the questionnaires. The participants were assured that they could leave the study whenever they wanted.

Data were analyzed by descriptive statistics and statistical tests in Spss V18. The statistical significance level was also determined to be 0.05.

Results

In the present study, 150 patients with epilepsy were studied. Their demographic characteristics are presented in Table 1. The following table shows that 88 cases (58.7%) were female and 104 cases (69.39%) of the participants were married. Also, 75 cases (50%) were between the ages of 26-44 and 66 cases (44%) had a mid-school diploma or higher. In addition, most of the samples (42%) had been suffering from epilepsy for more than 10 years.

Table 1. Demographic characteristics of patients with epilepsy (n=150)

characteristics		n (%)
Gender	female	88 (58.7)
	male	62 (41.3)
Age (years)	≤25	38 (25.3)
	26-45	75 (50.0)
	46≤	37 (24.7)
Marital Status	single	46 (30.7)
	married	104 (69.3)
Education Status	illiterate	23 (15.3)
	below mid-school diploma	61 (40.7)
	mid-school diploma and higher	66 (44.0)
Duration of Epilepsy (years)	<1	28 (18.7)
	1-5	37 (24.7)
	5-10	22 (14.7)
	10<	63 (42.0)

The most common psychiatric disorder among patients with epilepsy was related to depression with 68 cases (45.3%) and anxiety with 65 cases (43.3%) and the lowest prevalence was related to paranoid ideation and psychoticism (Table 2).

According to Table 3, there was a significant relationship between age with somatization and phobias disturbances (p<0.05). In the present study, in patients with epilepsy, somatization and phobic disorders significantly increased with increasing age. At the same time, no significant relationship was observed between other comorbidities and age.

There was no significant relationship between psychiatric disorders and gender in patients with epilepsy (Table 4).

According to Table 5, there was no significant relationship between psychiatric disorders among patients with epilepsy and the duration of disease.

Table 2. Comorbidities of patients with epilepsy regarding psychiatric disorder

Comorbidity	frequency		
	Healthy (%)	Afflicted (%)	Severe (%)
Hostility	104 (69.3)	45 (30.0)	1 (0.7)
Anxiety	85 (56.7)	61 (40.7)	4 (2.7)
Obsessive-Compulsive	108 (72.0)	41 (27.3)	1 (0.7)
Interpersonal Sensitivity	113 (75.3)	37 (24.7)	0
Somatization	100 (66.7)	48 (32.0)	2 (1.3)
Psychoticism	125 (83.3)	25 (16.7)	0
Paranoid Ideation	118 (78.7)	29 (19.3)	3 (2.0)
Depression	82 (54.7)	62 (41.3)	6 (4.0)
Phobia	108 (72.0)	41 (27.3)	1 (0.7)

Table 3. Comorbidities of patients with epilepsy according to disorder criterion in different ages

Comorbidity	Disorder criterion	Age (years)			p-Value
		≤25	26-45	46≤	
Hostility	Healthy (%)	24 (63.2)	53 (70.7)	27 (70.3)	0.46
	Afflicted (%)	13 (34.2)	22 (29.3)	10 (27.0)	
	Severe (%)	1 (2.6)	0	0	
Anxiety	Healthy (%)	19 (50)	45 (60.0)	21 (56.8)	0.12
	Afflicted (%)	19 (50)	29 (38.7)	13 (35.1)	
	Severe (%)	0	1 (1.3)	3 (8.1)	
Obsessive-Compulsive	Healthy (%)	29 (76.3)	53 (70.7)	26 (70.3)	0.43
	Afflicted (%)	8 (21.1)	22 (29.3)	11 (29.7)	
	Severe (%)	1 (2.6)	0	0	
Interpersonal Sensitivity	Healthy (%)	29 (76.3)	58 (77.3)	26 (70.3)	0.70
	Afflicted (%)	9 (23.7)	17 (22.7)	11 (29.7)	
	Severe (%)	0	0	0	
Somatization	Healthy (%)	30 (78.9)	51 (68.0)	19 (51.4)	0.02
	Afflicted (%)	8 (21.1)	24 (32.0)	16 (43.2)	
	Severe (%)	0	0	2 (5.4)	
Psychoticism	Healthy (%)	34 (89.5)	64 (85.3)	27 (73.0)	0.12
	Afflicted (%)	4 (10.5)	11 (14.7)	10 (27.0)	
	Severe (%)	0	0	0	
Paranoid Ideation	Healthy (%)	29 (76.3)	60 (80.0)	29 (78.4)	0.44
	Afflicted (%)	9 (23.7)	14 (18.7)	6 (16.2)	
	Severe (%)	0	1 (1.3)	2 (5.4)	
Depression	Healthy (%)	27 (71.1)	38 (50.7)	17 (45.9)	0.21
	Afflicted (%)	10 (26.3)	34 (45.3)	18 (48.6)	
	Severe (%)	1 (2.6)	3 (4.0)	2 (5.4)	
Phobia	Healthy (%)	30 (78.9)	59 (58.7)	19 (51.4)	0.01
	Afflicted (%)	8 (21.1)	16 (21.3)	17 (45.9)	
	Severe (%)	0	0	1 (2.7)	

Table 4. Comorbidities of patients with epilepsy according to disorder criterion by gender

Comorbidity	Disorder criterion	Gender		p Value
		female	male	
Hostility	Healthy (%)	62 (70.5)	42 (67.7)	0.47
	Afflicted (%)	26 (29.5)	19 (30.6)	
	Severe (%)	0	1 (1.6)	
Anxiety	Healthy (%)	44 (50.0)	41 (66.1)	0.13
	Afflicted (%)	41 (46.6)	20 (32.3)	
	Severe (%)	3 (3.4)	1 (1.6)	
Obsessive-Compulsive	Healthy (%)	64 (72.7)	44 (71.0)	0.48
	Afflicted (%)	24 (27.3)	17 (27.4)	
	Severe (%)	0	1 (1.6)	
Interpersonal Sensitivity	Healthy (%)	64 (72.7)	49 (79.0)	0.37
	Afflicted (%)	24 (27.3)	13 (21.0)	
	Severe (%)	0	0	
Somatization	Healthy (%)	55 (62.5)	45 (72.6)	0.26
	Afflicted (%)	31 (35.2)	17 (27.4)	
	Severe (%)	2 (2.3)	0	
Psychoticism	Healthy (%)	72 (81.8)	53 (85.5)	0.55
	Afflicted (%)	16 (18.2)	9 (14.5)	
	Severe (%)	0	0	
Paranoid Ideation	Healthy (%)	67 (76.1)	51 (82.3)	0.29
	Afflicted (%)	18 (20.5)	11 (17.7)	
	Severe (%)	3 (3.4)	0	
Depression	Healthy (%)	47 (53.4)	35 (56.5)	0.34
	Afflicted (%)	39 (44.3)	23 (37.1)	
	Severe (%)	2 (2.3)	4 (6.5)	
Phobia	Healthy (%)	61 (69.3)	47 (75.8)	0.52
	Afflicted (%)	26 (29.5)	15 (24.2)	
	Severe (%)	1 (1.1)	0	

Table 5. Comorbidities of patients with epilepsy according to disorder criterion by duration of disease

Comorbidity	Disorder criterion	duration of epilepsy (years)				p Value
		<1	1-5	5-10	10<	
Hostility	Healthy (%)	20 (71.4)	25 (67.6)	18 (81.8)	41 (65.1)	0.50
	Afflicted (%)	8 (28.6)	11 (29.7)	4 (18.2)	22 (34.9)	
	Severe (%)	0	1 (2.7)	0	0	
Anxiety	Healthy (%)	14 (50.0)	21 (56.8)	15 (68.2)	35 (55.6)	0.48
	Afflicted (%)	14 (50.0)	16 (43.2)	6 (27.3)	25 (39.7)	
	Severe (%)	0	0	1 (4.5)	3 (4.8)	
Obsessive-Compulsive	Healthy (%)	24 (85.7)	25 (67.6)	17 (77.3)	42 (66.7)	0.31
	Afflicted (%)	4 (14.3)	11 (29.7)	5 (22.7)	21 (33.3)	
	Severe (%)	0	1 (2.7)	0	0	
Interpersonal Sensitivity	Healthy (%)	20 (71.4)	28 (75.7)	19 (86.4)	46 (73.0)	0.60
	Afflicted (%)	8 (28.6)	9 (24.3)	3 (13.6)	17 (27.0)	
	Severe (%)	0	0	0	0	
Somatization	Healthy (%)	24 (85.7)	22 (59.5)	17 (77.3)	37 (58.7)	0.10
	Afflicted (%)	4 (14.3)	15 (40.5)	5 (22.7)	24 (38.1)	
	Severe (%)	0	0	0	2 (3.2)	
Psychoticism	Healthy (%)	27 (96.4)	29 (78.4)	20 (90.9)	49 (77.8)	0.09
	Afflicted (%)	1 (3.6)	8 (21.6)	2 (9.1)	14 (22.2)	
	Severe (%)	0	0	0	0	
Paranoid Ideation	Healthy (%)	24 (85.7)	25 (67.6)	20 (90.9)	49 (77.8)	0.38
	Afflicted (%)	4 (14.3)	11 (29.7)	2 (9.1)	12 (19.0)	
	Severe (%)	0	1 (2.7)	0	2 (3.2)	
Depression	Healthy (%)	15 (53.6)	18 (48.6)	14 (63.6)	35 (55.6)	0.12
	Afflicted (%)	12 (42.9)	19 (51.4)	5 (22.7)	26 (41.3)	
	Severe (%)	1 (3.6)	0	3 (13.6)	2 (3.2)	
Phobia	Healthy (%)	22 (78.6)	27 (73.0)	17 (77.3)	42 (66.7)	0.22
	Afflicted (%)	6 (21.4)	10 (27.0)	4 (18.2)	21 (33.3)	
	Severe (%)	0	0	1 (4.5)	0	

Discussion

This descriptive cross-sectional study was carried out in the neurology department of Ayatollah Rouhani Hospital in Babol to determine the distribution of comorbidity in patients with epilepsy. The results of this study showed that the most common comorbidity in epileptic patients was anxiety and depression disorders. In addition, psychiatric disorders showed no significant correlation with gender and duration of the disease. There was also a significant relationship between age with somatic and phobias disturbances.

In the study of the prevalence of comorbidity in epileptic patients admitted to Ayatollah Rouhani hospital in Babol, the results showed that the most commonly reported comorbidities were anxiety and depression (43.4% and 45.3% respectively), and the lowest incidence was related to psychotic disorders. Mensah et al. and Rai et al.'s studies concluded that the prevalence of depression were 11.2% and 9.6% respectively [13, 14], which are in line with this study. In Ertekin et al.'s study, 29 patients were temporal lobe epilepsy, 27 patients were generalized idiopathic epilepsy and 30 patients were considered as the control group. In the temporal lobe epilepsy group the major depressive disorder with a prevalence of 17.2% was the most common disorder after obsessive compulsive disorder [14]. In the present study epilepsy was not categorized to subgroups, but depression was the most comorbidity in Babol epileptic patients. However, sample size, specific categorized group and different questionnaires were the differences of these two studies. In Sedighi et al.'s study, in Iran was conducted on 170 patients with idiopathic tonic-clonic seizure treated with antiepileptic drugs in 2013. Results showed that the prevalence of psychiatric disorders was 38.8%. Also, the most common psychiatric disorders among patients with epilepsy were obsessive-compulsive disorder (49.4%) and post-depression (47.6%), which was inconsistent with the results of the present study. In Sedighi et al.'s study, certain types of patients suffering epilepsy were included in the samples. In addition, the number of samples was higher and the age of the patients with epilepsy was lower than the present study [8].

The demographic and comorbidity variables showed that there was a significant relationship between age and somatic phobias. In addition, there was no significant relationship between psychiatric disorders and gender. Another study by Stefanello et al. which was conducted during 2011 on 153 patients with epilepsy in Brazil showed that, 75% of participants studying over the age of 42 were dealing with depression, while 25% depressive patients were at the age of 13 to 41 years old which is considered as statistically significant. In fact, as age increased , depression significantly increased too, which was not in line with this study [11]. In Phabphal et al.'s study that was conducted on 126 epileptic patients, the results showed that age, sex, marital status, education, and duration of illness have no significant relationship with anxiety. Also, there was no significant relationship between age, duration of epilepsy, education level and marital status with anxiety [15]. Another study in Turkey aimed at determining the state of fear, self-esteem and depression in patients with epilepsy in 2012. The tools used in the mentioned study included the Beck Depression Inventory, Social Anxiety Inventory and Coppersmith Confidence Questionnaire. This research was conducted among 132 patients with epilepsy between the ages of 21-52 years old and 61 healthy patients between the ages of 25 and 60 years. The results of this study showed that there was no significant difference between Beck Depression Inventory and age [16], which is inconsistent with the present study.

Concerning the goal of determining the distribution of comorbidity in patients with epilepsy admitted to Ayatollah Rouhani Hospital in Babol, the results showed that no significant relationship exists between psychiatric disorders among patients with gender in epileptic patients. However, in most of the psychiatric disorders studied in patients with epilepsy, the percentage of women was higher than that of men. Information on the distribution of psychiatric disorders by gender is presented in Table 4.

In Kobau et al.'s study, among the 115 patients with epilepsy, 49.5% of them were male. The results showed that 45.3% of men and 54.7% of women were struggling with depression. Although the proportion of women with depression among patients with epilepsy was higher than men, the relationship was not statistically significant [17], which was in line with the results of this study.

Concerning the goal of studying the distribution of comorbidity in patients with epilepsy by duration of illness, the results show that 42% of the participants in the study had epilepsy for more than 10 years. Also, in examining the relationship between the duration of the illness with each mental disorder, no significant difference was observed between the duration of the illness and psychiatric disorders.

In Mensah et al.'s study, it has been revealed that the duration of epilepsy in both MDD and non-MDD groups was 15 and 19 years, respectively, which was not significant [10]. One of the limitations of the present study was the problem of collecting complete information from the samples due to lack of cooperation between the patients. In addition, the present study was a descriptive-cross-sectional study with a limited sample size which reduces the level of generalizability to other populations.

Conclusion

The results of this study showed a significant difference between age with somatic and phobias in patients with epilepsy. Also, depression and anxiety were the most common comorbidities in epileptic patients. In addition, gender and duration of epilepsy was not statistically significant with psychiatric comorbidities in epileptic patients.

However, more extensive studies are needed to investigate comorbidity in patients with epilepsy with a larger sample size so that the incidence of these disorders can be adequately measured and the demographic characteristics can be accurately assessed. Carrying out in-depth studies in this field can help health system policies

to provide more interventions for comorbidity in patients with epilepsy. In this study, the SCL-90 questionnaire was used which is a questionnaire for assessing mental health. It is recommended to use other questionnaires that are more accurately evaluated by patients with epilepsy.

Acknowledgement

Reference

1. Beghi E, Hesdorffer D. Prevalence of epilepsy—an unknown quantity. J Epilepsia. 2014;55(7):963-7.
2. Ngugi AK, Kariuki S, Bottomley C, Kleinschmidt I, Sander J, Newton C. Incidence of epilepsy: a systematic review and meta-analysis. J Neurology. 2011;77(10):1005-12.
3. Meinardi H, Scott R, Reis R. On Behalf Of The Ilae Commission on the Developing World JS. The treatment gap in epilepsy: the current situation and ways forward. J Epilepsia. 2001;42(1):136-49.
4. Winkler AS, Mayer M, Schnaitmann S, Ombay M, Mathias B, Schmutzhard E, et al. Belief systems of epilepsy and attitudes toward people living with epilepsy in a rural community of northern Tanzania. J Epilepsy Behavior. 2010;19(4):596-601.
5. Mbuba CK, Ngugi AK, Fegan G, Ibinda F, Muchohi SN, Nyundo C, et al. Risk factors associated with the epilepsy treatment gap in Kilifi, Kenya: a cross-sectional study. J The Lancet Neurology. 2012;11(8):688-96.
6. Wiebe S, Eliasziw M, Bellhouse DR, Fallahay C. Burden of epilepsy: the Ontario health survey. J Canadian Journal of Neurological Sciences. 1999;26(4):263-70.
7. Doganavsargil-Baysal O, Cinemre B, Senol Y, Barcin E, Gokmen Z. Epilepsy and stigmatization in Turkey. J Epilepsy Behavior. 2017;73:100-5.
8. Sedighi B, Seifaddini R, Iranmanesh F, Mehr Alhasani Y. Antiepileptic drugs and mental health status of patients with epilepsy. Iranian Journal of Pharmacology and Therapeutics 2014;12(2):66-0.
9. Rasolabadi M, Rasouli-Ghahfarkhi SM, Ardalan M, Kalhor MM, Seidi J, Gharib A. Epilepsy research in Iran: A scientometric analysis of publications output during 2000-2014. J Acta Informatica Medica. 2015;23(6):374.
10. Mensah SA, Beavis JM, Thapar AK, Kerr M. The presence and clinical implications of depression in a community population of adults with epilepsy. J Epilepsy Behavior. 2006;8(1):213-9.
11. Stefanello S, Marín-Leon L, Fernandes PT, Li LM, Botega NJ. Depression and anxiety in a community sample with epilepsy in Brazil. J Arquivos de neuro-psiquiatria. 2011;69(2B):342-8.
12. Derogatis LR, Melisaratos N. The brief symptom inventory: an introductory report. J Psychological medicine. 1983;13(3):595-605.
13. Rai D, Kerr MP, McManus S, Jordanova V, Lewis G, Brugha TS. Epilepsy and psychiatric comorbidity: a nationally representative population-based study. J Epilepsia. 2012;53(6):1095-103.
14. Ertekin BA, Kulaksızoglu IB, Ertekin E, Gurses C, Bebek N, Gokyigit A, et al. A comparative study of obsessive–compulsive disorder and other psychiatric comorbidities in patients with temporal lobe epilepsy and idiopathic generalized epilepsy. J Epilepsy Behavior. 2009;14(4):634-9.
15. Phabphal K, Sattawatcharawanich S, Sathirapunya P, Limapichart K. Anxiety and depression in Thai epileptic patients. J Medical journal of the Medical Association of Thailand. 2007;90(10):2010.
16. KUTLU A, Gokce G, Buyukburgaz U, Selekler M. Self-esteem, social phobia and depression status in patients with epilepsy. J Noro Psikiyatri Arsivi. 2013;50(4):320.
17. Kobau R, Gilliam F, Thurman DJ. Prevalence of self-reported epilepsy or seizure disorder and its associations with self-reported depression and anxiety: results from the 2004 Healthstyles Survey. J Epilepsia. 2006;47(11):1915-21.