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ORIGINAL ARTICLE

Frequency of Non-Adherence to Antiepileptic Drugs in Patients with Epilepsy

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ABSTRACT

Background: Epilepsy is a chronic medical ailment or condition that typically causes unexpected, unprovoked repeated seizures that impair a number of mental and physical abilities. Non adherence to antiepileptic drugs is an emerging issue.
Objective: To measure the frequency of non-adherence of AEDs among epilepsy patients presenting to a tertiary care hospital
Material and Methods: This study was conducted at Chandka Medical College Hospital Larkana and the duration of this study in which this study was completed was 6 months from 29-9-2020 to 29-3-2021. A total of 183 patients were the participants of this study and all the patients were calculated through the calculator of WHO. The method of non-probability sequential sampling was utilized. Forms for ethical approval and permission were completed. The Morisky 8-Item Medication Adherence Questionnaire was used to assess non-adherence. SPSS was used to analyze the data. The P value of 0.05 was deemed important.
Results: 183 patients were the participants of this study. There were 103(56.3%) male and 80(43.7%) female. Mean age of patients was 32.1 years ±5.6SD. Among all the patients 183(100%), 68(37%) had non adherence while 115(63%) did not had non adherence to antiepileptic drugs. A substantial association between non adherence and residential status (p=0.02), duration of diseases (p=0.00), educational status (p=0.00), employment status (p=0.00), marital status (p=0.00) and type of medication dose(p=0.00) was found.
Conclusion: Non adherence in epileptic patients, resistance to AED therapy has been identified as a key impediment to obtaining the therapeutic aim of seizure independence. Frequency of non-adherence in epileptic patients was moderately high.
Keywords: Non adherence, antiepileptic drugs, epilepsy

INTRODUCTION

Epilepsy is a chronic medical ailment or condition that causes spontaneous, unprovoked repeated seizures that impact a wide range of mental and physical activities. It is the most prevalent neurological illnesses, disturbing about three million individuals in the United States and around fifty million globally. One of the earliest brain ailments to be described was epilepsy [1]. It was referenced almost 3,000 years ago in ancient Babylon. The unusual conduct induced by some seizures has given rise to countless beliefs and biases over the centuries. The name epilepsy comes from the Greek word epilam-banein, which means "attack or seizure." People used to believe that epileptics were attacked by demons or gods. However, about 400 B.C., Hippocrates, an early physician [2,3], suggested that epilepsy was a brain disorder—and he was accurate. A person is diagnosed with epilepsy when two or more unprovoked seizures occur that cannot be explained by a medical condition such as fever or medication withdrawal. Seizures can occur as a result of a genetic susceptibility to the disease or as a result of brain injury, but the cause of epilepsy is mostly unknown. Epileptic seizures are caused by abnormal, excessive, and hypersynchronous electrical firing of neurons in the brain [4].

Each kind of epilepsy has a distinct natural history and therapeutic response. This variation is most likely owing to the many underlying causes of epilepsy and the large spectrum of epilepsy syndromes with discrete clinical and pathological characteristics pointing to a specific underlying etiologic mechanism [5].

Seizures arise in a number of forms, each with different behavioral alterations and electrophysiological abnormalities that are frequently visible in scalp electroencephalographic (EEG) recordings. A seizure is a short epileptic event in which brain function is disrupted. A single seizure may not usually establish the presence of epilepsy [6]. 10% of people will experience a seizure at some time in their life. Seizures might last from a few seconds to many minutes. Convulsions, loss of consciousness, blank stares, lip smacking, or jerking actions of the arms and legs are some of the signs or symptoms that patients and health care personnel may miss. A seizure has a clear beginning, middle, and end [7,8].

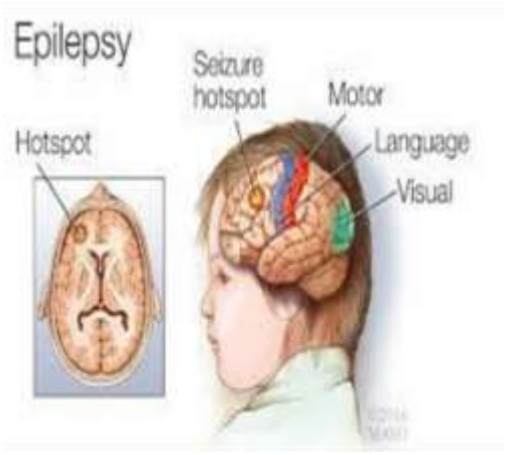

Figure 1: Epilepsy

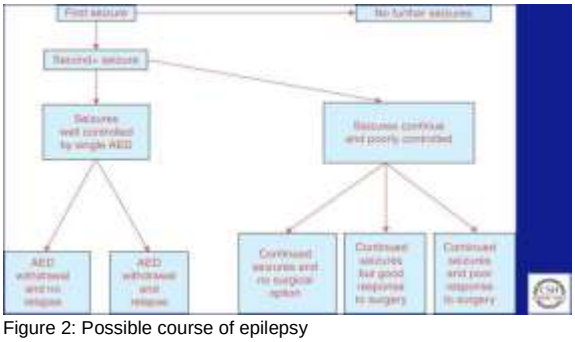
Figure 2: Possible course of epilepsy

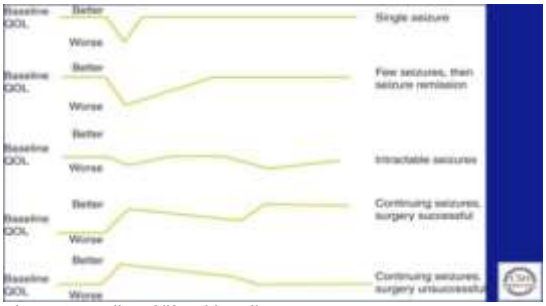

Figure 3: quality of life with epilepsy

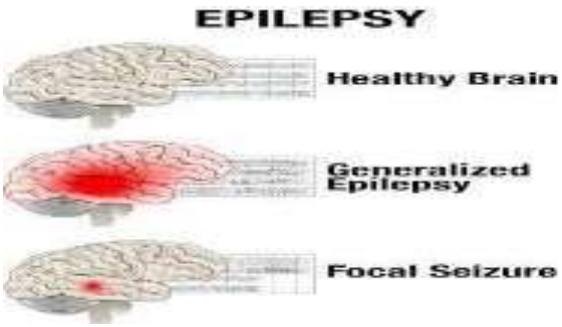

Figure 4: Comparison of healthy and epilepsy brain Diagnostic Evaluation:

MATERIALS AND METHODS

This study was carried out at Chandka Medical College Hospital Larkana and the duration of this study was Six months from 29-9-2020 to 29-3-2021. A total of 183 patients were the participants of this study and all the patients were calculated through the calculator of WHO. The method of non-probability sequential sampling was utilized. Forms for ethical approval and permission were completed. The Morisky 8-Item Medication Adherence Questionnaire was used to assess non-adherence. SPSS was used to analyze the data. The Chi-square test was used. The P value of 0.05 was deemed significant. The inclusion criteria of the Patients diagnosed with epilepsy (as per defined by our operational definition) at least one year previously and taking therapy with at least one AED, regardless of conventional or non-standard treatment**.** No change in AEDs in the last three months. The age of the patients was from 18 to 65 years. And both male and female patients were chosen. Patients with co-morbidities such as diabetes or ischemic heart disease were excluded from the trial, as were patients who were unable to answer to an interview or were unwilling to engage in the study. The study was carried out with the agreement and permission of the Hospital Ethical Committee. Patients with epilepsy, as defined by our operational definition, who were taking AEDs and met the inclusion and exclusion criteria for our investigation were contained within our study after informed written agreement was gained from the patients.

The trainee researcher took a clinical history as well as thorough demographic information. The Morisky 8-Item Medication Adherence Questionnaire was used to assess non-adherence to AEDs (Annexure-I). A cumulative score of higher than 2 on the Morisky 8-Item Medication Adherence Questionnaire was judged positive for non-adherence to AEDs. To ensure data quality and compliance, the trainee researcher collected all of the data himself. All data collection was documented on a predesigned proforma, which is provided as Annexure-II. SPSS Version 20.0 was used to enter and evaluate the data. For qualitative factors such as gender, non-adherence to AEDs, educational status, employment status, residence status, marital status, and type of medication dosage, frequencies and percentages were determined. For quantitative data such as age, sickness duration, and MMA Questionnaire score, the mean standard deviation was computed. The stratification-controlled effect modifiers such as age, gender, length of illness, educational status, employment status, residence status, marital status, and kind of medication dosage. SPSS software was use on the data which were collected for the study and chi-square test was applied, with a P-value of 0.05 deemed significant.

RESULTS

183 patients were the participants of this study in which 103(56.3%) male and 80(43.7%) female. There were 57(31.1%) patients were from the age group 18-30 years age group and 26 (68.9%) patients in 31-65 years age group. Duration of illness was ≤2 years in 90(49.2%) patients and >2 years in 93(50.8%) patients. Education was ≤metric in 44(23.9%), intermediate in 36(19.6%, ≥graduation in 32(17.4%) patients while 71(38.8%) were uneducated. Employment status was government in 23(12.6%), farmer in 20(10.9%), business in 31(16.9%), unemployed in 40(21.9%), students in 24(13.1%), daily labor in 28(15.3%) and others in 17(9.3%) patients. Residential area was rural in 88(48.1%) and urban 95(51.9%). Marital status was single 70(38.3%), married 84(45.9%) and divorced/widowed 29(15.8%). Types of medication dose was once a day in 77(42.1%), two time a day 57(31.1%) and three times a day 49(26.8%) as shown in table 1. Mean age of patients was 32.1 years ±5.6SD. Mean duration of illness was 2.5years±1SD. Mean MMA questionnaire scores were 1.81±1.6SD as shown in table 2. Among all the patients 183(100%), 68(37%) had non adherence while 115(63%) had medium to high adherence as shown in figure 3. Among all the males 103(56.3%), 33(18%) had non adherence while 70(38.3%) did not had non adherence. Similarly, among all the females 80(43.7%), 35(19.1%) had non adherence while 45(24.6%) did not had non adherence (p=0.124) as shown in table 3.

Among all the patients in age group 18-30 years 57(31.1%), 22(12%) had non adherence while 35(19.1%) did not had non adherence. Similarly, among all the patients in 31-65 years age group 126(68.9%), 46(25.1%) had non adherence while 80(43.7%) did not had non adherence (p=0.869) as shown in table 4. Among all the patients with duration of illness ≤2 years 90(49.2%), 57(31.1%) had non adherence while 33(18%) did not had non adherence. Similarly, among all the patients with duration of illness >2 years 93(50.8%), 11(6%) had non adherence while 82(44.8%) did not had non adherence (p=0.00) as shown in table 5. Majority of uneducated patients had non adherence as compared to patients with ≤Metric, intermediate and ≥graduation (23.5%, 0%, 9.8% and 3.8% respectively. p=0.00) as shown in table 6.

Table 1: Demographic Characteristics

Demographic Characteristics	Frequency (N=183)	Percentage (100%)
Gender Male	103	56.3%
Female	80	43.7%
Age categories 18-30 years	57	31.1%
31-65 years	26	68.9%
Duration of illness ≤2 years	90	49.2%
>2 years	93	50.8%
Education Uneducated	71	38.8%
≤Metric	44	23.9%
Intermediate	36	19.6%
≥graduation	32	17.4%
Employment status Government employee	23	12.6%
Farmer	20	10.9%
Business	31	16.9%
Unemployed	40	21.9%
Students	24	13.1%
Daily labor	28	15.3%
Others	17	9.3%

Residential area		
Rural	88	48.1%
Urban	95	51.9%
Marital status		
Single	70	38.3%
Married	84	45.9%
Divorced/widowed	29	15.8%
Type of medication dose		
OD	77	42.1%
BD	57	31.1%
TDS	49	26.8%

Table 2: Quantitative Characteristics

Quantitative variables	Mean ± SD	Min-Max
Age	32.1 years ±5.6SD	20-49
Duration of illness	2.5years±1SD	1-4
MMA questionnaire scores	0-5	

Figure 5: Frequency of Non-Adherence

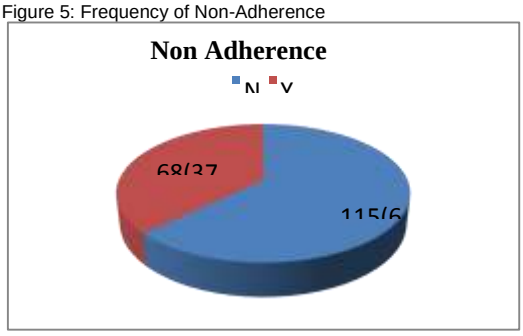

Table 3: Stratification of Non-Adherence With Respect To Gender

Gender	Non adherence No	Yes	Total	P value
Male	70(38.3%)	33(18%)	103(56.3%)	0.124
Female	45(24.6%)	35(19.1%)	80(43.7%)	
Total	115(62.8%)	68(37.2%)	183(100%)	

Table 4: Stratification Of Non Adherence With Respect To Age

Age	Non adherence No	Yes	Total	P value
18-30 years	35(19.1%)	22(12%)	57(31.1%)	0.869
31-65 years	80(43.7%)	46(25.1%)	126(68.9%)	
Total	115(62.8%)	68(37.2%)	183(100%)	

Table 5: Stratification Of Non Adherence With Respect To Duration Of Illness

Duration of illness	Non adherence No	Yes	Total	P value
<2 Years	33(18%)	57(31.1%)90(49.2%)		0.00
>2 years	82(44.8%)	11(6%)	93(50.8%)	
Total	115(62.8%)	68(37.2%)	183(100%)	

Table 6: Stratification Of Non Adherence With Respect To Education

Education	Non No	adherence Yes	Total	P value
Uneducated	28(15.3%)	43(23.5%)	71(38.8%)	0.00
≤Metric	44(24%)	0(0%)	44(24%)	
Intermediate	18(9.8%)	18(9.8%)	36(19.7%)	
≥Graduation	25(13.7%)	7(3.8%)	32(17.5%)	
Total	115(62.8%)	68(37.2%)	183(100%)	

DISCUSSION

Non-adherence to AED therapy has been identified as a key impediment to obtaining the therapeutic aim of seizure independence in epileptic patients. Non-adherence was found in 37% of the participants in our research [9,10]. It was comparable to Gabr and Shams' hospital-based study from Riyadh, Saudi Arabia. Nonadherence was detected in 38.3 percent of the subjects in their study. Buck et al. observed that 72 percent of patients were compliant in a community-based epilepsy research [11], but 28 percent admitted to missing their AED. 54 In another research, 32 (59%) of 54 patients recruited from a hospital epilepsy clinic were classed as nonadherent to their medications55. Nonadherence to AED treatment was found to be as high as 64% in a Malaysian clinic-based study and 66.2 percent in another [12,13].

A comparable non-adherence rate to our study was reported by Liu et al. 48.1 percent and Molugulu et al. 49.3 percent reported non-adherence rates comparable to our research. The disparity might be explained by various selection criteria and the use of different tools to examine participants' adherence and cultural practices. Peoples living in the other countries have different types of social values and cultures [14], which might lead to differences in their attitudes about treatment. In a South African survey, Alaqeel and Sabbagh discovered that 16.2 percent of participants thought epilepsy was incurable and that roughly 50 percent believed in nonmedical treatment. This investigation was followed by an awareness campaign. Similar efforts should be created to raise awareness of AED [15,16,17].

We found no statistically significant relationship between demographic factors such as age and gender and AED adherence. This conclusion is consistent with earlier research outlining the variables associated with AED adherence [18]. Other researchers 61 have found a significant relationship between age and self-reported adherence. Buck et al. discovered that failure to comply is more prevalent in younger patients, while Tan et al.63 discovered that 74.2 percent of patients with poor adherence were under the age of 40. According to one study [19], every year increase in age 64 results with a 3% reduction of AED nonadherence. Our study demonstrated no correlation between gender and adherence, which is consistent with other studies65. In contrast to our findings, other studies have discovered, in comparison to males, women are more likely to use AEDs. More large-scale research is needed to determine the specific link of age and gender with medication non-adherence in our region [20].

Drug adherence can also be affected by the age at which the sickness began and the length of the condition. Longer illness duration is regarded to be detrimental to compliance. In another investigation, absence of dosage was observed to be more common with longer treatment duration68. According to Liu et al., the only factor that influenced AED adherence was the longer period of treatment. Tan et al. found a strong positive association between epilepsy duration and adherence, in contrast to prior investigations. It was hypothesized that patients with prolonged illness duration see AED use as a usual part of life.

However, a substantial correlation was discovered between the duration of illness and adherence to AEDs in our analysis, which is consistent with previous investigations, including one from South Africa. We did not evaluate if a link could be found between the rate of non-adherence and seizure type in our research. Ferrari et al. and Guo et al [21]. were similarly unable to link the rate of non-adherence to a specific epileptic condition or seizure type. Gabr and Shams reported no significant difference in AED adherence between individuals with generalized epilepsy and those with focal epilepsy. In our study, AED adherence differed considerably across individuals on monotherapy, dual treatment, and polytherapy. Although non-adherence was greater in polytherapy and dual therapy patients than in monotherapy patients [22], it was statistically insignificant (P = 0.62). Sweileh et al. discovered that non-adherence was not connected with monotherapy or polytherapy/number of drugs. Some researchers, on the other hand, discovered that patients on monotherapy were substantially more adherent than individuals on polytherapy. In our study, seizure frequency and control were substantially linked with adherence rate (P = 0.00), which is consistent with previous research [23]. Those who did not take their medications as prescribed had poor seizure control as compared to patients who took their AEDs as prescribed. Other research has found a link

between the frequency of seizures and the rate of non-adherence. Jones et al [24]. discovered that poor seizure control was also substantially linked with nonadherence. In a cohort of patients, forgetfulness was the most prevalent reason, followed by a lack of time owing to a busy daily routine, resulting in nonadherence; a similar observation was observed by Arul et al. Research found that forgetfulness was the leading cause of non-adherence. Polytherapy, drug side effects, and poor counselling by the treating physician were all cited as causes for nonadherence in approximately an equal percentage of patients [25]. The reported prevalence of AED non-adherence and discovered factors/predictors impacting compliance in various research are presented in.

CONCLUSION

Non-adherence to AED therapy has been identified as a key impediment to obtaining the therapeutic aim of seizure independence in epileptic patients. Non-adherence was relatively common in epileptic individuals. Patients should be counselled thoroughly on the impact of AED non-adherence on seizure management by their treating physicians. As part of ordinary clinical practise, strategies should be adopted to measure adherence completely, which might otherwise be a cause of apparent treatment failure. To raise awareness, neighborhood, institutional, and national awareness programmes should be conducted.

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