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The Prevalence of Depression among Adolescents with Epilepsy in Taif City 2016

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ABSTRACT

Despite the relatively frequent co-morbidity of depression and epilepsy and its negative consequences on the child' quality of life, they are under-diagnosed and often go untreated. To explore the prevalence of depression among epileptic adolescents aged between 12 and 18 years and its possible determinants among them. A cross sectional study was carried out among epileptic adolescents aged between 12 and 18 years, of both sexes attended the Neurology clinics at Alhada Military Hospital, Taif city, Kingdom of Saudi Arabia throughout 2016. Those with psychiatric history or on antidepressant medications were excluded from the study. The data were collected through an interview questionnaire including demographic characteristics of patients and epilepsy-related characteristics. Patients were identified by their medical record numbers. The patients` files were reviewed to complete their information required for the study through a checklist. The Patient Health Questionnaire (PHQ-9) was used for diagnosis of depression among the patients. The study included 84 patient with epilepsy. Their age ranged between 12 and 18 years with a mean of 15.5 years and SD of ±2.7 years. They were equally distributed regarding gender. Depression was reported among 89% of patients; it was mostly mild (43.9%) and moderate (30.5%). Moderately severe and severe forms were observed among 8.5% and 6.1% of patients, respectively. Most patients who had complications (80%) compared to 37.3% of those who hadn`t complications expressed moderate to severe depression, p=0.003. Also 73.3% of patients who didn`t show improvement with therapy compared to 37.7% of those showed improvement expressed moderate to severe depression, p=0.006. Other factors (demographic and epilepsy-related) were not significantly associated with depression and its severity among epileptic adolescents. Depression is a common psychological disorder among epileptic adolescents. It is more significantly reported among those with complications and not improved on medical therapy. Care should be paid to early diagnosis and proper management of depression among this population.

Keywords: Depression, Epilepsy, Adolescents, Prevalence

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INTRODUCTION

Epilepsy is a prevalent health problem among children. [1]Although most cases are managed efficiently by medication and patients have normal Intelligence question (IQ) and are expected to have a normal life, there is a need to monitor them from psychological point of view as well as learning ability as these two entities are more common in epileptic children than in the general population. [1,2]

Depression is one of the most common psychiatric disorders among children with epilepsy.[3] Worldwide, its prevalence varies in different studies from 23% to 33%.[4-7]

Depression in children with epilepsy differs from those without epilepsy and is frequently classified as 'atypical'.[8]The symptoms of depressive disorders in epilepsy are classified into four categories according to their temporal relation to seizure occurrence; preictal (preceding seizures by up to2 days), ictal (being an expression of the actual seizures or the aura), interictal (occurring independently from seizures), and postictal (occurring any time within the first 5 days following seizures).[8]Suicide attempt and suicidal ideation are significantly more frequent among epileptic patients than in the general population.[9]

Risk factors of depression among epileptic patients include family history of mental disorder, left sided focus, focus in temporal or frontal lobe, the fear of seizure, perceived stigma, learned helplessness and decreased social support. [2]

Despite the relatively frequent co-morbidity of depression and epilepsy and its negative consequences on the child' quality of life, they are under-diagnosed and often go untreated.[10]

Early detection of depression among epileptic children allows the physician to choose the proper anti epileptic drugs in combination with other interventions necessary to result in an optimal remission of seizures and psychiatric co-morbidity.[8]

In the present study, we aim to explore the prevalence of depression among epileptic children aged between 12 and 18 years and its possible determinants among them.

MATERIALS AND METHOD

A cross sectional study was carried out among epileptic children aged between 12 and 18 years, of both sexes attended the Neurology clinics at Alhada Military Hospital, Taif city, Kingdom of Saudi Arabia throughout 2016. Those with psychiatric history or on antidepressant medications were excluded from the study.

The data were collected through an interview questionnaire including demographic characteristics of patients (age, gender, residency), epilepsy-related characteristics (family history, age of onset, duration, medications used, mode of therapy, frequency of epileptic episodes, complications, other- chronic diseases, and improvement).Patients were identified

by their medical record numbers. Their files were reviewed to complete their information required for the study through a checklist prepared for that purpose.

The Patient Health Questionnaire (PHQ-9) composed of 9 statements with a score ranging from 0 to 3 for each setting, was used for diagnosis of depression among the patients. It incorporates DSM-IV depression diagnostic criteria with other leading major depressive symptoms into a brief self report tool. [11]

A total score ranged between 0 and 4 was considered "no depression", 5-9 "mild depression", 10-14 "moderate depression", 15-19 "moderately severe depression" and 20-27 "severe depression". [12]

Information from the records was kept confidential and were not used in any purposes other than research.

Data entry and analysis were performed using the Statistical Package for Social Sciences, version, 22. Chi-square or Fischer exact test (for small frequencies) were used to test for the association between depression and related factors and p-value of a value <0.05 was considered statistically significant.

Table 1: Baseline characteristics of epileptic adolescents (n=84).

	Frequency	**Percentage**
Age (years)		
≤15	40	48.8
>15	42	51.2
Gender		
Male	41	50.0
female	41	50.0
Residency		
Urban	73	89.0
Rural	9	11.0
Family history of epilepsy		
Yes	15	18.3
No	67	81.7
Age at onset of epilepsy (years)		
<6	34	41.5
≥6	48	58.5
Duration of epilepsy (years) (n=79)		
≤3	32	40.5
4-6	23	29.1
>6	24	30.4
Medication used (n=79)		
Kepra	10	12.7
Depakin	29	36.7
Tegretol	11	13.9
Others	3	3.8
Two drugs	20	25.3
Three drugs	6	7.6
Other medications for other diseases		

No	78	95.1
Yes	4	4.9
Other methods for treating epilepsy		
No	70	85.4
Yes	12	14.6
Complications		
Yes	15	18.3
No	67	81.7
History of other chronic diseases		
Yes	7	8.5
No	75	91.5
Frequency of episodes/year (n=80)		
≤10	70	87.5
>10	10	12.5
Improvement (n=80)		
Yes	61	76.3
No	19	23.7

RESULTS AND DISCUSSION

The study included 84 children with epilepsy. Their age ranged between 12 and 18 years with a mean of 15.5 years and SD of ±2.7 years. More than half of them (51.2%) aged over 15 years. They were equally distributed regarding gender. Majority of them (89%) resided in urban areas of Taif. Family history of epilepsy was reported among 18.3% of the children. Age at onset of epilepsy was below 6 years among 41.5% of the participants whereas the duration of epilepsy was more than 6 years among 30.4% of valid patients. sodium valproate was the most frequent used medication for epilepsy(36.7%) and almost a quarter of patients (25.3%) reported taking two medications. Other methods for treatment of epilepsy were reported by 14.6% of patients. Complications and history of other chronic diseases were reported by 18.3% and 8.5% of them, respectively. The frequency of epileptic episodes exceeded 10 per year among 12.5% of epileptic children. Most of them (76.3%) reported improvement of their status with therapy.

Depression was reported among 89% of patients; it was mostly mild (43.9%) and moderate (30.5%). Moderately severe and severe forms were observed among 8.5% and 6.1% of patients, respectively as shown in figure 1

As illustrated in table 2, most patients who had complications (80%) compared to 37.3% of those who hadn`t complications expressed moderate to severe depression, p=0.003. Also 73.3% of patients who didn`t show improvement with therapy compared to 37.7% of those showed improvement expressed moderate to severe depression, p=0.006. Other factors were not significantly associated with depression and its severity among epileptic children.

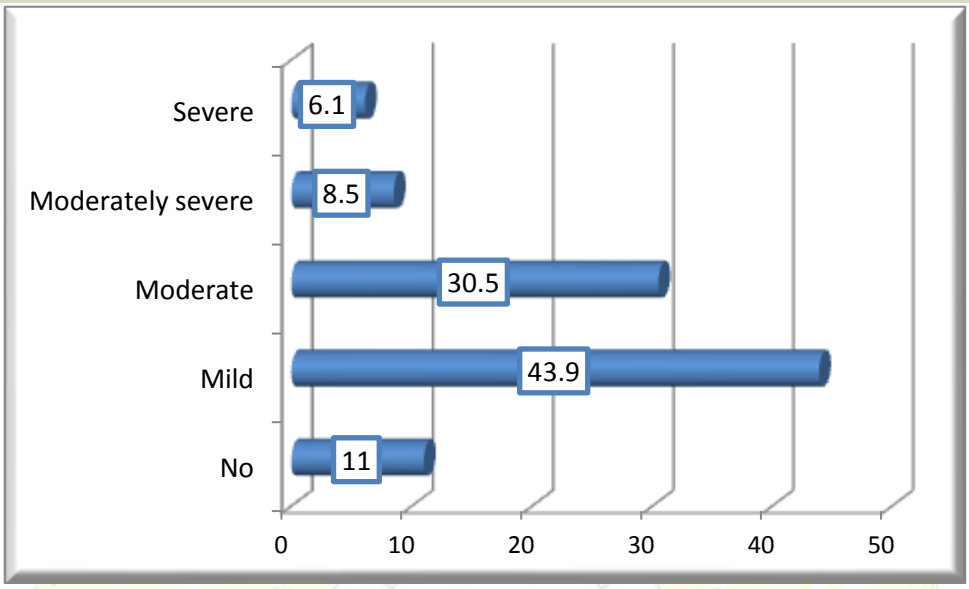

Figure 1: Depression among epileptic adolescent patients, Taif, Saudi Arabia

Table 2: factors associated with depression among epileptic adolescents, Taif

	Depression		**p-value**
	No/mild N=45 N (%)	**Moderate-severe N=37 N (%)**	
Age (years)			
≤15 (n=40)	21 (52.5)	19 (47.5)	
>15 (n=42)	24 (57.1)	18 (42.9)	0.673
Gender			
Male (n=41)	24 (58.5)	17 (41.5)	
Female (n=41)	21 (51.2)	20 (48.8)	0.506
Residency			
Urban (n=73)	41 (56.2)	32 (43.8)	
Rural (n=9)	4 (44.4(	5 (55.6)	0.375*
Family history of epilepsy			
Yes (n=15)	7 (46.7)	8 (53.3)	
No (n=67)	38 (56.7)	29 (43.3	0.480
Age at onset of epilepsy (years)			
<6 (n=34)	15 (44.1)	19 (55.9)	
≥6 (n=48)	30 (62.5)	18 (37.5)	0.099
Duration of epilepsy (years) (n=79)			
≤3 (n=32)	19 (59.4)	13 (40.6)	
4-6 (n=23)	14 (60.9)	9 (39.1)	
>6 (n=24)	10 (41.7)	14 (59.3)	0.320
Medication used (n=79)			
Kepra (n=10)	5 (50.0)	5 (50.0)	
Depakin (n=29)	15 (51.7)	14 (48.3)	
Tegretol (n=11)	5 (45.5)	6 (54.5)	
Others (n=3)	2 (66.7)	1 (33.3)	
Two drugs (n=20)	13 (65.0)	7 (35.0)	
Three drugs (n=6)	3 (50.0)	3 (50.0)	0.895
Other medications for other diseases			
Yes (n=78)	44 (56.4)	34 (43.6)	
No (n=4)	1 (25.0)	3 (75.0)	0.238*

Complications Yes (n=15) No (n=67)	 3 (20.0) 42 (62.7)	 12 (80.0) 25 (37.3)	 0.003*
Other methods for treating epilepsy Yes (n=7) No (n=75)	 3 (42.9) 42 (56.0)	 4 (57.1) 33 (44.0)	 0.390*
History of other chronic diseases Yes (n=7) No (n=75)	 3 (42.9) 42 (56.0)	 4 (57.1) 33 (44.0)	 0.390*
Frequency of episodes/year (n=80) ≤10 (n=70) >10 (n=10)	 39 (55.7) 5 (50.0)	 31 (44.3) 5 (50.0)	 0.734
Improvement (n=80) Yes (n=61) No (n=19)	 38 (62.3) 5 (26.3)	 23 (37.7) 14 (73.7)	 0.006

*Fisher exact test

DISCUSSION

Depression in children with epilepsy is a very common but often unrecognized disorder. Epileptic children may experience impairment of successful development because both epilepsy and depression are characterized by a chronic course and a poor long-term psychosocial outcome. [13, 14]Therefore, this study was carried out, and up to our knowledge this is the first trial in Kingdom of Saudi Arabia (KSA),to explore depressive disorders among pediatric Epileptics' patients in Taif city, KSA

In the current study, the prevalence of depression among epileptic children aged between 12 and 18 years was 89%; mostly mild (43.9%) and moderate (30.5%). Moderately severe and severe forms were observed among 8.5% and 6.1% of patients, respectively. In another recent study carried out in Egypt,[15] the prevalence of mild depression among epileptic children aged between 7 and 10 years was18%. Their study was case-control study and they revealed that there was no statistically significant association between the prevalence of depression and epilepsy.

In Turkey,[16] the level of depressive symptoms was higher in the epileptic children aged between 8 and 16 years with no statistically significant difference with controls. The aforementioned studies recruited small sample size of patients (50 and 30 children, respectively) which could explain the statistical insignificance despite the difference in rate of depression between epileptic children and their controls. Jones et al. (2007)[17]studied children aged 8–18 years with recent onset epilepsy and a healthy control group and showed significantly higher rates of depressive disorders (22.6% versus 4%).

Overall, the prevalence of depression among epileptic children ranges from 5.2%[18] to 39.6%.[19]Which is greatly lower than that reported in the current study.

The variations between these results and the results of the other studies could be explained by a number of factors, which may affect the prevalence of depression. First : the age of epileptic children in the current study was 12–18 years whereas the other studies have included children of different age group. Supporting this explanation, Oguz et al.[7]observed that depression was more prevalent in adolescents (12–18 years of age) with epilepsy as compared with younger children (9–11 years of age). Thome-Souza et al. (2004)[20]also found a predominance of depression in adolescents and found that age was an important predictive factor. Second, using of different diagnostic instruments and scales. Finally, design of the study as well as various methods of recruiting of samples (from the community or hospital-based) could be responsible of that variation.

Regarding the factors associated with depression among epileptic children, in the present study they were classified as demographic factors and epilepsy-related factors. As regards demographic factors, no factor was significantly associated with depression in our cohort. Turky et al[19] showed that female epileptic children were at higher risk for depression compared to male subjects. They attributed their finding to the fact that girls are being more realistic than boys, and boys being usually more optimistic than girls. In adolescents depression is mostly self-rated and based on own perception and self-concept of participants. Therefore, girls may self-score higher than boys on depression assessment. However, in the present study, gender was not an independent predictor for depression among epileptic children.

With regard to age as a risk factor for depression in epileptic children, Oguz et al [7]revealed that depression was significantly more frequent in 12-18 year olds than the 9-11 year old group ($P<0.05$). Thome-Souze et al[20] showed that depression has been diagnosed in 75% of epileptic adolescents (13-17years) compared to 25% in epileptic children aged<6 years ($P<0.0001$). In this study, we did not confirm age as a risk factor for depression, simply because we included only patients in the age group 12-18 years.

Concerning epilepsy-related factors, Oguz et al[7] indicated that in epileptic children with epilepsy duration longer than 3 years, depression is more likely to develop ($P<0.05$). A similar finding by Roeder et al[21] showed that longer duration of epilepsy increased the severity of depressive symptoms. In contrast, Jones et al[17] indicated that children with recent onset epilepsy presented a higher rate of depressive disorders compared to controls, $P=0.01$).In the present study, the association of depression with duration of epilepsy was found not significant.

We could not find any correlation between developing depression and age of onset of epilepsy in the current study. However, studies on population based sample of epileptic

children showed that children with early onset epilepsy (<4 years) are more likely to have behavioral problems(P<0.001).[22]

Few studies showed the association between depression and the number of antiepileptic drugs (AEDs). Roeder et al[21] stated that greater number of anti-epileptic drugs was independently associated with severe symptoms of depression, suggesting the number of AEDs to be a risk factor for undetected symptoms of depression. Oguz etal[7] stated that depression was significantly higher in patients receiving more than one AED, compared to monotherapy.

Establishing an association between AEDs and the symptoms of depression in epileptic children was found to be fraught with difficulties; due to side effects of AEDs imitating the symptoms of depression or behavioral problems, e.g. sleep problems, change in appetite, concentration difficulties or psychomotor retardation.[18]

Regarding type of AEDs, Brentet al[23] showed an association between depression and phenobarbital compared to carbamazepine, and demonstrated a much higher prevalence of major depression (40% vs 4%) in epileptic children treated with phenobarbital. In the present study, type of AED was not significantly associated with depression among epileptic children. Overall, it seems that the effect of AEDs on the development of depression needs further investigation.

Frequency and/or recurrence of episodes is another proposed risk factor for depression in children with epilepsy. However, in the present study and consistent with others,[16, 18, 20, 24]no significant relationship between frequency of episodes and the prevalence of depression in epileptic children could be detected.

These findings are supported by a review of the literature [13] that suggested depression cannot be independently predicted by epileptic episodes frequency. However in contrast to the findings of this study, Turky et al. (2008)[19]showed that seizure frequency was significantly associated with depression. Austin et al. (2002)[25]found a significant relationship between frequent seizures and internalizing problems and depression in children.

Familial factors have also been found to be an important predictive factor for depression. This could not be supported by the current study, as no significant relationship between depression and family history of depression was found. Plioplys (2003)[13]found that, family history of depression has been reported in up to 50% of patients with epilepsy and depression. However, the low prevalence of psychiatric disorders among the families of the epileptic children in this study could be due to cultural beliefs that ignore or deny the diagnosis of psychiatric troubles.

It is found that prevalence of depression was significantly higher among epileptic children with complications and those not improved on medical therapy in the present study. This is

illustrated well in a study done by Caplan et al. (2005)[18] who found higher rates of depression in children with epileptic complications and those who did nor show improvement with medical management.

This study is limited by its conduction in one health care setting in Taif with relatively small sample size. So, the generalizability of its findings on the whole country is questionable. Some important factors were not included such as type of epilepsy. We included patients in a specific age (12-18 years) with expected higher rate of depression. Despite of these limitations, the study gives a clue of the existence of this important unrecognized psychological problem among epileptic patients.

CONCLUSION

Depression is a common psychological disorder among epileptic adolescents. It is more significantly reported among those with complications and not improved on medical therapy. Care should be paid to early diagnosis and proper management of depression among this population.

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