

Determinants of Depression in Epileptic Patients in Pakistan

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Determinants of Depression in Epileptic Patients in Pakistan

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Abstract: The present research is an endeavor to study the determinants of depression among patients with epilepsy in Pakistan. For this purpose, 100 diagnosed epileptic patients (N=100), having an equal number of male (n=50) and female (n=50) were selected from the indoor and outdoor patient departments of different hospitals. The age range of the epileptic patients was 12-70 years. Siddique Shah Depression scale (SSDS, 1992) was used to measure the depression among epileptic patients. The level of depression was found to be highest in women, being in early adulthood phase of life, being single, employed and not having a significant family history.

Keywords: Depression, Epilepsy, Pakistan

INTRODUCTION

Epilepsy is one of the most known chronic neurological disorders which is characterized by recurrent seizures caused by sudden abnormal neuronal discharges in the brain (Yang et.al, 2021). Seizures involve abnormal electrical activity in the brain that causes an involuntary change in body movement or function, sensation, awareness, or behavior (Chaka et.al). The epidemiological incidence of epilepsy is 50 million people worldwide, sharing the 0.5 % of global burden of all diseases (Mula & Kaufman, 2020). With a countrywide prevalence of 0.98%, more than 2.2 million people have epilepsy in Pakistan (ILAE, 2020).

People with epilepsy are susceptible to psychiatric disorders. Depression is arguably the most common psychiatric co-morbidity, which affects approximately 25% to 30% of people with epilepsy (Leung, Leung, & Chang, 2020). Depression is disruption of mood characterized by loss of interest, discouraged temperament, and unsettling influence of sleep, problem in appetite and psychomotor action, trouble to concentrate or making decision, blameworthy or evil feeling, easily tiredness and repeating considerations of death or suicide (Nigussie et.al, 2021).

Data from population-based studies have revealed a more complex, bidirectional relation between the two disorders, whereby not only are people with epilepsy at greater risk of developing depression but also people with depression are at greater risk of developing epilepsy. Depression can directly increase seizure recurrence through the mechanism of sleep deprivation;

disappointment to recognize sadness or lacking treatment can lead to suicide (Jackson & Turkington, 2005). The existing common neurobiological pathogenic mechanisms shared by depressive disorders and epilepsy include neurotransmitter disturbances in the central nervous system such as serotonin, norepinephrine, dopamine, glutamate, and gamma-aminobutyric acid (GABA); endocrine disturbances such as hyperactive hypothalamic-pituitary-adrenal axis, resulting in high serum concentrations of cortisol; and inflammatory mechanisms (in particular, interleukin-1 β has been found to play a pathogenic role in patients with mood disorders) (Mula, 2016).

Depression is the most frequent psychiatric comorbidity in people with epilepsy with a prevalence rate ranging from 9.5 to 63% (Wong et. al, 2014; Kanner et.al, 2012; Sheer, 2012). It leads to underemployment, lower rates of marriage, and a greater chance of social isolation when compared to counterparts (Nabukenya et. al. 2014; Baker, 2002)

The high magnitude of depression among people living with epilepsy negatively influences their quality of life and increases suicidal tendency (Kralj-Hans et.al, 2014; Gabb & Barry, 2005). Factors such as side effects of antiepileptic drugs, perceived stigma, fear of seizures, discrimination, joblessness, lack of social support, increased seizure frequency, and non-adherence to their medication have contributed to inducing depression among epilepsy patients (Grabowska-Grzyb, Jędrzejczak, Nagańska, & Fiszer, 2006; Jones, Butler, Thomas, Peveler, & Prevett, 2006).

Objective of the Study: To study level of depression in relation with different demographic variables (age, gender, marital status, occupation and family history of epilepsy) of depressed epileptic patients.

Hypotheses

1. Depression will be higher in early adulthood as compared to adolescents and late adulthood among epileptic patients.
2. Epileptic women will have higher depression as compared to men.
3. Depression will be higher in unmarried epileptic patients as compared to married.
4. Depression will be higher in employed epileptic patients as compared to unemployed epileptic patients.
5. Depression will be higher in patients who do not have a significant family history of epilepsy as compared to patients with significant family history of epilepsy.

METHODOLOGY

Sample: Sample size consisted of diagnosed epileptic patients (N=100), having an equal number of male (n=50) and female (n=50) selected from Pakistan Institute of Medical Sciences (PIMS) Islamabad, Benazir Bhutto Shahid Hospital Rawalpindi and P.O.F Hospital Wah Cantt. Patients were selected from the outdoor and indoor patient departments of the hospitals. The age range of the patients was from 12 to 70 years. The sample was divided into three categories, 12-19 years (adolescents), 20-34 years (early adulthood), 35 years and above (late adulthood) according to Erikson's psychosexual stages of life. Those patients were selected who were able to read and write easily. Sample was selected on the basis of purposive sampling.

Instruments: Siddiqui Shah Depression Scale (SSDS) were used in the present study. Siddiqui Shah Depression scale (Siddiqui, 1992) has been used to measure the depression in the present

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study. SSDS is an indigenously developed depression scale in Urdu than concurs well with other measures of depression and is reliable and internally consistent. SSDS is a 36-item scale arranged in 4-point Likert scale ranging from 1(never) to 4 (every time). The high score on the scale indicates the presence of symptoms of depression. According to scoring procedure “never” is given value of “1” and “all the time” given value of 4. The score of the subject is the aggregate of the categories checked on all the items. The minimum score is 36 and the maximum can be 144 is the items of the scale were ordered in such a manner that it is comprised of two equal halves, each containing equal number of items pertaining to the varying intensity of depression from normal sadness and mild depression to severe depression. In SSDS, item no. 1,3,5,9,10,16,25 pertain to hopelessness aspect of depression, item no. 6,7,17, 24, 30, 34 to interpersonal conflicts with friends and family, item no. 9, 15, 16, 22, 23, 27 to personal worthlessness and incompetence, item no. 4, 11, 21, 32 to somatic complaints and item no. 13, 36 to death wish.

The SSDS has been reported to be a valid and reliable instrument to assess the depression in clinical and non-clinical Pakistani population. Siddiqui (1992) has reported that SSDS has significant split half reliability for clinical group (0.79) and (0.80) for the non-clinical group along with the spearman correlation for the full scale for both clinical (0.84) and non-clinical group (0.89). It has also highly significant internal consistency for both groups i.e., an alpha coefficient of 0.91 for the clinical group and 0.89 for the non-clinical group. The SSDS correlated significantly with Zong’s Depression scale ($r=0.55$) and psychiatrists rating for depression ($r =0.40$). The SSDS has also shown correlation with subjective mood ratings for the clinical group ($r=0.64$).

RESULTS

Demographic details: Along with these instruments a separately developed demographic sheet (age, gender, marital status, occupation), type of epilepsy and family history of epilepsy was used.

Table - 1: Socio Demographic Distribution of Epilepsy Patients

Variables	Frequency	Percentage (%)
Age		
12-19	68	34
30-34	102	51
35-65	30	15
Gender		
Male	100	50
Female	100	50
Marital Status		
single	158	79.0
married	38	19.0
divorced/widow	4	2.0
Occupation		
employed	90	45.0
unemployed	110	55.0
family history of psychiatric illness		
Sig	30	15.0
non-sig	170	85.0

Table - 2: One Way Analysis of Variance of Epileptic patients on SSDS and subscales of SSDS with Different Age Groups (N=100)

Scale	12-19years		20-34 years		35 years &>		F	p
	Adolescent		Early adulthood		Late adulthood			
	(34)		(51)		(15)			
	M	SD	M	SD	M	SD		
SSDS	84.55	24.80	94.76	33.33	72.66	16.04	3.82	0.02
Hopelessness	16.00	4.28	18.41	7.29	12.73	3.95	5.58	0.00
Interpersonal conflicts	15.38	5.95	15.72	5.56	12.40	3.52	2.21	0.11
Guilt	3.20	1.12	4.92	2.35	3.33	1.04	10.20	0.00
Personalworthlessness	14.76	4.76	16.03	6.47	10.20	3.83	6.28	0.00
Somaticcomplaints	8.29	2.26	9.21	3.47	9.06	2.93	0.97	0.38
Death wish	4.35	2.28	5.25	2.13	3.86	1.50	3.38	0.03

Note: SSDS=Siddique Shah Depression Scale, df =2,97

Table 2 shows the differences in the mean scores of epileptic patients belonging to different age groups. The difference in the means of ages of adolescents, early adulthood and late adulthood indicate that individuals belonging to the group of early adulthood are showing highest score on SSDS than the rest of age groups. Table also shows that epileptic individuals belonging to early adulthood scored highest on the hopelessness subscale as compared to other subscales.

Table - 3: Mean, Standard deviations and t- values on SSDS and on its subscales for male andfemale epileptic patients (N=100)

Scale	Male (34)		Female (51)		t	p	95% CL		Cohen's d
	M	SD	M	SD			LL	UL	
SSDS	77.94	25.04	98.02	30.28	3.61	.00	-31.10	-9.05	-0.72
Hopelessness	14.78	5.47	18.70	6.44	3.27	.00	-6.29	-1.54	-0.65
Interpersonal conflicts	13.98	5.37	16.24	5.49	2.07	.04	-4.41	-.10	-0.41
Guilt	3.52	1.59	4.68	2.24	2.98	.00	-1.93	-.38	-0.59
Personal worthlessness	12.94	5.07	16.52	6.16	3.17	.00	-5.82	-1.33	-0.63
Somatic complaints	8.22	2.61	9.54	3.03	2.21	.02	-2.50	-.13	-0.46
Death wish	4.10	1.94	5.38	2.19	3.09	.00	-2.01	-.45	-0.61

Note: SSDS=Siddique Shah Depression Scale; CL= Confidence Interval; LL=Lower Limit; UL= Upper Limit, df =98

Table 3 shows the differences in the mean scores of male and female epileptic patients on Siddique-Shah depression scale. The difference in the means of male and female epileptics on SSDS show that female epileptic patients are more depressed than male patients because the female epileptic patients scored higher on the SSDS with highest score on the hopelessness subscale and showing higher means as compared to males.

Table - 4: Mean, Standard deviations and t- values on SSDS and on its subscales for married and unmarried epileptic patients (N=100)

Scale	Unmarried (81)		Married (19)		t	p	95% CL		Cohen's d
	M	SD	M	SD			LL	UL	
SSDS	91.96	30.03	72.68	16.12	2.58	.00	4.16	33.42	0.79
Hopelessness	17.68	6.32	12.78	4.63	3.16	.00	1.82	7.95	0.88
Interpersonal conflicts	15.64	5.81	12.68	3.52	2.12	.03	0.19	5.77	0.61
Guilt	4.29	2.10	3.26	1.52	2.00	.04	.00	2.04	0.56

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Personal worthlessness	15.75	5.92	10.57	3.40	3.65	.00	2.37	7.99	1.07
Somatic complaints	8.88	3.12	8.57	2.69	0.39	.69	-1.23	1.85	0.10
Death wish	4.93	2.26	4.00	1.56	1.70	.09	-.15	2.02	0.47

Note: SSDS=Siddique Shah Depression Scale; CL= Confidence Interval; LL=Lower Limit; UL= Upper Limit, df =98

Table 4 shows the differences in the mean scores of unmarried and married epileptic patients on Siddique-Shah depression scale. The difference in the means of unmarried and married epileptic patients on SSDS shows that unmarried epileptic patients are more depressed than married epileptic patients. Unmarried epileptics scored higher on the SSDS scale with highest score on the hopelessness subscale than the married epileptic patients

Table - 5: Mean, Standard deviations and t- values on SSDS and on its subscales for employed and unemployed epileptic patients (N=100)

Scale	Employed (45)		Unemployed (55)		t	p	95% CL		Cohen's d
	M	SD	M	SD			LL	UL	
SSDS	103.7	29.44	75.13	22.53	5.49	.00	18.24	38.87	1.08
Hopelessness	19.80	6.46	14.23	4.87	4.90	.00	3.31	7.81	.97
Interpersonal conflicts	18.15	4.55	12.61	5.00	5.73	.00	3.61	7.45	1.15
Guilt	4.82	2.28	3.50	1.56	3.39	.00	.54	2.08	.67
Personal worthlessness	17.57	5.75	12.40	4.95	4.83	.00	3.05	7.30	.96
Somatic complaints	9.37	3.17	8.47	2.88	1.49	.13	-.29	2.10	.29
Death wish	5.86	2.15	3.81	1.67	5.33	.00	1.28	2.81	1.06

Note: CL= Confidence Interval; LL=Lower Limit; UL= Upper Limit; SSDS= Siddique Shah Depression Scale, df =98

Table 5 shows the differences in the mean scores of employed and unemployed epileptic patients on Siddique-Shah depression scale. The difference in the means of employed and unemployed epileptic patients on SSD scale proves that employed epileptic patients are more depressed than unemployed patients.

Table - 6: Mean, Standard deviations and t- values on SSDS and on its subscales for significant and non-significant family history of epileptic patients (N=100)

Scale	Significant ^a (26)		Non-significant ^b (74)		t	p	95% CL		Cohen's d
	M	SD	M	SD			LL	UL	
SSDS	68.92	19.23	94.67	29.55	4.13	.00	-38.09	-13.40	-1.03
Hopelessness	12.76	4.15	18.13	6.30	4.03	.00	-8.00	-2.72	-1.00
Interpersonal conflicts	12.30	4.78	16.09	5.46	3.13	.00	-6.18	-1.39	-0.73
Guilt	2.92	1.09	4.51	2.11	3.65	.00	-2.45	-.72	-0.94
Personal worthlessness	11.65	4.39	15.81	6.00	3.23	.00	-6.70	-1.60	-0.79
Somatic complaints	7.80	2.62	9.25	3.09	2.13	.03	-2.79	-.09	-0.50
Death wish	3.26	1.51	5.25	2.12	4.39	.00	-2.88	-1.09	-1.08

Note: SSDS= Siddique Shah Depression Scale; CL= Confidence Interval; LL=Lower Limit; UL= Upper Limit, df =98, a Patients who have a positive family history of epilepsy, b Patients who do not have a positive family history of epilepsy

Table 6 shows the differences in the mean scores of epileptic patients having a significant and non-significant family history of epilepsy on Siddique-Shah depression scale. The differences in

the means of family history of epilepsy in epileptic patients on SSDS show that epileptic patients who do not have a positive family history of epilepsy are more depressed.

DISCUSSION

Depression is more common in epileptic patients as compared to other disorders on the other hand it also appears that epilepsy is also associated with depression; both disorders have a bidirectional relationship. There is evidence of involvement of similar neurotransmitters in the both disorders (Kanner&Balabanov, 2002). There is apparently less work done upon the bidirectional nature of epilepsy and depression in Pakistan and its need of the time that researchers should focus this alley.

In Pakistani society people are living in stressful environment because of lack of resources, poverty and unemployment, unable to fulfill their basic needs. In addition, when epilepsy comes as lifelong disability people find themselves as handicap, unable to fulfill their wishes and desires, feel themselves as a burden on society and cannot survive independently. Further, Pakistani society hardly accepts the reality of mental illness. The ignorance and denial create much more severe symptoms and formulate impairments leading to depression.

Impact of sociodemographic variables were also found in relation to depression in epilepsy. It was hypothesized that depression will be higher in early adulthood as compared to adolescents and late adulthood among epileptic patients.

In the present research epileptic patients who are in their early adulthood and adolescence have shown higher scores on SSDS as compared to epileptic patients who are in their late adulthood (Table 2). Young adulthood and adolescence are the time of high demands and challenges. Epilepsy creates a hindrance in filling their wishes and desires; they are unable to pursue certain careers, unable to move around independently, dependent upon their significant others for performing different activities plus their distorted image in the eyes of their peers who do not consider them as normal individuals, they are being feared of or ridiculed for their seizures. People in their close vicinity show negative attitudes towards these youngsters because of it these young people are afflicted by the feelings of shame and guilt. These findings are supported by the study in which the most prevalent type of epilepsy in Pakistan is generalized epilepsy (Usman et al., 2007). All these things can lead to higher incidence of depression in young adults and adolescents as compared to other age groups. These findings are supported by other international findings. In one study conducted on youth's attitude towards epilepsy, it was found out that attributional styles of adolescents and problems in maintaining healthy family relationships are related to depression (Dunn, Austin, &Huster, 1999).

Young age is the time in which self-image goes under profound modifications. They consider seizure as a physical insult or a suffering that deteriorates their self-image. At the same time societal attitudes cause more pain as compared to the seizure itself hence they convey more feelings of depression as compared to the other age groups. It was found that young lot who convey more feelings of hopelessness felt more stigmatized by their disorder (Eklund &Sivberg, 2003).

The present study also aims to explore other important demographic characteristics of gender and marital status. Seventh and eighth hypotheses of the study were, women epileptics will have higher depression as compared to men and depression will be higher in unmarried epileptic patients as compared to married epileptic patients.

Females were found to be more depressed as compared to males in the present study (Table 3) as females are more emotionally vulnerable as compared to males. In a country like Pakistan where

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literacy rate is low and economic conditions are poor, women are subject to more prejudice and discrimination. Here, epilepsy plays an adverse role and females felt more stigmatized and in turn develop the feelings of depression. There are certain labels attached especially to epileptic women, most frequent of which are subject to demonic possession and contagious. Hence, they are also forbidden to take part in the daily house hold activities especially in the cooking of food. There is another explanation for higher incidence of depression in females that there are some neurologic links between epilepsy and depressive symptoms in women, presence of depressive etiology in women epileptics can be a result of hormone deficiency as seizures disorder is found to have links with defects in reproductive functioning (Hajszan&MacLusky, 2006). Another study conducted by Beghi, Roncolato, and Visonà (2004) reported that depression is present in higher incidence among women epileptics of childbearing age. Risk factors for depression also include being unemployed, underlying disability and severity of the disorder.

The present study showed that the unmarried epileptic patients are more depressed than married ones (Table 4). Society forbids the rights of an epileptic patient to get married and have children as they could transfer epilepsy to their spouses and children believing them to be suffering from a contagious illness. Research literature also supports the notion that patients of epilepsy are less likely to get married that increases their emotional burden and makes them more vulnerable to depression (Batzel&Dodrill, 1997). Males' epileptic patients are less likely to marry as they have limited economic resources and think that they could not full fill the basic needs of their family while female epileptic patients deny because they think that they are unable to full fill the house hold responsibilities where society also discourage them from getting married and considers them as a handicap. There is also a factor of lack of companionship as they do not have a companion for life for sharing their emotional stress.

It was hypothesized that depression will be higher in employed epileptic patients as compared to unemployed epileptic patients. Out of 100 patients only 45 were employed and showed higher scores on depression scale (Table 5). In Pakistan most of the population belongs to low socioeconomic class and lives in the rural areas and where facilities for basic health and life are impoverished. Employment is a factor in contributing to the enhancement of depression because employed epileptic patients are subject to discriminatory behavior, being less productive as they become handicapped and unable to give their full output and hence have low paid wages in work environment. Work has also been done in the sports arena regarding handicap children and mental health (Aqsa, Sadeea, &Saadia, 2020). Also, as they are earning, they wish to keep up the high standards of living but because of low income they cannot compete those standards that are prevalent in their vicinity. Depression is also high as they cannot afford the cost of antiepileptic drugs; they are unable to get basic needs of daily living where the cost of antiepileptic drugs becomes an additional financial burden (Usman et al., 2007). There is also evidence of avoidance of working with an epileptic patient in the coworkers (Harden, Kossoy, Vera, &Nikolov, 2004). Epilepsy is found to be a predisposed condition and has genetic traces (Steinlein, 2004). The present research also studied the role of family history of epilepsy in developing depression in epileptic patients. Results of the study showed that Depression will be higher in patients who do not have a significant family history of epilepsy as compared to patients with significant family history of epilepsy. In this present study out of 100 epileptic patients only 26 were found have a positive family history of epilepsy; results indicate that there is a difference in the mean scores of epileptic patients having a significant and non-significant family history of epilepsy on depression scale (Table 6). Patients not having a significant history of epilepsy were found to be more depressed as compared to the patients having a significant family history of epilepsy. This

could be because it's a new experience to the patients having non-significant family history, they are unfamiliar with the problems and shortcomings a person could face as a result of epilepsy, therefore they become more depressed as compared to individuals who are already aware of the condition and circumstances related to it. Individuals belonging to the families in which epilepsy is a prevailing condition are aware from the strategies how they could manage themselves also they are not the victim of stigma and ridicule as their surroundings are already aware of the situation but individuals who face the adversary for the first time find it difficult to cope with it. They are unable to manage themselves and the challenges that life has posed for them. Similarly, it is difficult for them to change the negative views that prevailed in their immediate social circle.

CONCLUSION

It can be concluded from the results of the study that depression is common disorder in patients with epilepsy. This study showed that depression tends to affect specific subgroup of people who exhibit specific demographic variables. Being young adults, female gender, being single, being employed and having a non-significant family history of epilepsy are significant risk factors for depression. Early recognition of depression symptoms in people with epilepsy should be of great concern for healthcare providers to help them provide appropriate counseling regarding adherence and substance use.

Limitations: Like any other empirical study, the generalization and the validity of the findings of this research are limited with respect to such issues as sampling, measurement and alternative explanations of the said phenomenon of depression in epilepsy. Following limitations must be taken into account for further researches in the similar field.

1. Data was collected through purposive convenient sampling technique. Due to time restraint and practical reasons it could not be collected randomly nationwide.
2. The sample size was not large enough; a large sample size may yield more fruitful findings.

Recommendations: Every research opens avenues for further investigations. Similarly, this research also provides the following pathways to improve our findings.

1. Future research should be undertaken with an enlarged sample to provide the generalizability of results on a national level.
2. Other psychological variables like, personality characteristics, social support, psychological wellbeing and locus of control can also be considered in the future studies.
3. Sample of children should be included and comparison groups can be made to find the differences between pediatrics, adolescents and adults.

Implications: The present study aim to study depression in different types of epilepsy. The possible implications of the study are as follows.

1. This research confirms the deep connections between depression and epilepsy. Further research could be done to confirm the bi directional nature of epilepsy and the mechanisms underlying its bidirectional nature, brain pathways, chemical and neurological associations between depression and epilepsy.
2. It can open door for the research because women are mostly associated with depression in epilepsy. Are there any similar hormonal changes and brain pathology in depression and epilepsy for women?

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3. It will help other researchers in future to replicate the findings or produce similar or better researches in this area.
4. Present research can be presented as a valuable literature in the concerned area, for all the persons who will use these pages as reference.

The present research will be of interest to psychologists, neurologists and psychiatrists, social workers and for the community at the larger level.

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