

ASSESSMENT OF LEVEL OF ADHERENCE TO THE ANTI-EPILEPTIC DRUGS AMONG PATIENTS WITH EPILEPSY

Nitin Kumar Jasvantlal Barot¹, Pragma Prakash Chandra Khanna²

¹Assistant Professor, Department of General Medicine, GMERS Medical College and General Hospital, Vadnagar, Mehsana, India.

²Associate Professor, Department of General Medicine, GMERS Medical College and General Hospital, Vadnagar, Mehsana, India.

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Corresponding Author:

Dr. Pragma Prakash Chandra Khanna,

Email: drpragyakhanna@gmail.com

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Abstract

Background: Epilepsy is one of the commonest chronic neurological disorders with serious health consequences. Treatment adherence is one of the determinants of seizure control. Our study assessed the level of adherence to AEDs in children and factor associated with nonadherence. **Materials and Methods:** A cross-sectional descriptive study was conducted tertiary care institute of India for the duration of 1 year. 100 patients were included in this study that gave written consent and had been taking at least one AEDs for at least 6 months. Only those patients with normal neurological and cognitive development and no other severe comorbidities were included in this study. Patients and their parents were individually administered a structured questionnaire consisting of personal and demographic information, self-prepared questionnaire to check compliance and validated questionnaire called Morisky medication adherence scale (MMAS-8). **Results:** High adherence was found in males. The most common reason for non-compliance was problem in remembering that was seen in 42% of the patients. 22% of the patients had problems in sticking themselves and 18% had problems with buying the drugs. Among poor adherence patients, all had the problem in remembering which was statically significant. 37% of poor adherence patient had problem with taking, 68% with sticking and 42% with buying that was statistically significant. **Conclusion:** The present study found that socioeconomic class and type of epilepsy have a significant influence on the adherence of PWE to AED therapy, and that forgetfulness is the primary reason for AED nonadherence among PWE. In the present research study, patients are not stick to their therapy, buy the drugs or had problem to remember to take their medication.

INTRODUCTION

Epilepsy affects 70 million people worldwide.^[1] Long-term antiepileptic drug (AED) administration remains the mainstay of epilepsy treatment. In up to 67% of patients with epilepsy (PWE), AEDs effectively eliminate or reduce the frequency of seizures.^[2] Medication adherence refers to the extent to which a patient's behaviour corresponds with the recommendations of a health professional. Medication adherence is usually better when there is greater patient involvement in the treatment choice, as well as cooperation and mutual agreement between the health provider and the patient.^[2] Nonadherence rates among PWE are reported to be 30%–50%.^[3] It is well established that patients with suboptimal adherence levels are more likely to have seizures that are associated with increased number of hospital admissions and healthcare costs.⁴

Epilepsy can restrain activities, decrease quality of life, occupational ability, professional goals and social integration of patients, increases hospital admissions and mortality.^[5] The goal of treatment of epilepsy includes minimizing the risk of recurrent seizures and AED side effects, and maintaining normal psychosocial and educational/vocational adjustment.^[6]

Adherence to medication is defined as the extent to which a person's behavior in taking medication corresponds with the agreed recommendation from a health care provider.^[7] The prevalence of non-adherence to AEDs in patients with epilepsy ranges from 20% to 80% depending on the populations studied, definition used for non-adherence, and research methods.^[8]

Estimates of adherence to antiepileptic drugs in children are variable in different studies depending on the population studied and method used. A study

in Uganda revealed that AED adherence by self-report was 80% but only 22% by drug levels.^[9] On the other hand, a multiple-methods assessment of adherence to AEDs revealed non-adherence in 33% of children with epilepsy in Northern Ireland.^[10] Adherence is influenced by several factors that include socioeconomic factors, the health care system, the characteristics of the disease, the treatment the patient receives, and patient-related factors.^[11] Some of the predictors of adherence identified in previous studies include duration of treatment, seizure type and parental depressed mood, seizure frequency, pill burden and drug costs, comorbidities, stigma, parent and child satisfaction with medical care, and medication adverse effects.^[12-17]

Adherence to AEDs is utmost important but due to poor resources in government setup like frequent drug shortages, poor patients not able to afford drugs as prescribed as ours, it is difficult to maintain adherence to AEDs. Our study assessed the level of adherence to AEDs in children and factor associated with nonadherence.

MATERIALS AND METHODS

A cross-sectional descriptive study was conducted tertiary care institute of India for the duration of 1 year. 100 patients were included in this study that gave written consent and had been taking at least one AEDs for at least 6 months. Ethical approval was taken from the institutional ethical committee and written informed consent was taken from all the participants.

Inclusion Criteria

Patients with diagnosed with epilepsy for at least 6 month, administered at least one AEDs, with normal neurological and cognitive development, without other severe co-morbidities and consented to participate in the current study were included in the study.

Exclusion Criteria

Patients with age 18 years, taking AEDs for the treatment other then epilepsy excluded from the study

Patients and their parents were individually administered a structured questionnaire consisting of personal and demographic information, self prepared questionnaire to check compliance and validated questionnaire called Morisky medication

adherence scale (MMAS-8)18 MMAS-8 is composed of 8 items, out of which the items from 1 to 7 are yes/no questions (except item 5) where no answers receive a score of 1.0, and yes answers receive a score of 0. The score is reversed for item 5. Item 8 is measured based on a 1 to 5 Likert scale. The total scores range between 0 and 8, where 8 is considered as high adherence, 6-8 as moderate adherence, and <6 as poor adherences.

Statistical Analysis

The recorded data was compiled and entered in a spreadsheet computer program (Microsoft Excel 2007) and then exported to data editor page of SPSS version 15 (SPSS Inc., Chicago, Illinois, USA). For all tests, confidence level and level of significance were set at 95% and 5% respectively.

RESULTS

The study was conducted in a tertiary care hospital in India. 100 pediatric patients were enrolled in this study. The baseline characteristics of the study population and their correlation with adherence were mentioned in Table 1. High as well as poor adherence both were seen in age group of 11 to 18 with $p=0.86$. High adherence was found in males (70% as compared to female (30%); however, the difference was not statistically significant ($p=0.23$). The adherence in urban population was found to be higher as compared to rural population with $p=0.02$. 50% of high adherence population belonged to upper lower class as compared to poor adherence population among which 56% belonged to lower class ($p=0.1$). Those patients who were on multiple AEDs had poor compliance as compared to those on only one AEDs but not statistically significant ($p=0.4$). The most common reason for non-compliance was problem in remembering that was seen in 42% of the patients. 22% of the patients had problems in sticking themselves and 18% had problems with buying the drugs. Among poor adherence patients, all had the problem in remembering which was statically significant. 37% of poor adherence patient had problem with taking, 68% with sticking and 42% with buying that was statistically significant with $p<0.05$. Only 5% of poor adherence patients had the reason of drugs side effect which was statistically not significant with $p=0.32$.

Table 1: Correlation of diverse variables with adherence levels

Variables	High adherence, n (%)	Moderate adherence, n (%)	Poor adherence, n (%)	P value
Gender				
Male	42 (70)	8 (53.3)	13 (52)	0.23
Female	18 (30)	7 (46.6)	12 (48)	
Age				
1-4	18 (30)	6 (40)	6 (24)	0.86
5-10	20 (33.3)	5 (33.3)	6 (24)	
11-18	22 (38.33)	4 (26.6)	13 (52)	
Socioeconomic class				
Lower	10 (18.33)	8 (53.3)	14 (56)	

Lower middle	18 (30)	3 (20)	5 (20)	0.1
Upper lower	30 (50)	4 (26.6)	6 (24)	
Upper middle	2 (3.3)	0	0	
Number of drugs				
1	45 (75)	7 (46.6)	7 (28)	0.4
>1	15 (25)	8 (53.33)	18 (72)	
Region				
Rural	22 (36.6)	7 (46.6)	17 (68)	0.02*
Urban	38 (63.3)	8 (53.3)	8 (32)	

* indicates statistically significance at $p \leq 0.05$

DISCUSSION

Adherence to AED is a challenge in the management of epilepsy. Although poor adherence is considered to be one of the major causes of non-responsiveness to AED therapy, this has not been studied extensively in India. Hence, we assessed the extent of AED adherence, as well as the factors influencing AED adherence among PWE.

The 100 patients were enrolled in this cross-sectional study. In our study, 60%, 15% and 25% had high adherence, moderate adherence and poor adherence respectively. Similar studies were conducted by Fadare et al, Pattoo et al and Yang et al the proportion of patients having high, moderate and low adherence were 17.2% 38.3%, and 44.5%, 48%, 34%, and 19%, 21.3%, 51.4%, and 27.3%, respectively.^[17-19] In other studies that were conducted in Nigeria and Uganda, the prevalence of nonadherence were 21% and 46%.^[20,21] Multiple factors are associated with non-adherence to the AEDs among epilepsy patients like low socio-economic status, type of seizure, number of AEDs, duration of therapy, cost of therapy.^[22] Urban patients were high adherent to the AEDs as compared to rural patients. It might be because of low education status to release the importance of AEDs and its adherence, low-income source to afford AEDs. Mbuba et al in did the study and revealed factors associated with non-adherence and association of low socioeconomic among poor adherence patients.^[23]

Males were found to have high adherence as compared to female patients. Liu J et al in 2013 also observed adherence to AEDs among males were more as compared to females.^[24] Women were found often more negative than men about the use of drugs in the study conducted by Jung et al. It might be because women are more sensitive to the adverse drug reactions due to this drugs.^[25] A study by Johnbull et al.^[26] reported a similar observation, in that gender did not affect the adherence rate in their study.

Patients on monotherapy were more adherent as compared on multiple AED therapy but this correlation was statistically not significant. It might be because monotherapy improves adherence by offering better tolerability and avoidance of drug interaction. Chauhan et al from India, Hovinga et al from United State in 2008 and Tan et al from Malaysia revealed in their studies that monotherapy improved the adherence by providing better

tolerability and decrease drug interactions.^[27-29] The studies by Gabr and Shams.^[30], Bautista and Rundle-Gonzalez.^[31] and Harimanana et al.^[32] found that patients on monotherapy were significantly more adherent to medication than those who were on polytherapy. This has been attributed to the complexity of a treatment regimen involving a larger number of pills that need to be taken at different time intervals, which increases the likelihood of missed doses.^[33]

In our study the most common reason for poor adherence was problem in remembering of taking drugs. The 68% and 37% had problem with sticking and taking the drugs respectively, which was statistically significant. The 42% patients were not able to buy drugs which were statistically significant. From all patients who were buying their medication 55% were known to be nonadherent. Mbuba et al conducted the similar study in Kenya and revealed similar results.^[23] A similar study conducted by Gurumurthy et al in which 94.6% of poor adherence patients had problem in remembering of drug intake as seen in our study.³⁴ This finding is in accordance with those of studies conducted by Liu et al.^[24] and Paschal et al.^[35] who reported that the primary reason for nonadherence in their study cohort was forgetfulness. Johnbull et al²⁶ observed that forgetfulness was the reason for nonadherence in only 40.7% of their study cohort.

The only limitation of the present study was that it was carried out in a tertiary healthcare setting, which made it difficult for us to extrapolate our findings to the general population

CONCLUSION

The present study found that socioeconomic class and type of epilepsy have a significant influence on the adherence of PWE to AED therapy, and that forgetfulness is the primary reason for AED nonadherence among PWE. In the present research study, patients are not stick to their therapy, buy the drugs or had problem to remember to take their medication. Free supply of AEDs, provision of regular information about significance of treatment may help improve adherence. By improving adherence to AEDs, we can decrease the morbidities and mortality associated with non-adherence.

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