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Investigating the Effect of Implementing an Adaptive Sustainability Care Model on the Social Adjustment and Resilience of Mothers with Children with Febrile Seizures in 2024: A Quasi-Experimental Study

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Abstract

Background: Febrile seizures are a concern for many parents. The aim of this study was to investigate the impact of implementing an adaptive sustainability care model on the social adjustment and resilience of mothers with children experiencing febrile seizures in 2024.

Methods: This non-random quasi-experimental study involved two groups: a control group and an intervention group. The study included 30 mothers with children who had febrile seizures and were referred to the emergency department of a medical center in Tehran. The social adjustment and resilience questionnaire was given to the control group (15 mothers) and then to the intervention group (15 mothers) at two time points-before and after the intervention.

Results: The increase in the average social adjustment score (13.73 ± 0.49 vs. 19.33 ± 1.32) in the intervention group was significant at the post-test stage ($P < 0.001$). However, the average social adjustment score in the control group (18.80 ± 0.55 vs. 18.86 ± 2.24) did not show a significant difference between the two time points before and after the intervention ($P = 0.869$).

Similarly, the increase in the mean resilience score (93.53 ± 4.52 vs. 99.06 ± 4.80) in the intervention group was significant between the pre- and post-intervention stages ($P = 0.023$). In contrast, the increase in resilience score in the control group (87.60 ± 1.23 vs. 91.13 ± 4.79) was not statistically significant between the two time periods ($P = 0.094$).

Conclusion: The study results indicate that implementing education through a sustainability and adaptive care model can enhance mothers' resilience skills and social adjustment.

Key Words: Children, Fever, Mothers, Resilience, Seizures, Social Adjustment.

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1- INTRODUCTION

Seizures caused by fevers are a common condition that effects infants and young children. During a seizure, the child often loses consciousness (1). Febrile seizures are one of the most common disorders in children aged 6 months to 6 years, affecting 2 to 8 percent of children (2,3). This disease is classified into two types: simple and complex. In the simple type, attacks last less than 10–15 minutes, are generalized, and occur once every 24 hours. In contrast, complex type attacks are localized, last 10–15 minutes, or may repeat within 24 hours (4,5).

Seizures caused by fever can be concerning for parents, even though this condition is often benign and rarely develops into epilepsy (6). A main concern of parents is the recurrence of convulsions caused by fevers in children (7). Fear of the child's death, along with a lack of knowledge about the disease's complications and prognosis, are additional sources of worry and tension for parents (8-11). An illness in one of the children can affect the entire family. Chronic diseases, such as epilepsy and convulsions, can disrupt family communication, cohesion, and integration. They may also impact the care provided to the affected individual and increase tension within the family (12). When there is tension in the family, mothers are more affected by the crisis, while fathers also try to adapt to the situation (13). Mothers have the primary and initial role in child care; they spend more time with the child and encounter more challenges (14).

Although the seizure attack is acute, the nature of the disease and the effects it has on the family are chronic (15). The family of a child with a chronic disease, especially the mother, faces challenges in adapting to their environment due to various factors, such as the child's physical condition and the psychological pressures caused by daily activities and caregiving (16).

Humans are constantly trying to adapt to their physical and psychological environments. Adaptability is a key factor that reflects a person's mental health and influences all social, family, and personal aspects (17). Compatibility consists of different dimensions, with the social dimension being the most important, serving as the foundation for achieving other dimensions of compatibility (18). Social adjustment is the process by which a person controls their behavior and regulates their social interactions (19). The stress caused by the presence of a sick child in the family affects the social adaptation and resilience of the family members (20). Because a seizure is a crisis, people should be empowered and resilient in dealing with it. Greater endurance improves a person's quality of life (21).

Resilience means overcoming life's problems and the ability to overcome problems (22), and it increases the power of adaptation and adaptability in the face of problems and improves a person's mental health. This skill makes it possible to face difficulties without harming the person (23). Resilience can be developed at any age and strengthened through training (24). One of the strategies to improve mental health is resilience (25). Resilience reduces anxiety and depression, helps overcome various adverse effects-including physical and emotional fatigue caused by work-and supports the maintenance of mental health (26).

Education can be a factor to increase resilience in stressful situations such as children's illness. Nurses are in a special position to interact with family members (27), and as a consultant, and an educator, they have an important role in helping parents (28). In terms of improving adaptation to diseases and improving family functioning, a native model in Iran

called the adaptive stability care model has been designed by Radfar et al. (2016). The goal of this model is to reach a high level of adaptation and compatibility and minimal harm to the patient and family (29). The use of indigenous models that are appropriate to the behaviors and needs of the society will be an important step in enabling nurses to achieve the goals of improving health and empowering families, based on the theory of family-centered care. Considering the importance of social adaptation and resilience in mothers of children suffering from febrile convulsions, and recognizing that the implementation of the adaptive stability care model-based on Iran's comprehensive scientific map-aligns with the country's grand strategy, the present study aimed to investigate the effect of implementing this adaptive sustainability care model on the social adjustment and resilience of mothers with children experiencing febrile seizures in Iran.

2- MATERIALS AND METHODS

2-1. Study Design and Population Under Study

The research was a non-randomized quasi-experimental study involving two groups: a control group and an intervention group. The study population consisted of mothers with children experiencing febrile seizures who were referred to Tehran Children's Medical Center Hospital.

2-2. Inclusion and Exclusion Criteria for Control and Intervention Group

2-2-1. Inclusion

1. Mothers whose children (a child suffering from febrile convulsions in the age group of 6 months to 6 years) went to the emergency department of the medical center for the first time with the diagnosis of convulsions caused by fever.
2. Mothers should be willing to cooperate and have no other sick children at home, and mothers should not suffer from psychological diseases and addictions (according to the mothers' own statements).
3. Mothers should be able to read and write.

2-2-2. Exclusion

1. Changing the diagnosis of the child's disease or the child contracting a new disease during the study.
2. Mothers suffering from physical, mental or addiction diseases that prevent the active participation of the mother in the implementation of interventions related to the study.

2-3. Sampling Method and Sample Size

The sampling method in this research was accessible and easy sampling. To calculate the sample size, the article by Roshni et al. (2018) (30) was used, which investigated the component of social adaptation in mothers with sick children. Based on the parameters of the mentioned study (Effect size d = 1.1, $\alpha = 0.05$, Power (1-βor power) = 0.82, Allocation ratio N2/N1 = 1), the minimum sample for the present study was equal to 30 people, with 15 in the control group and 15 in the intervention group.

2-4. Instruments

Bell's Social Adaptation Questionnaire: Bell's Social Adjustment Questionnaire was designed by Bell in 1961. It consists of five components: compatibility at home, health compatibility, social compatibility, emotional compatibility, and job compatibility. Each component contains 32 items, with the highest possible score being 32 and the lowest score being

zero.Based on Roshni et al.'s study (30), only the social compatibility test was used in this research. The response spectrum of the social adjustment questionnaire was Likert-type, with the score for each option including no (0), yes (1) and don't know (2).

Resilience Questionnaire: Connor and Davidson's resilience questionnaire was prepared in 2003. This questionnaire has 25 statements that are graded on a Likert scale between zero and five (completely false (1), false (2), I have no opinion (3), somewhat true (4) and completely true (5)). This questionnaire includes five dimensions of personal abilities, tolerance, positive acceptance of changes, control and spiritual effects.

2-5. The Validity and Reliability of Instrument

The content validity of the resilience and social adaptation questionnaires was assessed using the translation-back translation method and confirmed by a panel of five experts, receiving 100% approval. The reliability of both questionnaires was also evaluated through a test-retest procedure conducted two weeks apart with a pilot sample of 15 participants. The Intraclass Correlation Coefficient (ICC) was 0.74 for the social adaptation questionnaire and 0.83 for the resilience questionnaire.

2-6. Participants and Study Procedure

In this non-random quasi-experimental study, the samples were selected from among mothers with children suffering from febrile convulsions, whose children are between the ages of one and six years old and have the ability to use WhatsApp messenger and are literate. 15 eligible mothers were included in the control group and another 15 in the intervention group. At the time of discharge, the researcher approached the mothers, introduced himself, fully and clearly explained the aim of the study, and tried to gain the mothers' satisfaction in the study. After obtaining informed consent from them to participate in the study, in the first visit, the demographic questionnaire(including mother's age, education, marital status, number of children, occupation, residence status (private house or rented house) and questions about actions during seizures and mother's awareness, attitude, and belief) was first given to the mothers individually. To determine the level of awareness and knowledge, and after that, in order to establish communication and easier access to mothers in the conditions of the spread of the COVID-19 disease and mothers' willingness to communicate through virtual space, in order to complete the resilience and social adaptation questionnaire, the mothers' contact numbers were taken. Various educational methods were used, including the following: 1- One in-person training session and eight individual virtual training sessions; 2- Using WhatsApp messenger for communication and training; 3- Providing educational videos and educational pamphlets; and 4- Daily virtual and telephone follow-up for ongoing support.

The selected model of the present study includes in-person and virtual training (via WhatsApp), providing educational videos, pamphlets, and daily virtual and telephone follow-ups over a period of three months, which helps improve social adaptation skills and increase mothers' knowledge and performance. Through WhatsApp messenger, two questionnaires of social adaptation and resilience were sent to the mothers in the control group individually for each mother and then to the intervention group after a week. After completing the questionnaires, within three months, based on the intervention Training through the implementation of the adaptive sustainability care model under the supervision of the model designer to the

intervention group, training on febrile seizure disease, the nature of the disease, how to control the disease and prevention, participation of fathers, introduction of similar examples to measure social adaptation and resilience of mothers from It was given through an educational film and a pamphlet in the WhatsApp messenger, and after 3 months, the demographic and social adaptation and resilience questionnaires were given to the intervention and control groups and completed by them again. The flowchart of the study is depicted in Figure 1.

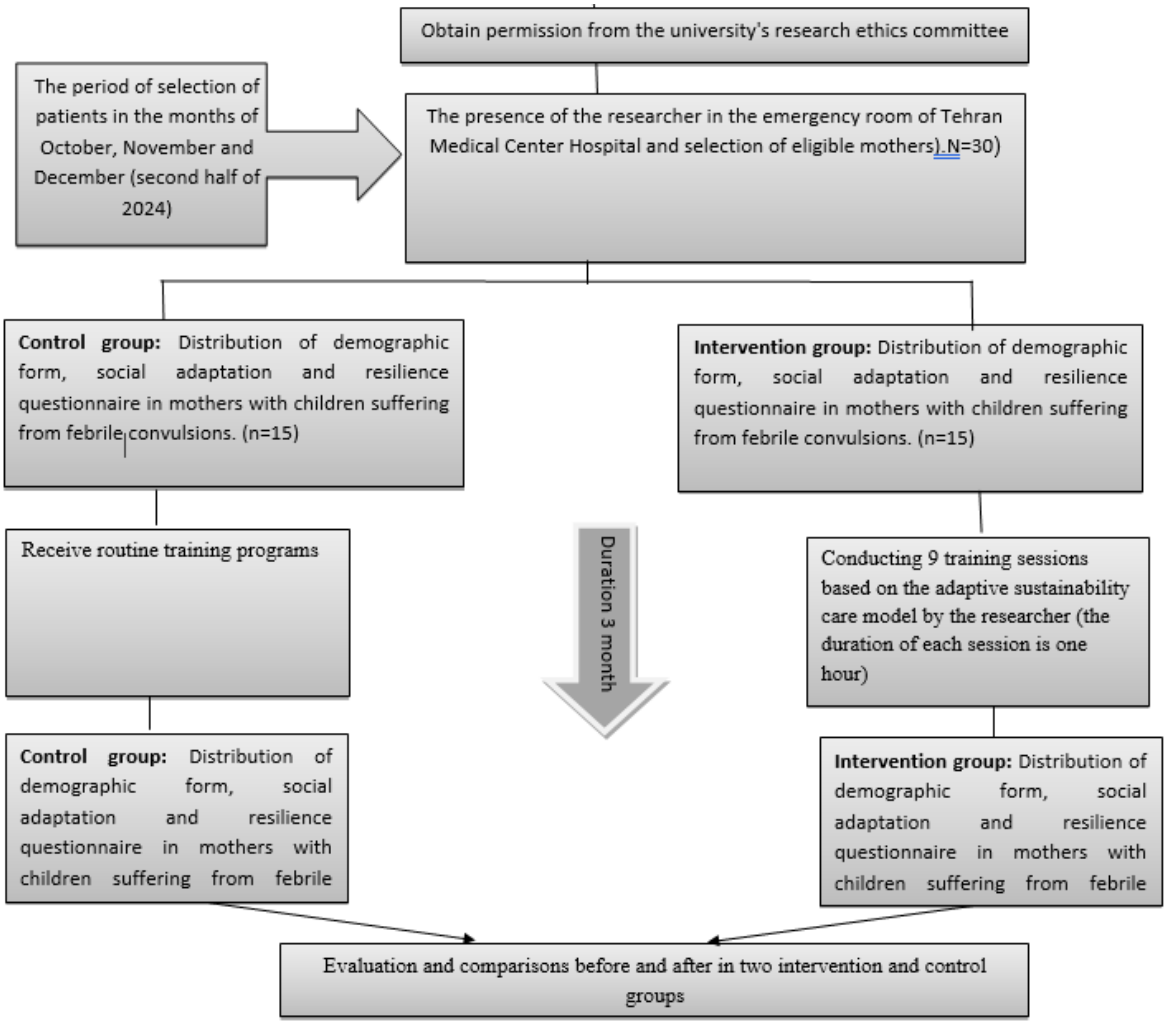

Figure-1. Flowchart of study.

2-7. Adaptive Sustainability Care Model as an Intervention

In terms of improving adaptation to diseases and improving family functioning, a native model in Iran called the adaptive sustainability care model has been designed by Radfar et al. (2016). The goal of this model is to reach a high level of adaptation and compatibility and minimal harm to the patient and family. The performance based on the adaptive sustainability care model consists of four stages: In the first step, Discover the family situation, the demographic information of the family is investigated; In the second stage, Desensitization, through education to the family, it will improve their awareness of the disease and create sufficient motivation in caring for the patient; In the third stage Collaboration, trainings are given for more cooperation of the family in the post-wetting period and In the fourth stage

Continuous Monitoring, the family nurse was examined and taken care of the patient, which was done virtually through WhatsApp messenger or by phone. In order to implement the training, first the topics were coordinated with the model designer Dr. Radfar and his colleagues, and then the intervention implementation was made available to mothers with children suffering from febrile convulsions through the preparation of an educational film and pamphlet within three months with the coordination of the model designer. The number of sessions and the time of the intervention were determined by the opinion of the model designer.

2-8. Data Analysis

Baseline characteristics of the study population were described as mean (± standard deviation, SD) values for continuous variables and frequencies (%) for categorical variables. The normality of the data was assessed using the Kolmogorov-Smirnov test. To compare means between and within groups before and after the study, paired t-tests and independent t-tests were used for normally distributed data. In cases of non-normal distribution, non-parametric tests such as the Mann–Whitney U test and the Wilcoxon signed-rank test were applied. All analyses were conducted using STATA version 14 SE (StataCorp, TX, USA), and a two-tailed p-value of < 0.05 was considered statistically significant.

2-9. Ethical Consideration

1. Obtaining permission from the creator of the adaptive sustainability care model to use the model in the study.

2. Coordination and obtaining permission from the relevant officials of Tehran Children's Medical Center Hospital was done (IR.TUMS.FNM.REC.1398.191).

3. Conscious written consent was obtained from the participants in the study.

4. Presentation of educational clips and pamphlets about febrile convulsions to mothers with children with febrile convulsions in the control group after data analysis.

3- RESULTS

Table 1 shows the characteristics of mothers with children suffering from febrile convulsions in two intervention and control groups in the present study. The age of most mothers with children suffering from febrile convulsions in the intervention group was 25-30 (33.3%) and in the control group was 20-25 (40%). Most of the mothers in the intervention group had a diploma higher than a diploma (53.3%) and in the control group a diploma or less (66.7%). Most of the mothers in the intervention (66.7%) and control (60%) groups had one child. Most mothers in the intervention (80%) and control (100%) groups were housewives. The homes of most mothers in the intervention (66.7%) and control (80%) groups were rented. The results showed that the two studied groups had no significant differences in terms of demographic characteristics and were homogeneous ($P<0.05$ for all).

Table 2 shows the distribution of the frequency of beliefs about febrile convulsions in the intervention and control groups and its comparison before and after the intervention. In the intervention group, most of the mothers, both before the intervention (80%) and after (66.7%), believed that the cause of the seizures caused by fever was the level of fever. In the control group, mothers were of this opinion both before the intervention (86.7%) and after (60%). The results of Fisher's exact test showed that there was no significant difference between the frequency distribution of the cause of fever both before the intervention ($P=0.999$) and after ($P=0.762$) in the two groups.

Table-1: Characteristics of mothers with children suffering from febrile convulsions in two intervention and control groups in the present study.

Variables	Subgroups	Intervention n(%)	Control n(%)	P-value
Age(yr)	15-20	1(6.7)	0(0)	0.175
	21-25	1(6.7)	6(40)	
	26-30	5(33.3)	5(33.3)	
	31-35	3(20)	3(20)	
	36-40	3(20)	1(6.7)	
	41-45	2(13.3)	0(0)	
Educational certificate	Diploma and less	7(466.7)	10(66.7)	0.269
	Above diploma	8(53.3)	5(33.3)	
Number of children	1	10(66.7)	9(60)	0.263
	2	3(20)	6(40)	
	3	2(13.3)	0(0)	
Occupation	Housewife	12(80)	15(100)	0.224
	Employee	3(13.3)	0(0)	
	Internet sales	1(6.7)	0(0)	
Residence status	Personal	5(33.3)	3(20)	0.682
	Rental	10(66.7)	12(80)	

Table-2: Distribution of the frequency of beliefs about febrile convulsions in the intervention and control groups and its comparison before and after the intervention.

The cause of convulsions caused by fever	Before		After	
	Intervention n(%)	Control n(%)	Intervention n(%)	Control n(%)
Abnormal conduction of electric current in the brain	2(13.3)	1(6.7)	3(20)	2(13.3)
Fever rate	12(80)	13(86.7)	10(66.7)	9(60)
Age of the child	1(6.7)	1(6.7)	2(13.3)	4(26.7)
P-value	0.999		0.762	

Table 3 shows the distribution of the frequency of actions during seizures in the intervention and control groups and its comparison before and after the intervention. In the intervention group, most of the mothers used to monitor the seizure time (26.7%) before the intervention while after the intervention, the child was placed on a soft and safe surface (66.7%). In the control group, the action taken by most of the mothers before the intervention (40%) and after (40%) was shaking and trying to wake up the child. The results of Fisher's exact test showed that there was no significant difference between the frequency distribution of seizure measures before the intervention (P=0.363) in the two groups, but the frequency distribution after the intervention had a significant difference in the two groups (P<0.001).

Table 4 shows the comparison of the mean and standard deviation of the social adaptation variable in the control and intervention groups in the before and after periods. Using the paired t-test, it was found that the increase in the average score of social adjustment in the intervention group was significant in the post-test stage (P<0.001). But the average score of social adjustment in the control group was not significant in the two time periods before and after (P=0.869).

Table- 3: Distribution of the frequency of actions during seizures in the intervention and control groups and its comparison before and after the intervention.

The cause of convulsions caused by fever	Before		After	
	Intervention n(%)	Control n(%)	Intervention n(%)	Control n(%)
I don't do anything	3(20)	3(20)	0(0)	3(20)
Shaking and trying to wake up the child	1(6.7)	6(40)	0(0)	6(40)
Heart massage	0(0)	0(0)	0(0)	1(6.7)
Place the child on a soft and safe surface	3(20)	1(6.7)	10(66.7)	0(0)
Restrain the child	3(20)	2(13.3)	5(33.3)	2(13.3)
Monitoring seizure time	4(26.7)	2(13.3)	0(0)	2(13.3)
Laying the baby on its side	1(6.7)	1(6.7)	0(0)	1(6.7)
P-value	<0.001		0.363	

Table-4: Comparison of the mean and standard deviation of the social adaptation variable in the control and intervention groups in the pre-test and post-test periods.

Group	Before	After	P-value
	Mean±SD	Mean±SD	
Intervention	13.73±0.49	19.33±1.32	<0.001
Control	18.80±0.55	18.86±2.24	0.869

Table 5 shows the comparison of the mean and standard deviation of the resilience variable in the control and intervention groups in before and after periods. Using the paired t-test, it was found that the increase in the mean resilience score in the intervention group was significant in the before and after the stage (P=0.023). However, in the control group, this score increase was not statistically significant in the two periods before and after the study (P=0.094).

Table-5: Comparison of the mean and standard deviation of the resilience variable in the control and intervention groups in before and after periods.

Group	Before	After	P-value
	Mean±SD	Mean±SD	
Intervention	93.53±4.52	99.06±4.80	0.023
Control	87.60±1.23	91.13±4.79	0.094

4- DISCUSSION

The results of the present study show that implementing education through a sustainability and adaptive care model can enhance mothers' resilience skills and social adjustment. Based on the findings in Table 1, which compare the demographic characteristics of mothers with children suffering from febrile convulsions in the intervention and control groups, none of the demographic variables -such as age, educational level, number of children, occupation, and residence status -were statistically significant between the two groups. Therefore, these variables cannot act as confounders when evaluating the differences between the intervention and control groups, as the distribution of these variables is relatively homogeneous across the two groups. Consequently, the valid results obtained from the present study should be regarded by readers with greater confidence and credibility.

Our results also indicate that in the intervention group, most mothers believed that the cause of seizures triggered by fever was the level of the fever, both before (80%) and after (66.7%) the intervention. In the control group, mothers held this opinion both before and after the intervention. There was no significant difference in the frequency distribution of the causes of fever before and after the intervention between the two groups. Our results are consistent with previous published studies such as Abdelkreem et al. (31), Nourmohammadi et al. (32) and Dickmark et al.(33) In the study of Sajjadi Hezaveh et al.(34) mothers had limited knowledge and weak beliefs about febrile convulsions and their relationship with the level of fever, affecting their response during convulsive episodes. Therefore, the researchers of this study designed educational interventions for mothers of children suffering from febrile convulsions, aiming to improve their understanding and ultimately enhance the child's health. The study of Talibian et al. also showed that parents do not have enough belief in the field of seizures caused by fever (35). Perhaps one of the reasons for the differences in the reported results of published studies on this topic is the variation in sample size, study design, types of belief measurement tools, and the social backgrounds of people from different cultures. All these differences highlight the need for effective educational interventions in this field and emphasize the necessity of changing parents' beliefs to prevent febrile convulsions in their children. The results of our study in Table 3 showed that interventional educational measures after the study compared to before the study were significant, efficient, and effective. Other researchers in their findings have emphasized this important issue that probably educational interventions have an effect on parents' actions in dealing with febrile convulsions caused by fever (36-38). The findings of the present study (Table 4), which compared the social adaptation of mothers with children suffering from febrile convulsions before and after the implementation of the adaptive stability care model in both the control and intervention groups, showed that the intervention based on this model had a positive and significant effect on enhancing social adaptation in the intervention group compared to the control group. According to Karatas et al (39), the nature of the emotional atmosphere within a family-which includes the relationships between parents and their children, among siblings, and between the parents themselves-can either facilitate or hinder the family’s social adaptation. Consistent with the results of the present study, the findings reported by Carlson et al (40), Brien et al (41), Stewart et al (42) and Kolahi et al (43), also indicate the effective and meaningful role of educational interventions in promoting the social adaptation of parents with a child suffering from seizure disorder caused by fever. In this case, the authors in the present study also point out that in addition to efficient and effective educational interventions, the valuable role of specialized interventions and support factors and consultations from relatives and acquaintances or, if possible, from responsible managers and policy makers involved in social work matters such as well-being for reducing stress and promoting social adaptation of parents with children suffering from a seizures due to fever cannot be ignored or denied; because social support makes parents feel cared for, loved, self-respected, and valuable, and feel that they are part of a wide social and communication network, and in this way, they can cope well with stressors and keep themselves adapting socially.

Table 5 compares the resilience of mothers with children who experience febrile convulsions before and after the

implementation of the adaptive stability care model in both control and intervention groups. In general, the results indicate that implementing the adaptive stability care model as an educational intervention increases the resilience of mothers with children experiencing fever-induced convulsions. After an extensive review of the literature, no studies were found to survey the resilience of mothers with children suffering from febrile convulsions. But in line with this finding in the present study the Rezaeifar et al (44), and Kanani et al (45), studies also pointed to the effect of educational interventions in improving the resilience of mothers with children with mental retardation and reported this method as useful. The study of Hosseini Qomi et al (46). showed that educational interventions related to the promotion of resilience in mothers with cancer children undergoing training, were associated with a significant increase in resilience and a reduction in stress in mothers. The authors of this study believe that, in addition to educational interventions, practical measures such as insurance coverage, social support, and reducing weekly working hours to enhance parents' ability to manage their child's illness are likely effective and should be given greater consideration. According to the implementation of the educational intervention based on the care model in the present study, data analysis determined that accompanying parents in child care, fostering better interaction between parents, and providing opportunities to express fears, concerns, and questions through this model improved the social adaptation and resilience of mothers. Also, with better management and performance at the time of fever, the mother has more peace to do her affairs and activities outside her home and develop social relationships. High resilience helps mothers manage stressful situations and adapt to challenges. It enables a person to achieve a new level of positive growth in dealing with life's troubles and adversities, enjoy greater dynamism in life, strengthen individual capabilities, and lead to positive and effective adaptation and performance. Although all the above statements align with the findings of the present study, the authors strongly recommend that the comparison of social adaptation and resilience in mothers of children suffering from febrile convulsions be investigated separately by other researchers in a randomized controlled study with a larger sample size. This approach would provide stronger evidence on the subject.

The application and generalizability was: 1- in relation to educational services, health education officials, especially trainers and policy makers and nursing managers, can provide educational contexts for the sustainable care model in retraining programs, as well as modify and update equipment, infrastructures, models and protocols related to the promotion of Social adaptation and resilience of mothers with a child with seizures help to stabilize the psychological status of mothers and improve the health of the child, as well as improve the knowledge and awareness, the performance attitude of mothers and 2- Since the most important factor in caring for and improving the quality of life in patients suffering from febrile convulsions is, first of all, nurses or health care providers, and then their families and parents, and the participation and interaction of these two is a basic principle in the implementation of care for the patient. The results of this research can be very effective and useful in patients suffering from febrile convulsions, as the leader of chronic diseases such as epilepsy.

The authors of the present study suggest that other psychosocial variables affecting patients with febrile convulsions, such as social support, hope with various educational models, should also be investigated and studied in this field. Furthermore, it is suggested that future

studies assess and consider the role of the father-particularly his level of education-as one of the influential variables in this relationship, in order to obtain a more comprehensive understanding of the factors affecting the adjustment, social adaptation, and resilience of mothers with children who experience febrile seizures. The focus of our study was a detailed examination of mothers of children with febrile seizures referred to the Tehran children's medical center hospital. Evaluating more complex cases of febrile seizures in other regions requires separate, larger investigations, which could be the subject of future studies.

5- CONCLUSION

Based on the findings of the present research, education through the adaptive stability model has a significant and meaningful effect on the resilience and social adaptation of mothers with children suffering from febrile convulsions. Educational interventions using this model can effectively enhance mothers' resilience and social adaptation skills. In this study, the effect of training through the adaptive stability care model on enhancing mothers' confidence and reducing their worries regarding the subject under investigation was confirmed. During the training, mothers reported that their stress in caring for a child suffering from febrile convulsions had decreased. They also expressed that, if convulsions occur again, they would respond appropriately and be able to tolerate and accept the situation. Psychologically, the disorder in their beloved child has become easier for them to cope with.

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