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Research Article

Relationships Between Beliefs about Medication, Seizure Control and Adherence to Antiepileptic Drugs Among People with Epilepsy

Archana Verma[1], Kiran K[2], Alok Kumar[3]

[1]Professor, Department of Neurology, UP University of Medical Sciences, Saifai, Etawah, UP, 206301, India

[2]Junior Resident, Department of Community Medicine, UP University of Medical Sciences, Saifai, Etawah, UP, 206301, India

[3]Dean, Professor and Head, Forensic Medicine & Toxicology, UP university of Medical Sciences, Saifai, Etawah, UP, 206130, India

***Corresponding Author:** Dr. Archana Verma, Professor, Department of Neurology, UP University Medical Sciences, Saifai, Etawah, UP, 206301, India, E-mail: archanashiva2010@rediffmail.com

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Abstract

Objectives: To determine the relation between beliefs about medication, seizure control and non adherence to antiepileptic drugs (AEDs) in people with epilepsy (PWE) from rural northern Indian community.

Methods: Three hundred and eighty five adult PWE were included in the present cross sectional study. Morisky–Green Test was applied for evaluation of adherence level and their beliefs towards usage of AEDs by utilizing Beliefs about Medicine Questionnaire (BMQ).

Results: 58.8 % patients were reported non adherent to treatment on the Morisky Green scale. PWE belonging to lower socio economical class has high concern towards the negative effect of AEDs ($r=0.200$; $p<0.001$). Patients with lower adherence expressed strong doubts about the necessity of AEDs ($r= -0.356$; $p< 0.01$) and increase concern about the negative consequences of taking AEDs ($r= -0.433$; $p< 0.01$) as compared to adherent patients. PWE with increased concern has significantly high seizure recurrence ($r=0.397$; $p<0.0001$) while believing in necessity of medicines was associated with fewer seizures recurrence ($r= -.156$; $p= .02$).

Conclusion: Attitude towards AEDs is closely related with adherence. PWE having high concern and low necessity towards AEDs were more non adherent and had poorly controlled seizures. To improve adherence a full and inclusive evaluation of modifiable factors should be made. Present challenge is to create effective interventions to address patients' doubts about the need for treatment and concerns about adverse consequences in order to enhance adherence.

Keywords: Beliefs about Medicine Questionnaire (BMQ); Adherence; Antiepileptic drugs; Morisky–Green Test

1. Introduction

Epilepsy is a major public health problem; more than 85% of people with epilepsy (PWE) are living in low- and middle-income countries, including India [1]. Anti-epileptic drugs (AEDs) are the main treatment modality. Up to 70% could become seizure-free once the most effective regime is followed [2]. The principal determinant of treatment success in epilepsy is adherence to treatments. Non adherence to AEDs is associated with of seizure recurrence, increased risk of mortality, hospital admissions, injuries and fractures. Current estimates of non-adherence in epilepsy are similar to those in other chronic illnesses and ranges from 40 to 60% [3, 4].

For variety of chronic illnesses the Necessity-Concerns Framework suggests that the beliefs towards medication influences adherence can be grouped under two categories: perceptions for the personal need of treatment (Necessity beliefs) and concerns about a range of potential unfavorable side effects [5]. A Meta analysis on assessing the relationship between treatment beliefs and adherence confirmed that the chances of non adherence were altogether increases when patients revealed high concerns and low necessity beliefs [6]. Previous studies have documented role of beliefs and perceptions towards medication in non adherence to AEDs [7, 8].

The present study was aimed to determine the relation between patient's beliefs about medication, seizure control and non adherence to AEDs.

2. Material and Methods

We performed a cross sectional study by consecutively enrolling adults (≥18 years) PWE attending to our neurology department from November 2016 to March 2018. The study received the approval from the institutional ethics committee. Patients who were taking at least one AEDs for more than a year; without psychiatric disorders or major cognitive impairment were included. We excluded patients experiencing first-time seizures or newly diagnosed epilepsy.

Demographic data recorded included the following: age, gender, education, employed (included self-employed) or unemployed (retired, student and homemaker), marital status: classified as married or unmarried (single, widowed or separated), seizure semiology, duration of epilepsy, duration of treatment and recurrence of seizures in the last 6

months. BG Prasad socioeconomic classification 2016 [9] was used to calculate per capita income. AED adherence was assessed by using Morisky Green 4-item scale [10]. The Morisky scale has four items with minimum score of 0 and maximum of 4.Patients were considered non-adherent if they scored 1 or more.

Beliefs about Medicine Questionnaire (BMQ) [11] were used to assess patients' belief towards use of medication in general and in addition to their AEDs. The BMQ has two sections (BMQ-Specific and BMQ-General). BMQ-Specific was related to AEDs and has two parts: the Specific Necessity scale and the Specific Concern scale and each have five items. The Specific Necessity scale evaluates need of AEDs whereas the Specific Concern scale reviews the uncertainties about the potential adverse effects of AEDs. BMQ-General has two segments: the General Harm scale and the General Overuse scale. General Harm scale has five items and review how much drug is perceived to be addictive and destructive. General Overuse scale has three items and estimate how much medicine is overused by clinicians. Items of each area are rated with a Likert scale from 1 to 5; higher belief levels of necessity, concern, harm, or overuse is connected with higher scores. The responses to each question was noted by one of the investigators (KK).

3. Statistical Analysis

A sample size of 385 was calculated by using Single population proportion formula [12], assuming a 50% non-adherence rate, with a 95% confidence level and a 5% significance level. The data collected was coded and analyzed using MS Excel and SPSS 23 and results were represented in the form of tables. Categorical data and continuous data were expressed as percentage and mean with standard deviation respectively. Pearson correlation coefficient was calculated to know the correlation between different variables and the domains BMQ.

4. Results

The mean age of 385 patients were 26.2±10.4 years (range between 18-66 years). Most (68%) patients were unmarried (52% single, 16% separated or divorced). As far as their socio economical status concerned most of them belongs to lower middle class (class IV) (44.4%) followed by lower; class V (35.6%). The period of epilepsy ranged from 1 to 42 years (median 5 yrs, IQR: 3-10yrs). Length of antiepileptic treatment ranged from 1 to 24 years (median 2years IQR: 1-4 yrs). Focal seizures (60%) (Focal motor, focal motor with dyscognitive features, focal with bilateral convulsive seizures) was the most common presentation. Demographic characteristic of patients enrolled in the study are shown in Table-1. 58.8 % patients were non adherent to AEDs. Non-adherence was related with forgetting to take AEDs (74.6%), lack of time to take AEDs (13.4 %), stop taking AEDs when feeling more worse (9 %) or better (3%).

PWE belonging to lower socio economical class has high concern towards the negative effect of AEDs ($r=0.200$; $p<0.001$). A significant moderate negative correlation was observed in between age and necessity ($r=-0.62$, $p<0.001$) of AEDs. No significant correlation was seen between duration of AEDs and BMQ domains. Patients with lower

adherence expressed strong doubts about the necessity of AEDs (r= -0.356; p< 0.01) and increase concern about the negative consequences of taking AEDs (r= −0.433; p< 0.01) as compared to adherent patients.

On an average patients with increased concern have significantly high seizure recurrence in last six months (r=0.397; p<0.0001) while believing in necessity of medicines was associated with fewer seizures recurrence (r= −.156; p= .02). Necessity showed negative correlation, whereas concern showed positive correlation with all the variables. Table 2 shows that several beliefs about medication and association with the Morisky score and seizure recurrence.

Variables	**N (%)**
Adherent	159 (41.2)
Non adherent	226 (58.8)
Age mean (SD)	26.2 ±10.4
Gender	
Male	252 (65.4)
Female	133 (34.6)
Age Group	
18-25	256 (66.5)
26-35	64 (16.6)
36-45	41 (10.6)
>46	24 (6.3)
Religion	
Hindu	368 (95.5)
Muslim	17 (4.5)
Employment status	
Employed	130 (33.7)
Unemployed	255 (66.3)
Education status	
Illiterate	30 (7.8)
Primary	126 (32.7)
High school	119 (31)
College	110 (28.5)
Regime	
Monotherapy	204 (53)
Polytherapy	181 (47)

Frequency of drug intake	
Once	4 (3)
Twice	373 (97)
Thrice	8 (2)
Duration of Epilepsy {Median(IQR)}	5 (IQR:3-10)
Duration of anti-epileptic drugs {Median(IQR)}	2 (IQR:1-4)
Socio economical class 1,2 & 3	77 (20)
4	171 (44.4)
5	137 (35.6)
Type of seizure	
Focal	231 (60)
Generalized	154 (40)

Table 1: The demographic characteristic of patients enrolled in the study (N=385).

Domain	**Age**		**Socio economical status**		**Duration of anti-epileptic drugs**		**Seizure frequency**		**Morisky score**	
	r	P	r	P	r	P	r	P	r	p
Harm	-0.015	0.776	-0.013	0.796	0.085	0.098	0.039	0.44	0.049	0.335
Overuse	-0.097	0.056	0.067	0.187	0.021	0.683	0.015	0.76	0.078	0.125
Necessity	-0.628	<0.0001*	-0.036	0.477	-0.03	0.96	-0.156	0.02	-0.356	<0.01
Concern	0.068	0.186	0.200	<0.001*	0.057	0.268	0.397	<0.0001*	0.433	<0.01

Table 2: Beliefs about medication and association with the Morisky score and seizure control.

5. Discussion

In our study the majority (58.8%) of PWE were non adherent to AEDs. Attitude towards AEDs was related with adherence. We found that non adherent expressed strong doubts about the necessity of AEDs and high concern about the negative consequences of taking AEDs. These findings are fairly comparable with previous other studies that evaluated beliefs about medication in PWE and adherence to AEDs using consistent scales [4,7,13]. In ethnic minority Nakhutina L et al. [13] observed that beliefs about medicines were not associated with adherence as measured by the Morisky scale but were associated with self-rated AED adherence may be due to small sample size. Beliefs about medicines were connected with clinical and demographic factors. PWE belonging to lower socio

economical class has high concern towards the negative effect of AEDs. Relationship between AEDs non adherence and lower economic status was also reported from other Indian studies [14, 15].

Seizure recurrence was primarily connected with belief in medication in our study. PWE with increased concern has significantly high seizure recurrence in last six months than counterpart. Higher seizure recurrence has less belief in necessity of medication. Whereas Jones et al. [4] and Chapman SCE et al. [7] reported that PWE with poorly controlled seizures had stronger beliefs in the necessity of AEDs than well-controlled patients and also found a trend for a relationship between AEDs concerns and poorer control.

Our study has some limitations: there is a potential risk of response bias as the self reported adherence measure was used. We did not analyze the factors like stigma, cultural factors within the present study. To conclude PWE having high concern and low necessity belief towards AEDs were more non adherent, had poorly controlled seizures and belong to lower socioeconomically status.

To improve adherence a full and inclusive evaluation of modifiable factors should be made. Present challenge is to create effective interventions to address patients' doubts about the need for treatment and concerns about adverse effects of AEDSs in order to enhance adherence in PWE.

Ethical Publication Statement

We confirm that we have read the Journal's position on issues involved in ethical publication and affirm that this report is consistent with those guidelines.

Disclosure

None of the authors has any conflict of interest to disclose.

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