

How Do Parents Think about the Effect of Food and Alternative Medicine on their Epileptic Children?

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Abstract

Objective: Parents of epileptic children are willing to know if specific foods precipitate or aggravate their kids' seizures. Nonetheless conclusive data are limited. Alternative medicine has become a popular approach to many diseases in the world and there are limited data about this approach to epilepsy in Iran. We tried to evaluate attitude of parents of epileptic children to food-epilepsy relationship and alternative therapeutic approach to epilepsy.

Methods: We carried out a cross-sectional study with analytic aspect at Children's Medical Center, Tehran, Iran in 2008, by asking the parents of epileptic children to fill out a valid and excellently reliable questionnaire. We collected parents' attitude and analyzed it using SPSS software.

Findings: One-hundred and fifty one families participated in the study. Fifty-nine of participants (39.1%) believed that foods had no effect on epilepsy. Fifty one cases (33.8%) said that foods might have negative or positive effect on epilepsy and 27.1% (41 cases) had no idea. Higher percent of parents believed in food-epilepsy relation in cases that fathers had educational levels above high school graduation. Sixteen cases (10.6%) said that alternative medicine might improve epilepsy and 55% had no idea about efficacy of this approach to epilepsy.

Conclusion: Compared with previous published study from Iran, parents of epileptic children believed less in food-epilepsy relation. Majority of parents either believed that foods had no effect on epilepsy or had no idea. More than half of parents had no idea about efficacy of alternative medicine to epilepsy. Only a few of them believed in ameliorating effects of alternative medicine on epilepsy.

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Introduction

Epilepsy is one of the most important disorders in the field of pediatric neurology. The cumulative lifetime incidence of epilepsy is 3% while more than half of cases begin in childhood^[1]. Parents of epileptic children often ask if there is any relationship between specific foods in a usual daily diet and amelioration or exacerbation of seizure attacks. Nonetheless there is no decisive and proved answer to this question. Even different authorities may have different ideas about this subject. The oldest recommendation which we have is by Avicenna, the great Iranian physician of nearly 1000 years ago, who believed and recommended that epileptic patients should avoid excessive eating and also avoid some foods such as beef, mutton, fish, milk, onion, garlic, celery, radish, turnip, cauliflower, carrot, broad beans and lentils^[2].

Reviewing literature we can find reports of reduction of seizure threshold in rats by excess dietary amino acids^[3], induction of convulsive disorders in rats by monosodium glutamate^[4], occurrence of generalized convulsions after consumption of a large amount of ginkgo nuts^[5], and induction of seizures and refractory status epilepticus due to star fruit intoxication in patients with chronic renal disease^[6].

Although there is no randomized controlled trial to prove correlation between foods and epilepsy or to recommend specific dietary restriction for children suffering epilepsy, a few studies have tried to evaluate beliefs and experiences of people about this relationship. It is interesting to know that results of these studies are not similar.

Another thing which we should consider is the attitude of our community to different types of foods according to traditional medicine in which food substances are divided into three groups as follows: foods with cold nature, foods with moderate nature, and foods with warm nature^[2].

There is no published study to evaluate attitude of people to relation of epilepsy with these food groups. Therefore, regarding to importance of this subject and specific attitude of our families to different kinds of foods based on traditional medicine, we designed this study.

Alternative medicine including herbal medicine, homeopathy, acupuncture and other approaches become increasingly popular in the world; but there is limited conclusive evidence about efficacy of these methods on epilepsy^[7], moreover the situation of these treatments for epilepsy in Iran is not so clear, hence, as our next goal in the study, we tried to ask the attitude of parents of children with epilepsy toward the role of these approaches on seizure control.

Undoubtedly this is important because sometimes these treatments are used by families without informing the physician while there are possible risks of prescription of these treatments without any scientific evidence.

Subjects and Methods

We carried out a cross-sectional study with analytic aspect at outpatient clinics of Children's Medical Center, affiliated to Tehran University of Medical Sciences (TUMS), Iran, in 2008 (from January to December). These clinics are one of the main referral centers for children suffering from epilepsy from all over the country.

Applying convenient sampling, we selected the patients with epilepsy (idiopathic or symptomatic) rather than children affected by seizures with fever or metabolic disorders.

Patients were taking antiepileptic drugs. To assess parents' attitudes toward the relation of foods and alternative medicine with epilepsy, we prepared a questionnaire. A detailed list of 119 food substances was given to parents. The questionnaire also asked their idea about effect of three main food groups according to traditional medicine (foods with cold, moderate or warm nature) and effect of alternative medicine on epilepsy. They were requested to select one of the following options:

- The item improves disease
- It has no effect on disease
- It precipitates disease
- Having no idea.

Validity of questionnaire was approved by expert panel. To analyze reliability of

questionnaire we determined Cronbach's Alpha which was 0.998 indicating an excellent reliability. For assessing the relationships, *P* value less than 0.05 was considered significant. To evaluate negative attitude to each group of foods (i.e., cold, moderate or warm nature) at level of 25%, with acceptable difference of 7%, we computed the sample size which was 147.

The questionnaire also included demographic information of patients and the family such as educational level of parents, average monthly income of family, patient's age and sex, family's religion and residence city. After taking verbal informed consent from parents of children with epilepsy, we gathered the information via personal interviews. We asked parents' attitude without offering them any "leading questions". We collected data with confidentiality.

Findings

We had 151 participants. All participants were Moslems. They were from different parts of Iran, so, cultural factors seemed to be different. The age of epileptic children varied from 1 to 14 years [mean (SD) age: 5.9 (\pm 3.1)]. Male to female ratio was 1.09. Educational levels of parents are illustrated in table 1.

While only one of the fathers was epileptic (0.7%), history of epilepsy was positive in 13 (8.6%) of mothers. Other siblings with epilepsy were seen in 6 (4%) of families. Average monthly income of family ranged from \$55.6 to \$1111.1 [mean (SD) income: 420.7 (\pm 207.4)]

In general, 59 (39.1%) of participants [Confidence Interval (CI)_{95%}: 31.3-46.9] believed that foods had no effect on epilepsy. 51 (33.8%) cases [CI_{95%}: 26.2-41.3] said that foods might

have negative or positive effect on epilepsy.

41 (27.1%) of them [CI_{95%}: 20.1-34.2] had no idea. In other words, 100 (66.2%) believed that food does not improve or precipitate seizures.

The attitude of parents to relation of each group of three above mentioned traditional dietetic groups based on traditional medicine is seen in table 2. As illustrated in the table, the most negative attitude was related to foods with cold nature, while the most positive attitude was toward foods with warm nature.

Parents believed that foods with moderate nature do not ameliorate or exacerbate epilepsy. About following substances, participants either had no idea or said that they have no effect on epilepsy: Mulberry, beetroot, celery, saffron, ergot of rye, cow's brain and sheep's brain.

Following were recognized by our participants as the most aggravating food substances (numbers and percentages are seen in parentheses): Cucumber (37, 24.5%), sour yoghurt (30, 19.9%), broad bean (24, 15.9%), watermelon (23, 15.2%), vinegar (21, 13.9%), sweet yoghurt (20, 13.2%), lemon juice (19, 12.6%), verjuice (19, 12.6%), hot pepper (19, 12.6%), and churned sour milk (19, 12.6%).

Following food substances were recognized by participants as the most ameliorating substances (numbers and percentages are seen in parentheses): Honey (31, 20.5%), sugar (27, 17.9%), ripe dates (23, 15.2%), lentil (18, 11.9%), walnut (18, 11.9%), sesame (15, 9.9%), and sheep's milk (15, 9.9%). Other substances were reported either ameliorating or aggravating or both (of course, by different people) at lower percents.

We also evaluated participants' attitude considering any food substance in related group of *food guide pyramid*. The average of attitude scores is illustrated in table 3, using previously mentioned scoring. As seen in this table, none of

Table1. Educational levels of epileptic children's parents

Educational levels	Educational levels of fathers	Educational levels of mothers
Under high school graduation	64(42.4%)	94(62.3%)
High school graduation	63(41.7%)	45(29.8%)
Above high school graduation	24(15.9%)	12(7.9%)
Total	151(100%)	151(100%)

Table2: Parents' attitude to food groups of traditional medicine

Parents' attitude	Foods with warm nature	Foods with moderate nature	Foods with cold nature
Improves	22(14.6%)	0	0
No effect	68(45%)	90(59.6%)	58(38.4%)
Precipitates	0	0	36(23.8%)
No idea	61(40.4%)	61(40.4%)	57(37.8%)

parents believed that food substances belonged to "bread and corns" group might precipitate epilepsy. Mean attitude scores to "vegetables and fruits" and "milk and dairy products" groups was below zero indicating that on the average, participants believed that these groups aggravate epilepsy.

To see if educational levels of parents, family income and history of epilepsy in family, affect parents' attitude to food-epilepsy relation, we analyzed our data based on these variables. The only statistically significant difference was seen based on educational levels of fathers. In other words, 16 of 24 (66.7%) families in which fathers had educational levels above high school graduation, believed in food-epilepsy relation; while 35 of 127 (27.5%) families in which fathers had lower educational levels believed in such relation ($P<0.001$). There were no significant differences between different subgroups considering mothers' educational levels, history of epilepsy in family and monthly income of the family.

Participants' beliefs about alternative medicine are summarized in table 4. Looking at this table, it is obvious that the majority of participants had no idea about the efficacy of alternative approaches to epilepsy. Moreover, among different types of alternative medicine, the most positive attitude was to herbal medicine.

Discussion

Parents usually ask if their epileptic children have dietary restrictions. The oldest recommendation which we have is by Avicenna, who believed and recommended that epileptic patients should avoid excessive eating, foods with cold nature and also some foods such as beef, mutton, fish, milk, onion, garlic, celery, radish, turnip, cauliflower, carrot, broad beans and lentils. He also advised the main daily meal to be divided into three parts, one-third for lunch and two-thirds for dinner. Of course, he was one of the greatest physicians of traditional medicine and has mentioned some other characteristics of food substances in his book. For example food substances may have moist or dry nature. He believed that these other characteristics might influence epilepsy. Therefore, it seems that he believed in different factors which affect food-epilepsy relation [2].

However, to design a clinical controlled study to evaluate the effects of different foodstuffs on epilepsy in children is not so easy; perhaps this is why researchers just have tried to evaluate people's attitudes and experiences.

In a published study in Fars province, Iran, among 125 families of epileptic children, 55.2% believed there was a relationship between specific foods and occurrence of seizures. Personal confirmatory experiences with seizures

Table3: Parents' attitude scores regarding food pyramid groups

Food groups	Mean (SD) of scores	Min score	Max score
Bread, corns	0.17 (0.50)	0	2
Vegetables, fruits	-0.89 (8.77)	-25	28
Meat, grains, nuts, egg	0.86 (3.71)	-6	16
Milk, dairy products	-0.17 (2.33)	-6	8
Other food substances	0.19 (1.59)	-4	6

SD: standard deviation

Table 4: Attitudes to beneficial effects of alternative medicine on epilepsy

Alternative medicine	Improves	No effect	Precipitates	No idea
Alternative medicine (in general)	16(10.6%)	51(33.7%)	1(0.7%)	83(55%)
Herbal medicine	9(6%)	52(34.4%)	0	90(59.6%)
Acupuncture	4(2.6%)	47(31.1%)	6(4%)	94(62.3%)
Homeopathy	1(0.7%)	45(29.8%)	0	105(69.5%)
Other alternative approaches	3(2%)	46(30.5%)	0	102(67.5%)

after consumption of certain food materials were reported by 31.2% of families. Dairy products, sour foods, fruits and vegetables were the most common foods reported to be responsible [8].

In another study from the same province, among 250 health care workers participated, 58.4% believed there existed a relationship between consumption of specific foods and occurrence of seizures. Dairy products, sour foods, food additives, meats, fish, fruits and vegetables were the most common foods reported to be responsible for occurrence of seizures according to their experiences [9].

A more recent study carried out in America, showed that only 5.7% of epileptic patients (with an average age of 40.3±16) believed in such a relationship. Therefore it could be due to the cultural diversity [10].

Comparing these data with our results showing only 33.8% of participants believed that foods had positive or negative effect on epilepsy, is in favor of this idea that relation of foods and epilepsy may be more culturally based than being a fact. However, it is clear that we have evaluated just parents' attitude and our results can't prove or disprove food-epilepsy relation by itself.

Considering results of our study, the most negative attitude was directed at foods with cold nature; obviously this result is consistent with Avicenna's belief. As mentioned before, participants believed that vegetables, fruits and dairy products were the most aggravating food groups. Undoubtedly, this result is similar to previous studies from Iran [8, 9].

The analysis of parents' attitude based on educational levels revealed that fathers' educational level had influenced parents'

attitude; in a way that educational levels higher than high school had made them believe more in food-epilepsy relation. This result is inconsistent with the result of previously published study from Iran in which well educated (above high school) families believed less in such relation than low educated (below high school) families (40% versus 62.4%) [8].

A possible reason for such disagreement is that we have no scientific evidence about relation between daily diet and epilepsy. So, increasing educational level cannot cause achievement to relevant references. Another reason may be different jobs of well educated participants of these studies. In other words, increasing educational level in different fields cannot have the same influence on parents' attitudes toward food-epilepsy relation. Anyway, this disagreement shows that people's attitude to this subject can't be anticipated based on their educational level.

It is worthwhile to have a look on possible causes of food-epilepsy relation. Reviewing literature we find that lowering seizure threshold, food-drug interaction, deficiency of some vitamins (e.g. thiamin) and allergic reaction to foods (as allergens) have been mentioned so far [11].

However, regarding results of studies indicating food-epilepsy relationship and results of our study and similar studies, it seems that specific foods may precipitate seizures in specific settings. In other words, foods have no definite and extendable causative effect on epilepsy. In contrast, such a belief results from cultural factors. Finally, we suggest designing further clinical controlled prospective studies,

regarding different aspects of this subject, to prove or disprove food-epilepsy relation.

Our data showed that just 10.6% of participants believed that alternative medicine (in general) may be beneficial in children with epilepsy. This indicates that our participants were not interested in these approaches; perhaps because they have referred to a conventional medicine center otherwise they would have referred to alternative medicine centers.

However, more than half of participants (55%) had no idea on this subject; therefore, we think that educational programs by experts are needed to make people familiar with available facts in this field; at the same time, to carry out randomized clinical trials is really needed to clarify more facts.

Conclusion

Compared with previous published study from Iran, parents of epileptic children believed less in food-epilepsy relation. Majority of parents either believed that foods had no effect on epilepsy or had no idea. However, among those who believed in food-epilepsy relation, the most negative attitude was directed at foods with cold nature.

Moreover, these parents believed that vegetables, fruits and dairy products were the most aggravating food groups (similar to previous studies from Iran). More than half of parents had no idea about efficacy of alternative medicine to epilepsy. Only a few of them believed in ameliorating effects of alternative medicine on epilepsy.

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Conflict of Interest: None

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