

Perception and Use of Complementary and Alternative Medicine Among Patients With Epilepsy

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Background: Complementary and alternative medicine is considered and used by many people with epilepsy to treat seizures, despite the lack of enough scientific proof for its efficacy.

Objectives: The aim of the current study was to assess the extent to which patients with epilepsy use complementary and alternative medicine (CAM), and to assess the perceptions of CAM among these patients.

Patients and Methods: In this study patients with epilepsy were recruited at two epilepsy centers in Iran (Shiraz and Tehran). The survey collected specific information about CAM perceptions and usage. All independent variables were correlated with the dependent variables: the perception about CAM and the CAM usage. The Pearson Chi-square test and Student's t-test were used for univariate analyses. Subsequently, multivariate analysis using logistic regression was performed on variables that were significant ($P < 0.05$) in univariate analysis.

Results: Three hundred and twenty-three patients and / or their caregivers in Shiraz, and 227 people in Tehran were recruited. One hundred and thirty-nine patients (43%) in Shiraz, and 116 (51%) in Tehran and it was thought that at least one of CAM treatments might be helpful to treat seizures. Forty-five patients in Shiraz and 30 people in Tehran had used CAM to treat their seizures. We could not find a model to predict which thinks that CAM is effective in treating seizures. However, we found a model among CAM users. Within this model educational level made a significant contribution. People with epilepsy who had either a low education or, on the contrary, were highly educated more likely used CAM to treat their seizures.

Conclusions: CAM is considered and used by many people with epilepsy to treat their seizures. Cultural issues probably play an important role in having faith in CAM and consequently using a specific method of CAM to treat seizures.

Keywords: Complementary Therapies; Epilepsy; Perception; Complementary Therapies

1. Background

Epilepsy ranks among the most common chronic neurological disorders and perhaps fifty million worldwide are living with it. The mainstay of treatment is drug therapy. In the past decade, many new antiepileptic drugs (AEDs) have been introduced, so that there are now more than 20 medications available to treat epilepsy (1). However, about one-third of individuals with epilepsy have persistent seizures despite using appropriate AEDs (2). Once two drugs have failed, other treatment options should be considered (3). Complementary and alternative medicine (CAM) is defined as "those healthcare and medical practices not currently an integral part of conventional medicine" (4). It is estimated that more than 40% of population in most western countries use CAM for various health conditions (5). Research into the use

of complementary and alternative medicine in epilepsy is ongoing.

2. Objectives

The aim of the current study was to assess the extent to which patients use CAM treatments for epilepsy and to assess the perceptions of CAM by patients in south Iran and compare it to the patients in north Iran, to find a general idea of people's perceptions and use of CAM for epilepsy in Iran.

3. Patients and Methods

In this cross-sectional study, patients treated for epilepsy for at least one year were recruited at two epilepsy centers in Iran: the outpatient epilepsy clinic at Shiraz

Implication for health policy/practice/research/medical education:

Complementary and alternative medicine is considered and used by many people with epilepsy to treat seizures, despite the lack of enough scientific proof for its efficacy. As a matter of fact, effectiveness of the CAM used by our patients was described as less effective compared to their AEDs, in most people. Cultural issues probably play an important role in having faith in CAM and consequently, use a specific method of CAM to treat seizures. Therefore, informing people with epilepsy about risks of not taking AEDs in hope of receiving help from an unapproved unconventional method is of paramount importance.

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University of Medical Sciences, which is the only epilepsy clinic in south Iran; and a major neurology clinic in Tehran, which is the capital of Iran located in the north of the country, from November 2011 through April 2012. All patients had access to healthcare facilities and could afford standard medication. The diagnosis of epilepsy was made based on the clinical grounds and EEG findings. Patients and/or their care-givers who were physically able to speak, hear, and read were eligible to participate in the study. A survey was designed for this study (Appendix 1). The survey collected some demographic data on the person who was filling it (either the patients or their care-givers), some demographic and clinical data about the patients, and also specific information about CAM perceptions and usage (whether they used various types of CAM; and if they believed CAM was effective to treat seizures). If they had used CAM in the past, they were asked questions regarding the types of CAM they used, its duration, the perceived effectiveness of CAM treatment com-

pared to their AEDs, and finally, their reasons for using CAM. If they did not use CAM in the past, they were asked questions regarding their reasons for not using CAM.

This study was conducted with the approval of Shiraz University of Medical Sciences Review Board. The patients were informed about the study and if agreed, participated. All independent variables were correlated with the dependent variables: the perception about CAM and the presence or absence of CAM use. The Pearson Chi-square test and Student's t-test were used for univariate analyses. Subsequently, multivariate analysis using logistic regression was performed on variables that were significant ($P < 0.05$) in univariate analysis (if they were three or more).

4. Results

Three hundred and twenty-three patients and/or their care-givers in Shiraz and 227 people in Tehran participated in this study. The characteristics of the participants are summarized in Table 1.

Table 1. The Characteristics of the Participants^a

	Shiraz	Tehran	P value
Sex ratio of the interviewee, Male/Female	138/185	105/122	0.4
Education of the interviewee, under diploma/diploma/university	98/104/117	84/66/68	0.15
Age of the interviewee, Mean \pm SD, y	31 \pm 9	33 \pm 14	0.11
Duration of epilepsy in the patient, y	10 \pm 8	11 \pm 10	0.2
Antiepileptic drugs in the patient, monotherapy/polytherapy	156/150	126/96	0.18
Patients with uncontrolled seizures, having any seizure in the past year, No. (%)	218 (67)	134 (59)	0.01
Having comorbidity in the patients, No. (%)	80 (25)	51 (22)	0.5

^a Some data are missing in each cell

One hundred and thirty-nine patients in Shiraz and 116 people in Tehran thought that at least one of the items questioned might be helpful to treat seizures and answered "YES" to at least one question (Table 2). Comparisons of the people who said "YES" to any question with the others did not show any significant differences regarding the sex ratio ($P = 0.2$), education ($P = 0.09$), degree of seizure control ($P = 0.1$), duration of the disease ($P = 0.1$), age of the patient ($P = 0.2$), and having comorbidity ($P = 0.4$). The only significant difference was the age of the interviewees (who filled the form); it was 31 ± 11 years in people who said "YES", and 33 ± 11 years in the others ($P = 0.03$) (While statistically different, it seems not biologically different). Therefore, we did not do multivariate analysis (logistic regression) in these patients. Complementary and alternative medicine usage among patients with epilepsy in Shiraz and Tehran is shown in Table 3.

Regarding the usage of CAM to treat seizures, gender of the interviewees ($P = 0.1$), degree of seizure control ($P =$

0.4), the patient's age ($P = 0.2$), and duration of the illness ($P = 0.1$) were not different between patients who used CAM and those who did not. However, education of the interviewee ($P = 0.007$), age of the interviewee (36 ± 14 in those who used CAM vs. 31 ± 11 in those who did not; $P = 0.03$), and having comorbidity ($P = 0.03$) were different among these two groups. Educational level in the group who used CAM to treat their seizures was high school (10 years of education or less) in 31 (41%), diploma (11 or 12 years of education) in 12 (16%), and university in 32 (43%) participants, while these figures in those who did not use CAM were 151 (32%), 158 (33%), and 153 (32%), consecutively (13 patients did not answer to this question). Direct logistic regression was performed to assess the impact of these factors on the likelihood that patients use CAM to treat their seizures. The model contained three independent variables (age of the interviewee, educational level of the interviewee, and having comorbidity in the patient). The full model containing all predictors was statistically significant ($X^2 = 21.7$; $P = 0.0001$), indicating that the

Table 2. Perception of Helpfulness of Complementary and Alternative Medicine to Treat Seizures Among the Participants

Method	Yes, Shiraz/ Tehran	No, Shiraz/ Tehran	Do Not Know, Shiraz/Tehran
Herbal drugs	60/27	52/88	209/112
Traditional Medicine	20/32	74/86	226/109
Exercise	58/73	53/89	184/65
Yoga	35/37	37/71	248/119
Meditation	12/18	34/57	276/150
Tai chi	3/3	30/59	290/162
Hypnosis	9/29	37/64	227/132
Acupuncture	12/23	37/61	274/143
Chiropractic care	0/1	32/46	290/180
Massage therapy	22/32	42/58	259/137
Reflexology	4/3	32/52	287/172
Aromatherapy	4/2	34/72	285/153
Homeopathy	3/9	32/40	288/175
Biofeedback	1/1	29/42	292/184
Ayurvedic medicine	1/3	25/42	296/182
Psych readers	1/17	142/148	176/62
Exorcism	3/9	153/156	167/62
Total, No. (%)	139 (43)	116 (51)	P value = 0.06

Table 3. Complementary and Alternative Medicine Usage Among Patients with Epilepsy

CAM ^a used by the patient	Shiraz, No. (%)	Tehran, No. (%)	P value
Herbal and traditional medicine	29 (9)	9 (4)	0.02
Exorcism or Psychic	1 (0.3)	15 (6.6)	0.0001
Yoga	2	2	-
Acupuncture	1	0	-
Massage therapy	1	2	-
Homeopathy	1	0	-
Biofeedback	1	0	-
Relaxation techniques	1	0	-
Exercise	1	0	-
Others, not specified	7	2	-
Total persons used CAM, No. (%)	45 (13.9)	30 (13.2)	0.8

^a Abbreviation: CAM, complementary and alternative medicine

model was able to distinguish between CAM users and the others. The model correctly classified 86% of the interviewees. Within the model the following results were observed: high school educational level ($P = 0.008$, Odd's Ratio = 2.6, 95% Confidence Interval = 1.3 - 5.3), university educational level ($P = 0.006$, Odd's Ratio = 2.7, 95% Confidence Interval = 1.3 - 5.5), age of the interviewee ($P = 0.005$, Odd's Ratio = 1.03, 95% Confidence Interval = 1.009 - 1.05),

and having comorbidity ($P = 0.2$, Odd's Ratio = 1.4, 95% Confidence Interval = 0.8 - 2.4). None of the patients studied stopped their treatments (antiepileptic drugs) due to use of alternative medicine.

Effectiveness of the CAM used by the patients compared to their AEDs was described as less effective in 22 patients (49%) in Shiraz, and 13 patients (43%) in Tehran; more effective in 13 people (29%) in Shiraz, and 12 (40%) in Tehran; and not different in 10 (22%) in Shiraz, and five (17%) in Tehran; the differences were not significant ($P > 0.1$ for all comparisons). Duration of using CAM for seizures was less than six months in most patients (in 61% of the patients who used CAM in Shiraz, and in 52% in Tehran); however, some patients used CAM for more than two years. The difference between people in Shiraz and patients in Tehran regarding the duration of using CAM was not significant ($P = 0.8$). Reasons for using complementary and alternative medicine among patients with epilepsy in Shiraz and Tehran are presented in Table 4, and reasons for not using CAM are given in Table 5.

Table 4. Reasons for Using Complementary and Alternative Medicine Among Patients With Epilepsy^a

Reason	Shiraz, No. (%)	Tehran, No. (%)	P value
High cost of AEDs ^b	8 (18)	8 (27)	0.4
Low AED efficacy	20 (44)	22 (73)	0.1
AED adverse effects	12 (27)	12 (40)	0.3
Do not believe in AEDs	3 (7)	5 (17)	0.2
Others	21 (47)	13 (43)	0.7

^a Participants could select more than one answer.

^b Abbreviation: AED, antiepileptic drug

Table 5. Reasons for not Using Complementary and Alternative Medicine Among Patients With Epilepsy^a

Reason	Shiraz, No. (%)	Tehran, No. (%)	P value
Lack of enough information about CAM ^b	196 (71)	91 (46)	0.0001
Fear of medical interactions	78 (28)	33 (17)	0.006
Fear of adverse effects of CAM	70 (25)	29 (15)	0.008
High cost of CAM	15 (5)	9 (5)	0.7
Others	29 (10)	39 (20)	0.004

^a Participants could select more than one answer

^b Abbreviations: CAM, complementary and alternative medicine

5. Discussion

Epilepsy is a common chronic neurological disorder and more than one-third of patients have persistent seizures despite using appropriate AEDs (2). Once two drugs have failed, other treatment options should be considered (1, 3). Complementary and alternative medicine is

an option considered by many people with epilepsy, despite the lack of enough scientific proof for its efficacy in most instances. No randomized, controlled trials have evaluated the efficacy of various CAM treatments for epilepsy. This has been highlighted by several recent reviews on the topic showing the absence of enough evidence to support CAM efficacy, despite the high prevalence of using CAM by patients with epilepsy (5). In our study, 46% of people in Iran thought that at least one of the choices of CAM treatments is effective in treating seizures. People in the north of the country more frequently believed that CAM could be helpful in treating seizures compared to the people in the south. This difference is probably due to cultural issues and differences, as availability of conventional treatments for epilepsy, and economical situation, educational system, race and religion of people are more or less similar between these two areas. About 14% of people in this study used CAM treatment(s) with the hope of treating their seizures. The number of patients who used CAM in Shiraz compared to those in Tehran was not different. Similarly, the reasons as why they used CAM were not different either. However, the CAM methods they applied were different between these two areas; people in Shiraz more often used traditional or herbal medicine to treat their seizures, while patients in Tehran used exorcism or psychic more than any other method. This difference is most probably due to cultural differences, as described above. The most common reasons for not using CAM were lack of enough information, fear of medical interactions, and fear of adverse effects in both areas, despite the differences in their frequencies. The number of patients who used CAM in our study is less than that expected for the people in our region (6), and even compared to other studies (4, 7, 8). This is probably due to cultural differences or different methodologies applied. None of the patients studied stopped their antiepileptic drugs due to use of CAM, but these were the people who were admitted to our clinic, and it does not reflect all patients in general. In answer to the question "Why do individuals use CAM?", Sirven (5) has mentioned three possible theories: 1) High failure rates of antiepileptic drugs (AEDs) to treat seizures; 2) The comorbidities of epilepsy, some of which are more problematic than the seizures themselves and for which AEDs or other therapies are perceived to be of little help; 3) CAM may be perceived as more natural and less toxic than AEDs. Most probably, all these theories are valid and contribute to the use of CAM by people with epilepsy. We observed that most people used CAM, because they were unhappy with their treatment results with AEDs. However, there are probably more factors involved in making such a decision as to use an unconventional therapy (i.e. CAM) to treat seizures. For example, in our study, high cost of AEDs was considered as an important factor by some patients.

In this study, we could not find a model to predict that

CAM is effective in treating seizures. However, we found a model among CAM users. The model correctly classified most of the interviewees. Within this model educational level [having either low education (under secondary school) or on the contrary, high education (university education)] made a significant contribution. People with epilepsy who had either a low education or, on the contrary, those who were highly educated more likely used CAM to treat their seizures. In people with lower education, it is probably related to the fact that patients with epilepsy often have weak perceptions of internal and strong perceptions of external health locus of control, which probably means that patients with epilepsy might adapt less effectively to their illness and have lower levels of engagement in beneficial health behaviors and active coping strategies (9). On the other hand, people with higher education more often have access to available sources of information (e.g., internet), and because they might not be happy with their current conventional therapy with AEDs, they look for other possible alternatives. In a previous study (10), logistic regression analysis revealed that the three factors independently associated with CAM use were male gender ($P < 0.05$, OR = 2.3, 95% CI = 1.1 - 4.9); higher economic status ($P < 0.05$, OR = 2.5, 95% CI = 1.2 - 5.0); and the belief that CAM use was safe ($P = 0.001$, OR = 1.9, 95% CI = 1.3 - 2.9). Gender was not an important factor in our study. We did not study the effects of economic status in our research and we cannot comment on that. We did not look at income. It might influence whether the patients could afford CAM options.

Complementary and alternative medicine is considered and used by many people with epilepsy to treat seizures, despite the lack of enough scientific proof for its efficacy. As a matter of fact, effectiveness of the CAM used by our patients was described as less effective compared to their AEDs, in most people. Cultural issues probably play an important role in having faith in CAM and consequently, use a specific method of CAM to treat seizures. Therefore, informing people with epilepsy about risks of not taking AEDs in the hope of receiving help from an unapproved unconventional method is of paramount importance. However, when asked about CAM treatments by patients, the first recommendation is to keep an open mind. Try to understand the rationale as to why people choose these therapies. Provide available and appropriate information regarding the safety and efficacy of various CAM treatments for epilepsy (5, 11, 12). Some CAM treatments may be potentially useful or at least are not harmful. Yoga, exercise, and stress management techniques are of potential benefit and are not harmful. Others are a clear danger (5, 13, 14). Further well-designed studies are required to investigate the precise role of various CAM treatment options in people with epilepsy. Similarly, further investigation is necessary to clarify all the factors involved in making the perceptions of CAM by people with epilepsy and the rationale as to why they choose these therapies.

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Authors' Contribution

All authors participated in data collection and manu-

script preparation.

Financial Disclosure

The authors have no conflict of interest.

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Appendix

Dear Patient,

We are conducting a research study to learn about application of alternative medicine to treat seizures in epilepsy.

The survey does not include any information that would reveal your identity and is anonymous. Please do not write your name or any other specific personal information on the questionnaire.

If you agree to participate in this study, please fill out the survey in the following pages as completely as possible. Please read each item and circle either YES, or NO. If any question makes you uncomfortable, you do not have to answer it. We appreciate your time and your cooperation.

Application of Alternative Medicine to Treat Seizures in Epilepsy: part 1, part 2, part 3, part 4, part 5, part 6

* Part 1

Who is filling out the questionnaire	Patient	Parents	Care-giver
The patient age		
The patient gender	Female	Male	
Level of education of interviewee	High School	Some College	Graduate
The patient's age at the onset of seizure		
Which anti-epileptic drugs you are taking		
The patient seizure type		
How often the patient has seizures	None for at least 1 year	Less than once per month	More than once per month
Any other illnesses the patient has		

** Part 2

1. Do you think that any of the following might be helpful to treat seizures?				
Herbal drugs	Yes	No	I do not know	If yes, which herbal drugs.....
Exercise	Yes	No	I do not know	If yes, what kind of exercise.....
Yoga	Yes	No	I do not know	
Meditation	Yes	No	I do not know	
Tai chi	Yes	No	I do not know	
Hypnosis	Yes	No	I do not know	
Acupuncture	Yes	No	I do not know	
Chiropractic care	Yes	No	I do not know	
Massage therapy	Yes	No	I do not know	
Reflexology	Yes	No	I do not know	
Aromatherapy	Yes	No	I do not know	
Homeopathy	Yes	No	I do not know	
Biofeedback	Yes	No	I do not know	
Ayurvedic medicine	Yes	No	I do not know	
Psych readers	Yes	No	I do not know	
Exorcism	Yes	No	I do not know	
Traditional medicine	Yes	No	I do not know	If yes, what kind of traditional medicine.....
Diet therapy	Yes	No	I do not know	If yes, what kind of diet therapy.....

*** Part 3

2. Have you ever USED anything other than conventional antiseizure medicine to treat your seizures? Such as vitamins, herbs, other supplements, acupuncture, chiropractic manipulation, exercises, or anything mentioned above?

YES NO If yes, name what you have used or tried.....

How long did you use it?.....

Did you experience any side effects?.....

How did its effectiveness compare with those of the medicines your doctor prescribed?

Less effective

More effective

Equally effective

If you have used or tried more than one item, please name them.....

**** Part 4

3. What is your source of information about alternative medicines?

.....

***** Part 5

4. If you have used anything other than conventional antiseizure medicines to treat your seizures, what are the reasons? You may select more than one answer

Dissatisfaction with the cost of conventional therapy

Dissatisfaction with the effectiveness of conventional therapy

Dissatisfaction with the side effects of conventional therapy

I do not believe conventional therapy works

Other

***** Part 6

5. If you have NEVER used anything other than conventional antiseizure medicine to treat your seizures, what are the reasons? You may select more than one answer

Financial considerations

Fear of side effects

Fear of medical interactions

Do not know about them enough

Unwilling to use treatments which are not scientifically valid

Other

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