

Adherence to Anti-Epileptic Drugs at a Tertiary Health Center in a Developing Country- a Cross-Sectional Study



Medical Science

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ABSTRACT

Epilepsy is a common neurological disease affecting almost 50 million people worldwide, about 40 million of those affected live in developing countries. A cross-sectional descriptive study of 120 subjects, a structured questionnaire was administered on adults 18 years and above. Information was obtained about patients' baseline characteristics, estimated monthly income and determinants of adherence. Adherence to the AEDs was categorised as good, moderate or poor. Good adherence was recorded in 70% of participants, 26.7% had moderate adherence in 26.7% and poor in remaining 3.3%. Education was statistically significantly associated with adherence ($\chi^2_{213.092}$, $p=0.01$). Adherence rate among patients in this study was high despite poor control of seizure.

Introduction

Epilepsy is a common neurological disease affecting almost 50 million people worldwide. About 40 million of those affected live in developing countries (Chandra et al., 1993; WHO, 2001). The condition is a chronic disorder, characterised by recurrent and unpredictable seizures (Akinsulore and Adewuya, 2010). In many parts of African countries beliefs about epilepsy is characterised by superstition, discrimination and stigma (Ndour et al., 2004). It is estimated that 75 to 90% of people with epilepsy in developing countries receive no treatment at all (WHO 2001). Most people with epilepsy in the developing countries are continually being stigmatized and have a lower quality of life compared to people with other chronic illnesses (Kaiser et al., 1998, WHO 2001). Point prevalence of epilepsy from local studies in Nigeria is 5.3 to 37 per 1000 (Osuntokun et al., 1982, 1987).

Cornerstone of management of epilepsy in Nigeria is the use of antiepileptic drugs (Ezeala-Adikaibe et al., 2010). Some epileptics do not seek treatment in the hospitals because they perceive the condition as not treatable by western medicine (Bener et al., 1998; Nyame and Biritwum, 1997; Santos et al., 1988). Cost of treatment of chronic diseases is important in making therapeutic decisions in developing countries (Ezeala-Adikaibe et al., 2010). This is because patients still have to pay out of their pockets for medications and other costs due to non-existent health insurance.

A former United States surgeon general Everett Koop once said, "Drugs don't work in patients who don't take them" (Osterberg & Blaschke, 2005). Adherence is a primary determinant of effectiveness of treatment (WHO, 2002); good adherence optimises clinical benefit (Dunbar, 2000). Studies have reported adherence rate of 40–60% in adults on management for epilepsy (Gomes et al., 1998; Sureka, 1999).

This is a descriptive cross-sectional study; aimed at assessing level of adherence to anti-epileptic drugs in patients attending the neurology clinic of our hospital and also to determine the risk-factors for non-adherence.

Methods and materials Site

The study took place at the neurology clinic of Medicine department, Lagos State University Teaching Hospital (LASUTH), Nigeria, between January to June, 2012. LASUTH is a 740 bedded tertiary health centre located in Ikeja, the capital of Lagos state.

Methodology

The study was a descriptive cross-sectional survey. A structured questionnaire was administered to patients 18 years and above who consented to be part of the study. Inclusion criteria were: clinical diagnosis of epilepsy, attendance of clinic for at least 3 months prior to the study and willingness to participate in the study. Patients with acute medical conditions requiring emergency care were excluded.

The minimum sample size was 96, this was rounded up to 120

to make up for non-responders. 50% adherence rate (Gomes et al., 1998; Sureka, 1999) was used for the calculation at 10% precision. The study protocol was approved by the institution ethics committee.

Questionnaires were administered on eligible consecutives consenting adults. The questionnaire was written in English but translated and explained to subject who do not understand English. Information about the patients' baseline characteristics including age, sex, level of education and estimated monthly income were obtained in the first part of the questionnaire. In the second part, questions were asked to help determine level of adherence and other associated factors like source of medication, estimated monthly drug expenditure and information on who pay for the medications. To assess adherence patients were asked five questions; 1. Do you sometime forget to take your AED (yes or no), 2. how frequently do you forget to take your medication (often or rarely), 3. in the last one week how many times did you miss taking your AED (twice or more than twice), 4. how long does it take to refill your AED (2 days or more than 2 days) and 5. when last did you take your AED (2 days or less prior to clinic visit or more than 2 days). These questions were meant to assess forgetfulness, ease of refill and carelessness about use of medication. Response in favour of adherence was scored 1 and zero for response in favour of non-adherence, possible scores is between 0 and 5. Score of 0-1 is poor adherence, 2-3 moderate adherence and 4-5 good adherence.

Statistics

Data were transferred from the questionnaire the SPSS version 17 data base for statistical analysis. Continuous data were summarised as mean (Standard deviation) and qualitative data were summarised as count and percentages. Statistical difference and association between qualitative data were tested with chi square test and the level of statistical significance was set at p value of less than 0.05.

Results

One hundred and twenty consecutive adults with seizure disorder were included in this study. The mean age of the participants was 29 years and 55% were males. Details of the demographic of the participants are presented in table 1.

Table 1 about here

Generalized seizure was the commonest type of seizure presentation; 53.3% of patients presented with generalized seizure. Thirty per-cent of the respondents had been previously admitted on the ward on account of seizure disorder, the drug of choice in 55.8% of our patients is carbamazepine. Details of the type of seizure and the choice of antiepileptic medication (AED) are presented in table 2.

Table 2 about here

Family members, including; parents, children and other relatives are responsible for paying for medications in 67.5% of patients, 27.5% pay for medications out of their own pockets and

medications of remaining 5% were paid for by either employers or insurance.

Adherence to AEDs was categorised into good, moderate and poor. Good adherence to medication is recorded in 84 (70%) of the participants, 32 (26.7%) had moderate adherence and the remaining 4 (3.3%) recorded poor adherence. Determinants of adherence considered in this study include level of education, age, gender, occupation and monthly income. The only statistically significant determinant predictive of adherence was level of education. Details of cross tabulation of determinants with adherence are presented in table 3.

Table 3 about here

In the three months preceding the last clinic visit by the participants, 72.5% (87) of respondents had their last attack of seizure, 9.2% (11) in the preceding three to six months of their visit, 6.7% (8) in the last 6 months to 12 months and the remaining 11.6% (14) had their last episode 24 months or longer prior to their last clinic visit.

Table 1: Demographic of patients with seizure disorders attending neurology clinic at LASUTH

Variables	Values
Age (years)	
Mean (SD)	29 (12)
Range	18 to 80
Age group % (n)	
Less than 40	82.5 (99)
40 to less than 60	14.2 (17)
60 and above	3.3 (4)
Gender % (n)	
Male	55.0 (66)
Female	45.0 (54)
Level of education % (n)	
No formal education	12.5 (15)
Complete primary school	21.7 (26)
Complete secondary school	40.8 (49)
Post-secondary school	25.0 (30)
Monthly income (Naira)	
Less than 10,000	65.0 (78)
10,000 to less than 30,000	20.0 (24)
30,000 to less than 50,000	6.7 (8)
50,000 and above	8.3 (10)

Table 2: Type of seizure and choice of anti-epileptic drugs among patients with seizure disorders attending LASUTH

Variables	Percentage	Frequency
Type of seizure		
Generalized	53.3	64
Partial/Focal	41.7	50
Secondarily generalize	5.0	6
AED		
Carbamazepine	55.8	67
Sodium valproate	25.0	30
Phenytoin	15.0	18
Barbiturates	2.5	3
Benzodiazepines	0.8	1
Not of medication	0.8	1
Total	100	120

Table 3: Cross tabulation of adherence with determinants of adherence

Variables	Adherence			Fisher's Exact Test
	Good	Moderate	Poor	
Gender				
Male	48	17	3	$\chi^2, 1.801, p=0.56$
Female	58	17	1	
Level of education				
No formal education	8	7	0	$\chi^2, 11.092, p=0.03$
Complete primary school	19	7	0	
Complete secondary school	39	18	0	
Post-secondary education	22	8	0	
Monthly drug expenditure (Naira)				
Less than 2000	37	14	2	$\chi^2, 4.872, p=0.18$
2000 to 4999	49	17	2	
5000 to 9999	3	3	0	
10000 and above	3	0	0	
Age group (years)				
Less than 40	71	28	4	$\chi^2, 2.795, p=0.54$
40 to less than 60	10	7	0	
60 and above	1	1	0	

Discussion

This study shows that 70% of patients attending our neurology clinic had 'good adherence' to their antiepileptic drugs. This level of adherence as recorded in this study is high when compared to results obtained in similar studies. In a study by Sweileh and his co-workers (2011) they reported adherence rate of 36% and a United Kingdom study reported that 41% of their patients were adherent (Jones et al., 2006). The high rate of adherence in our study may be explained by the fact that majority of patients with epilepsy in our environment do not seek western medical care for this condition. In a study in the Northern Nigerian, when respondents were asked where they would seek intervention for the management of seizure disorder, only 34% said they will seek orthodox medical care (Kabir et al., 2005). Those that chose to seek medical help may be extra motivated to take their medication in order to avoid the stigma associated with the disease. Culturally many of our patients do not like to admit to not taking medications even when this is obvious, this may be a drawback with the use of a subjective self-reported method to assess adherence in this environment.

The best estimation of adherence to AEDs is believed to be the measurement of serum levels of drugs (Dowse et al., 1991, El-echi, 1991 and Osterberg & Blaschke, 2005). This measurement is not a routine in our practices for reasons of high cost and lack of available expertise. Pill count would have been the next ideal method to assess adherence in our settings, but because both the hospital and the community pharmacy do not keep record of drug dispensed matching medications given to what was taking becomes unreliable.

The use of the self-reported, subjective assessment method appeared to be the realistic measure of adherence in our environment.

Among determinants of adherence assessed, level of education is the only factor that showed statistical significance. This may be explained by the fact that 65.8% of our respondents completed at least secondary education. Age, gender and monthly income appeared not to be statistically significant in our group of patients. In the Palestine study by Sweileh 2011, age was found to be a determinant of adherence.

The choice of antiepileptic drug is determined by type of seizure and individual characteristics (Scott et al., 2001). In our practice as in most practises in developing countries choice is dictated by cost and availability of medicines (Scott et al., 2001). Most patients (65%) in the study earn less than 10,000 naira in a month and spent average of about 2,000 to 5,000 naira monthly on medications. The estimated 20-50% monthly spending on medication is the reason why 67% of our patients have their family members paying for their medication.

The two commonest choices of AEDs in our study are carbamazepine and sodium valproate, this choice is similar to what was reported by Ezeala-Adikaibe et al., 2010 in Eastern Nigeria. Phenytoin, carbamazepine and sodium valproate are preferred AEDs in our practice despite WHO recommendation of phenobarbitone, a cheaper AED (Scott et al., 2001). This is because of higher adverse effects associated with phenobarbitone. None of the patient in this study is on the newer generation AED. The newer generation AEDs have been shown to have a fewer adverse effect profile compared to the older generation (Ficker et al., 2005).

International league against epilepsy defines active epilepsy as occurrence of two or more unprovoked seizures on different days in the previous year (Meinardi et al., 2001). By this definition most of our patients have active epilepsy despite high rate of adherence in majority of them. The fact that 75% of our patients have suffered at least 2 seizure attacks in preceding year to this study and 72.5% of these occurring within the last three months underscores the need to look beyond adherence in assessing effectiveness of care in our patient. It has been reported that more than 30% of epileptics do not attain full control of seizure, even with the best available treatment regimen (Devinsky, 1999). Quality of drugs is also important in ensuring effectiveness of treatment; in our practice we have multiple sources

of unverifiable supplies of medications. Carbamazepine the drug of choice in 55.8% of our patients is unstable and must be protected from hot or humid conditions, which decrease its bioavailability by 50%. This may explain poor control in our patients as we are not able to guarantee the source and quality of medications available to most patients in the country (Nkang et al., 2010). Monitoring of the serum levels of drugs can also help

in determining if an adequate bioavailability has been achieved.

Conclusion

Adherence rate among patients in this study is high despite poor control of seizure. There is a need to look at sources and quality of AEDs in order to ensure their effectiveness in managing cases of epilepsy especially in developing countries.

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