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# The role of educating parents of children with fever and febrile convulsions in reducing the intensity of anxiety of parents; A Quasi-experimental study in Gorgan, Iran

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## Abstract

**Introduction:** Fever and convulsions are one of the most common forms of convulsions and the cause of hospitalization in children under 5 years old. The occurrence of fever and convulsions in a child causes parents to worry about the child's death, and this mental pressure can harm the parent's mental health.

**Objectives:** This study was conducted to investigate the effect of education in reducing the intensity of anxiety of parents with a child with fever and seizures due to fever in Gorgan.

**Patients and Methods:** In this quasi-experimental study 49 parents of children who had fever and convulsions caused by fever in the second half of 2018 and were admitted to Taleghani hospital in Gorgan were studied. The intensity of anxiety was measured using the Burns Anxiety Inventory questionnaire. Data were analyzed by SPSS version 24 statistical software.

**Results:** In this study, 49 parents of children with fever and seizures were investigated. The average age of parents was  $30.27 \pm 12.82$  years. The ethnicity of 63.3% of parents was Fars and 91.8% of participating parents were mothers, 86.6% of mothers were household and 12.2% were employed. The results of the study showed that the level of anxiety of the parents before the training was such that 2% of the parents had minimal or no anxiety, 1.6% had mild anxiety and 49% of the parents had extreme anxiety or panic.

**Conclusion:** In the present study, after the educational intervention, the anxiety of the parents compared to before the training showed a significant decrease, which shows the effect of the training on reducing the anxiety of the parents.

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## Introduction

Seizures are caused by abnormal electrical discharges in the brain cells, and during the discharge of electrical waves, some organs or the whole body may tremble and shake (1). Various causes such as primary disorder in the central nervous system, high fever, trauma, infectious diseases, tumors and brain lesions, genetic factors, and developmental defects can change the seizure threshold and affect the discharge of electrical charge of neurons (2,3).

Febrile seizure in 1980 by the National Health Consensus Committee (NHCC) as an event that occurs in infancy or childhood (usually between the ages of 3 months and 5 years) with fever; It was stated that there is no evidence of central nervous system infection or other known causes for it (4). Seizure caused by fever is one of the most common forms of seizure in children, which occurs

## Key point

The results of this study help clarify the role of education in reducing the level of anxiety of parents with children with fever and seizures and provide useful information to pediatricians that can help in appropriate clinical treatment; The use of education in dealing with patients and at the same time as the treatment of the child helps to increase the quality of life of the parents and as a result of the children.

in approximately 3-4% of children under 5 years of age (5). Most cases of febrile seizures occur between 6 months and 3 years of age, and only 6-15 percent of them occur after 4 years of age and rarely after 6 years of age (6,7). As well as, its prevalence in American children is 2% to 5% (3) and it has a different prevalence in different populations, from 1% in China to 41% in Guam (4). The increased probability of febrile convulsions in a



child with a positive family history suggests the genetic complexity (polygenetic) of this disease. In such a way that a set of environmental and genetic influencing factors are effective in creating it (7,8). A febrile convulsion is considered to be a developing brain response to fever, but its exact physiopathology is still unknown (9).

Seizures in a child can disrupt the family life, sleep, and social activities of the parents, and create a lot of stress and anxiety in them; It can cause irreparable damage to the child's health. Increasing parents' awareness about the relationship between fever and convulsions and the benign nature of the disease can play an important role in reducing their worry and anxiety (10). Some mothers become confused and scared and lose control when their child has a fever, and for this reason, they are not able to take any measures to control it and its complications (11,12). For parents, watching their children suffer from convulsions is a terrifying and stressful experience, and it arouses their emotions (13), and this causes a clear difference between the opinions of doctors based on the relief of fever and convulsions and the reaction of parents (14).

## Objectives

Several factors play a direct role in creating and intensifying parents' anxiety, the most important of which is the lack of accurate information on how to manage seizures and required measures such as a lumbar puncture or electroencephalogram (15). This study was conducted to investigate the effect of education in reducing the intensity of anxiety of parents with a child with fever and seizures due to fever in Gorgan.

## Patients and Methods

### Study design

In this quasi-experimental study, 49 parents of children who had fever and convulsions caused by fever in the second half of 2018 and were admitted to Taleghani hospital in Gorgan were studied. The sample size includes all the parents referring to Taleghani Medical Training Center in Gorgan with a child suffering from febrile convulsions in the second half of 2018, who are willing to participate in the study. Demographic information of children including age, sex, gender, occupation and education of parents, ethnicity, number of children, rank of child, seizure episode, type of seizure, and history of seizure were collected using a designed checklist.

The intensity of anxiety was measured using the Burns Anxiety Inventory questionnaire. This questionnaire has 33 questions related to the general symptoms of anxiety, which the Burns-A consists of three subscales: Anxious feelings (six items: anxiety, nervousness, worry, and fear; Feeling that things around you are strange, unreal or foggy; Feeling detached from all or part of your body; Sudden, unexpected panic spells; Apprehension or a sense of impending doom; Feeling tense, stressed, "uptight", or on edge), anxious thoughts (11 items: Difficulty

concentrating; Racing thoughts or your mind jumps one thing to the next; Frightening fantasies or day dreams; Feeling that you're on the verge of losing control; Fears of cracking up or going crazy; Fears of fainting or passing out; Fears of illnesses, heart attacks or dying; Fears of looking foolish in front of others; Fears of being alone, isolated or abandoned; Fears of criticism or disapproval; Fears that something terrible will happen) and physical symptoms (16 items: Skipping, racing or pounding of the heart; Pain, pressure or tightness in the chest; Tingling or numbness in the toes or fingers; Butterflies or discomfort in the stomach; Constipation or diarrhea; Restlessness or jumpiness; Tight, tense muscles; Sweating not brought on by heat; A lump in the throat; Trembling or shaking; Rubbery or "jelly" legs; Feeling dizzy, lightheaded or off balance; Choking or smothering sensations; Headaches or pains in the neck or back; Hot flashes or cold chills; Feeling tired, weak or easily exhausted). The validity and reliability of the questionnaire were investigated in the study of Ortuño-Sierra et al, and Cronbach's alpha coefficient for all items was 0.95(16).

For each symptom of anxiety, points are considered as follows: not at all=0, sometimes=1, moderately=2, and a lot=3. The scores obtained are between 0 and 99, which according to these scores, the intensity of anxiety is divided as follows: total score 0-4: minimal or No anxiety, 5-10: borderline anxiety, 11-20: mild anxiety, 21-30: moderate anxiety, 31-50: severe anxiety, 51-99: extreme anxiety or panic.

After assessing the severity of the parent's anxiety, they were given the necessary training on how to recognize their child's illness and how to deal with it. Also, educational pamphlets and telephone numbers were provided to parents for answering and providing necessary guidance, three months later, the questionnaire about them was completed again and the intensity of anxiety was measured. In this research, the parent is the parent who is present at the time of the seizure, but in the case of the presence of both people, training was given to both of them, but the questionnaire was completed only about the father present at the time of the seizure, with the priority of the mother.

### Statistical analysis

The patients' data were recorded based on the prepared checklist that was completed by the project executive assistant, and the required information was extracted. After coding, the collected data were analyzed in SPSS version 24 statistical software, and the Friedman test, Fisher's exact test, and Pearson's correlation coefficient were performed. In this study, *P* values less than 0.05 were considered statistically significant.

## Results

In this study, 49 parents of children with fever and seizures were investigated. The average age of parents was 30.27 ± 12.82 years. The ethnicity of 63.3% of parents was Fars

and 91.8% of participating parents were mothers, 86.6% of mothers were Household and 12.2% were employed. 69.4% of parents had a diploma level of education or less and 30.6% had a college education. 34.7% of parents had one child and 18.4% had three children (Table 1). Table 2 shows the demographic and clinical information of children hospitalized with fever and seizures.

The results of the study showed that the level of anxiety of the parents before the training was such that 2% of the parents had minimal or no anxiety, 1.6% had mild anxiety and 49% of the parents had extreme anxiety or panic (Table 3).

## Discussion

In this research, for the first time in Iran, the role of education of parents of children with fever and convulsions in reducing the intensity of anxiety of parents with children suffering from febrile convulsions was examined. Before the intervention, the anxiety level of about 78% of the parents was extreme anxiety or panic. But after the intervention, which showed that 87.8% of the parents had minimal or no anxiety and no case of mild anxiety to panic was found in the patients.

The results of this research showed that all the parents who were at any level of anxiety moved to the level of insignificant anxiety and a few parents who were at the level of panic anxiety moved to the borderline level of anxiety. In a study conducted by Klotz et al, to measure the anxiety level of family members after the first attack of fever and convulsions, they concluded that parents who were trained three weeks after the occurrence of fever and convulsions in their children, their anxiety decreased significantly after training, which is in line with the results of the present study (17). In another study by Chang and Huang, which investigated the effect of education on the anxiety level of parents of children with fever, they showed that the anxiety level of trained parents was significantly lower than that of untrained parents (18). In addition, several studies discussed the effect of having enough information about fever and seizures in parents. The average anxiety level before training was 7.2 and after training was 5.5, which indicated a significant decrease in the level of anxiety of parents after training (18-20).

In 2017, Frascari et al conducted a pilot study in France to investigate the level of post-accident stress in parents who witnessed the first seizure caused by fever and the effect of training workshops to familiarize them with appropriate coping methods. They reported that the level of parental anxiety 10 weeks after the seizure, in the group that participated in the educational intervention, had a significant decrease compared to the group that did not participate in the educational class (15); The findings of the above research confirm the results of the present study to reduce the anxiety of parents who were trained and show the important role of education in reducing the anxiety of parents with children with fever and seizures. Although it

shows the effect of the passage of time on reducing anxiety, it is recommended to conduct case-control studies in future research.

## Conclusion

In the present study, after the educational intervention,

**Table 1.** Demographic information of parents of children hospitalized with fever and seizures

Variable		No. (%)
Gender of parents	Female	45 (91.8)
	Male	4 (8.2)
Ethnicity of parents (mother)	Fars	31 (63.3)
	Sistani	10 (20.4)
	Torkaman	6 (12.2)
	Others	2 (4)
Education level of parents (mother)	Illiterate or elementary	7 (14.3)
	Middle school	8 (16.3)
	High school	19 (38.8)
	College	15 (30.6)
Employment status (mothers)	Household	40 (86.6)
	Employed	6 (12.2)
	Unemployed	3 (6.1)
Number of children	One child	17 (34.7)
	Two children	23 (46.9)
	Three children	9 (18.4)

**Table 2.** Demographic and clinical information of children hospitalized with fever and seizures

Variable		No. (%)
Gender	Girl	27 (55.1)
	Boy	22 (44.9)
The rank of the child in the family	One	22 (44.9)
	Two	20 (40.8)
	Three	7 (14.3)
Family history of fever and seizures	Yes	6 (12.2)
	No	43 (87.8)

**Table 3.** Comparison of parents' anxiety levels before and after the intervention of children hospitalized with fever and seizures

Degree of anxiety	Before intervention	After intervention
	No. (%)	No. (%)
Minimal or No anxiety (0-4)	1 (2)	43 (87.7)
Borderline anxiety (5-10)	2 (4.1)	6 (12.3)
Mild anxiety (11-20)	3 (6.1)	0 (0)
Moderate anxiety (21-30)	5 (10.2)	0 (0)
Severe anxiety (31-50)	14 (28.6)	0 (0)
Extreme anxiety or panic (51-99)	24 (49)	0 (0)

*P* value = 0.001

the anxiety of the parents compared to before the training showed a significant decrease, which shows the effect of the training on reducing the anxiety of the parents.

### Limitations of the study

Failure to provide accurate information and defects in completing information by parents, as well as the lack of a control group, are among the limitations of the present study.

### Authors' contribution

Conceptualization: SAH.

Methodology: NB, MGG.

Validation: NB.

Formal analysis: ME, NB.

Investigation: ME.

Resources: SAA.

Data curation: PSH, ME.

Visualization: SAA.

Supervision: SAH, NB.

Project administration: SAH, NB.

Funding acquisition: SAH.

Writing—original draft: ME.

Writing—review and editing: SAH, MGG.

### Conflicts of interest

The authors decline any kind of conflict of interest.

### Ethical issues

The research followed the tenets of the Declaration of Helsinki. The Ethics Committee of Golestan University of Medical Sciences approved this study (Ethical code# IR.GOUMS.REC.1399.264). Accordingly, written informed consent was taken from all participants before any intervention. This study was extracted from Mousa Estiri thesis (Thesis#111192) of a pediatric resident at this university. Additionally, ethical issues (including plagiarism, data fabrication, and double publication) were completely observed by the authors.

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