

Original Article

Demographic profiles of epileptic patients and their awareness towards epilepsy with the influence on compliance

Mian MF¹, Jobayer M², Afroz Z³, Chowdhury AH⁴, Chowdhury RN⁵, Habib M⁶, Mohammad QD⁷

Abstract

There are about 2 million epilepsy patients in Bangladesh. The aim of this study was to correlate the demographic parameter of epilepsy patients with their knowledge about the disease and also with the compliance of antiepileptic drugs. This retrospective study was carried out in the Department of Neurology at Dhaka Medical College Hospital, Bangladesh from July 2010 to June 2012. A total of 100 epilepsy patients of any age and sex attending the epilepsy clinic were enrolled of which 50 patients who had experienced one or more seizures over last six months were designated as uncontrolled epileptic patients were in case group and 50 patients who were seizure-free for six months were designated as controlled epileptic patients were in control group. Mean age of case and control groups were 21.84 ±8.70 and 23.94 ±10.28 years respectively. Most of the epilepsy patients were between the age of 11 to 30 years that was 88% in case group and 76% in control group. Male was predominant than female in both group. Among study population 70% and 58% had educational status below Primary level in case and control group respectively. Seventy percent of uncontrolled epilepsy patients were from low income group and 62% of them were unemployed. Maximum (68% in case and 44% in control group) patients were from rural area. Almost all controlled epilepsy patients took drugs regularly, whereas 52% patients

with uncontrolled epilepsy did not took drugs regularly and 64% of them had history of missing anti-epileptic drugs. Knowledge about the disease, treatment and prognosis of epilepsy was better in control group than in case group of epilepsy patients. It may be concluded that lower socioeconomic condition, less education and lack of awareness about epilepsy and non-affordability, limited availability of drugs, lack of counseling have contributed to the non-compliance of antiepileptic drugs.

Key words : Epileptic patients, awareness, Demographic profile

Introduction

Epilepsy is a neurological disorder characterized by recurrent unprovoked seizures that are transient symptoms or signs of abnormal, excessive and synchronous neuronal activity in the brain.^{1,2} Eighty percent of 50 million people with epilepsy reside in developing countries.³ The lifetime prevalence of epilepsy varies among countries from 1.5 in developed countries to 18 per 1000 in Latin America.^{4,5}

Incidence of epilepsy is high in childhood, decreases in adulthood and rises again in older people.⁶ It has a bimodal distribution with a first peak in childhood and young adults and another peak age for prevalence in old age.^{4,7} Epilepsy is common in men.⁴ Prevalence of epilepsy is higher in rural area than in urban area especially in developing countries.^{4,8} Prevalence is 15.4 per 1,000 in rural and 10.3 in urban area in a study by Ngungi et al⁹ in India.

Epilepsy may sometimes result in significant disability, social stigmatization and encounter problems in education, employment, personal development, social and personal relationships.⁴ Children with epilepsy may have attention difficulties, learning difficulties or cerebral palsy.⁵

Compliance behavior is regular taking anti-epileptic drugs without manipulating dosages, and following advice¹⁰ that depends on specific clinical situation, nature of illness and treatment program.¹¹ Non-compliance is a significant problem in epilepsy management.¹² Reason of non-compliance of anti-epileptic drugs therapy in Bangladesh are non-affordability and limited availability of drugs, inadequate knowledge, negative attitude, lack of counseling etc.¹³ Knowledge regarding the disease and anti-epileptic drug is very much an important factor

1. *Dr Md Ferdous Mian, Medical officer, Clinical Neurology, Department of Neurology, National Institute of Neurosciences, Dhaka, Email: mfm020771@gmail.com
2. Dr Mohammad Jobayer, Medical Officer, Department of Microbiology, Dhaka Medical College, Dhaka
3. Dr Zeenat Afroz, Lecturer, Department of Microbiology, Dhaka Medical College, Dhaka
4. Dr Ahmed Hossain Chowdhury, Assistant Professor, Department of Neurology, Dhaka Medical College, Dhaka
5. Dr Rajib Nayan Chowdhury, Associate Professor, Head, Department of Neurophysiology, National Institute of Neurosciences & Hospital, Dhaka
6. Professor Dr Mansur Habib, Professor & Head, Department of Neurology, Dhaka Medical College, Dhaka
7. Professor Dr Quazi Deen Mohammad, Professor of Department of Clinical Neurology, Director, National Institute of Neurosciences & Hospital, Dhaka

*For correspondence

regarding compliance. Difficulty in collecting drug, lack of family support, mental adverse effect of drugs, poor motivation are also the factors influencing non-compliance in resource limited areas.¹⁴

There are about 2 million epilepsy patients in Bangladesh and a significant portion of them are suffering from uncontrolled epilepsy.¹³ This study was done to identify the factors responsible for uncontrolled epilepsy and to find out any possible relationship between the socio-economical or other demographic status of the epilepsy patients and their influence on compliance of anti-epileptic drugs.

Methods

This retrospective case-control study was carried out in the Epilepsy clinic of the Department of Neurology at Dhaka Medical College Hospital, Dhaka, Bangladesh from July 2010 to June 2012. A total number of 100 epilepsy patients of any age and sex attending the epilepsy clinic were enrolled in this study. Among them 50 patients having uncontrolled epilepsy was in the case group and the rest 50 patients were in the control group who had controlled epilepsy.

Controlled epilepsy: No seizure for more than six months during treatment of epilepsy.¹⁵ Uncontrolled epilepsy: One or more seizures over a period of six months during treatment of epilepsy.¹⁵

The data collection tools was a structured questionnaire. Questionnaire had both open-ended and closed-ended questions. Data were collected by means of interview with the patients or patient's family members. History, clinical features, investigation findings and relevant data were collected by the researcher himself by face to face interview and from records of the patients.

Data were processed and analyzed using SPSS version 17.0 software for windows. Both qualitative and quantitative tests were performed. For comparison between groups, Chi square (χ^2) test was performed and for quantitative variables 2 sample t-test was used. The level of significance was set at 0.05 and $p < 0.05$ was considered significant. The summarized data were interpreted accordingly and was presented in the form of tables. Statistical analyses were done by appropriate methods.

Prior to the commencement of the study, the research protocol was approved by the Ethical Review Committee (ERC) of Dhaka Medical College. The aims and objectives of the study along with its procedure, methods, risks and benefits were explained to the respondent in easily understandable language and then informed written consent was taken from each patient or appropriate guardian. It was assured that all information and records would be kept confidential.

Results

In case group 24(48%) of epilepsy patients were in the age of 21-30 years followed by 11-20 years group which were 20(40%). In control group equal number of patients was found in the age group of 11-20 years and 21-30 years which were 19(38%). In case group male 31(62%) was predominant than female 19(38%) and in control group male was 30(60%) and female was 20(40%). (Table-I)

Table- I: Distribution according to age and sex (n=100)

Age group	Case		Control		P value
	Male n(%)	Female n(%)	Male n(%)	Female n(%)	
≤10	2 (4)	0 (0)	1 (2)	1 (2)	0.273
11-20	16 (32)	4 (8)	6 (12)	13 (26)	
21-30	11 (22)	13 (26)	15 (30)	4 (8)	
31-40	0 (0)	2 (4)	5 (10)	2 (4)	
>40	2 (4)	0 (0)	3 (6)	0 (0)	
Total	31 (62)	19 (38)	30 (60)	20 (40)	

t-test was done to measure the level of significance.

Among the study population 35(70%) and 29(58%) had educational status below primary level in case and control group respectively and 8(16%) and 10(20%) had educational status above SSC level in case and control group respectively. In case group 31(62%) epilepsy patients were unemployed and 19(38%) were employed and in control group 26(52%) patients were unemployed and 24(48%) were employed. Thirty five (70%) and 18(36%) of the study population were from low income group in case and control group respectively and 15(30%) and 32(64%) of them were from middle income group in case and control group respectively. In case group 16(32%) patients were from urban area and 34(68%) were from rural area but in control group 28(56%) patients were from urban area and 22(44%) were from rural area. (Table-II)

Table-II: Demographic data of epilepsy patients (n=100)

Criteria	Case n(%)	Control n(%)
Educational status- Below Primary	35(70)	29(58)
SSC	7(14)	11(22)
Above SSC	8(16)	10(20)
Occupation- Unemployed	31(62)	26(52)
Employed	19(38)	24(48)
Income status – Low income group	35(70)	18(36)
Middle income group	15(30)	32(64)
Residence- Urban	16(32)	28(56)
Rural	34(68)	22(44)

The disease was known to 30(60%) and 43(86%) patients in case and control group respectively. The difference was statistically significant (p=0.003). The treatment of epilepsy was known to 20(40%) and 34(68%) patients in case and control group respectively. The difference was statistically significant (p=0.005). Among the patients prognosis was understood by 9(18%) and 19(38%) in case and control group respectively. The difference was statistically significant (p=0.026). (Table-III)

Table - III: Distribution according to understanding of the disease, the treatment and the prognosis of epilepsy (n=100)

	Understanding disease			Understanding treatment			Understanding Prognosis		
	Case n(%)	Control n(%)	P value	Case n(%)	Control n(%)	P value	Case n(%)	Control n(%)	P value
Yes	30(60)	43(86)	0.003	20(40)	34(68)	0.005	9(18)	19(38)	0.026
No	20(40)	7(14)		30(60)	16(32)		41(82)	31(62)	

Chi-square test was done to measure the level of significance.

Table IV: Distribution of study population according to taking antiepileptic drugs regularly and missing anti-epileptic drugs after being seizure free for few months(n=100)

	Taking antiepileptic drugs regularly on time			H/O missing antiepileptic drugs		
	Case n(%)	Control n(%)	p value	Case n(%)	Control n(%)	p value
Yes	24(48)	49(98)		32(64)	7(14)	
No	26(52)	1(2)	0.001	18(36)	43(86)	0.001
Total	50(100)	50(100)		50(100)	50(100)	

Chi-square test was done to measure the level of significance.

Regularly taking of anti-epileptic drugs was found in 24(48%) and 49(98%) patients in case and control group respectively. History of missing anti-epileptic drug after being seizure free for a few months was found in 32(64%) and 7(14%) patients in case and control group respectively. In both issues the difference was statistically significant (p=0.001).

Discussion

According to the World Health Organization, 80% of 50 million people with epilepsy worldwide reside in developing countries³ and among them at least 1.5 to 2 million epilepsy patients in Bangladesh.¹³ In this present study a total number of 100 epilepsy patients were enrolled of which 50 patients were in the case group who presented with uncontrolled epilepsy and the 50 patients were in the control group. The mean age of case and control group were 21.84 ± 8.70 and 23.94 ± 10.28 years respectively which indicate that the case and control groups were homogenous in respect of age. Most of the epilepsy patients were between the age of 11 to 30 years that was 44(88%) in case group and

in control group it was 38(76%). This finding is in accordance with a study done by Tran et al who mentioned that the peak age for incidence was in children as well as in young adults.¹⁶ A study done in Shanghai showed two prevalence age peaks: one between 10 and 30 years old and one in people over 60 years old.⁷ But only a few cases were above the age of 40 years in the present study. The incidence and prevalence of epilepsy follow a bimodal distribution with one peak age for incidence in children and then another in old age.^{4,16}

Male was predominant than female in this study in both case and control group in which male was 62% and 60% respectively. This finding coincides with Mac et al who reported that epilepsy is slightly more common in men than in women.⁴ But the sex-specific prevalence is not, in general, statistically significant.

Demographic data like educational status, occupation, income status of family and residence of the epilepsy patients were collected and analyzed. Majority of them

(70% and 58% in case and control group respectively) had educational status below Primary level. Sixty two percent of the uncontrolled epilepsy patients and 52% patients in control group were unemployed. This result shows that the education may have some role in epilepsy and patients with less education have more chance of epilepsy than the educated patients. People with epilepsy commonly encounter problems in education, employment, personal development, psychiatric and psychological aspects and social and personal relationships.⁴ Children with epilepsy may also have attention difficulties, learning difficulties or cerebral palsy.⁹

Seventy percent study population of case group was from low income group and 30% of them were from middle income group. Whereas 36% and 64% in control group were from low and middle income group respectively. Similar result has been published by Mac et al who mentioned that socio-economic status has an important role in the aetiology of epilepsy.⁴

Maximum patients (68%) in case group and about half (44%) patients of control group were from rural area. This result is in accordance with several community-based studies in India and in Africa where it was stated that though not very significant but the prevalence of epilepsy is higher in rural areas than in urban areas.^{4,8}

Knowledge or understanding of the disease epilepsy, its treatment and the prognosis of the disease in the study population was evaluated. Understanding in all these three aspect of epilepsy was better in people with controlled epilepsy than in case group with uncontrolled epilepsy which was statistically significant. Control group of patients in this study had higher educational status, rate of employment and were from family with better income status. Knowledge is related with educational and other socioeconomical status of the patients. This might be due to the fact that people with less education and low income status are usually not concerned enough about their health. This is also supported by the data of BDHS-2007, according to which knowledge about transmission of disease as well as its treatment is less among illiterate and low income individuals in Bangladesh.¹⁷

There is a statistically significant relation between regular taking anti-epileptic drugs and missing anti-epileptic drugs after being seizure free with epilepsy control. Almost all (98%) controlled epilepsy patients took drugs regularly and only a few (14%) missed anti-epileptic drug after being

seizure free for a few months. Whereas more than half (52%) patients with uncontrolled epilepsy did not took drugs regularly and about two third (64%) has history of missing anti-epileptic drugs. So there is possibility that regular taking of anti-epileptic drugs has contributed in controlling epilepsy in the study population.

Most of the epilepsy patients come for follow-up every one or two month, but get free supply of antiepileptic drugs from tertiary hospital for one week. They do not get drugs from primary level hospitals. Patients from rural area do not get antiepileptic from nearby pharmacy. Non-affordability of drugs, limited availability of drugs, inadequate knowledge, not taking anti-epileptic drugs on time, manipulating dosages, negative attitude, lack of counseling, are the main causes of non-compliance of anti-epileptic drugs therapy.^{10,13} So it may be said that lower socioeconomical condition, less education of the study population that results in their lack of awareness about the disease along with above mentioned factors are contributing to the non-compliance of antiepileptic drugs found in this study.

References

1. Blume W, Luders H, Mizrahi P. Glossary of descriptive terminology for ictal semiology: report of the ILAE task force on classification and terminology. *Epilepsia* 2001; 42(9): 1212-8.
2. Fisher R, van Emde, Boas W. Epileptic seizure and epilepsy: definition proposed by the International League Against Epilepsy and the International Bureau for Epilepsy (IBE). *Epilepsy*. 2005; 46(4): 470-2.
3. World Health Organization. Atlas: epilepsy case in the world 2005, Geneva: WHO Press 2005; 1: 11-3.
4. Mac TL, Tran DS, Quet F, Odermatt P, Preux PM, Tan CT. Epidemiology, aetiology and clinical management of epilepsy in Asia: a systematic review. *Lancet Neurol*. 2007; 6: 533-43.
5. Jallon P. Epilepsy in developing countries. *Epilepsia*. 1997; 38: 1143-51.
6. Sander JW, Shorvon SD. Epidemiology of the epilepsies. *J Neurol Neurosurgery Psychiatry*. 1996; 61: 433-43.
7. Huang M, Hong Z, Zeng J. The prevalence of epilepsy in rural Jinshan in Shanghai. *Zhonghua Liu Xing Bing Xue Za Zhi*. 2002; 23: 345-6.

8. Preux PM, Druet-Cabanac M. Epidemiology of epilepsy in sub-Saharan Africa. *Lancet Neurol.* 2005; 4: 21-31.
9. Ngungi A, Bottomley C, Kleinschmidt I, Sander J, Newtor C. Estimation of the burden of active and lifetime epilepsy: a meta-analytic approach. *Epilepsia.* 2010; 51: 883-90.
10. Leppik. How to get patient to take their medicine. *Postgrad Med.* 1990; 88(1): 253-5.
11. Blackwell B. Treatment compliance. Kaplan and Sadock's comprehensive text book of psychiatry, 7th ed. Philadelphia: Lippincott Williams and Wilkins; 2000. pp. 1893-8.
12. Henneman EA, Lee JL, Cohen JI. Collaboration: a concept of analysis. *J Advanced Nursing.* 1995; 21: 103-9.
13. International Bureau for Epilepsy (IBE). 2011. Epilepsy in Bangladesh: News and Updates, section regions, South East Asia, text pattern category import. Available form: <http://www.ibe-epilepsy.org/epilepsy-in-bangladesh/>
14. Dhanaraj M and Jayavelu A. Factors influencing anti epileptic drug noncompliance. *Annals of Indian Academy of Neurol.* 2004; 7(2): 369-74.
15. Chawla S, Aneja S, Kashyap R, Mallika V. Etiology and clinical predictors of intractable Epilepsy. *Pediatr Neurol.* 2002; 27: 186-91.
16. Tran DS, Odermatt P, Le TO et al. Prevalence of epilepsy in a rural district of central Lao PDR. *Neuroepidemiol.* 2006; 26: 199-206.
17. BDHS. Bangladesh Demographic and Health Survey. Bangladesh: National Institute of Population Research and Training (NIPORT); 2007.