

Knowledge, Concerns and Beliefs of Mothers Towards Febrile Convulsions and its Management at King Abdul-Aziz Medical City, Western Region, Saudi Arabia

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Abstract

Background: Febrile convulsions can be managed at home and usually has a good prognosis. The lack of knowledge about management and prevention can cause parental discomfort and increase rates of unnecessary health care services utilization. **Objectives:** To identify the level of knowledge, concerns and beliefs regarding febrile convulsion and its management among mothers of children aged between six months to five years attending pediatric clinics and primary health care centers at King Abdulaziz Medical City-Western Region, Saudi Arabia. **Methods:** This is an analytical cross-sectional study. It included a sample of 400 mothers during the period (May-July, 2018). Data were collected using a valid questionnaire filled manually by the participants. Data were analyzed using the statistical package for the social sciences (SPSS, version 21.0). **Results:** The mean age of mothers was 31.7±5.8 years. Only 13.3% reported previous history of child febrile convulsion. The main source of information was internet 51.6%. The majority (82%) reported having medical thermometer at home. Overall, the knowledge score ranged between 0 and 14, out of a possible maximum of 17. The median (IQR) was 6 (4-8). Higher maternal educational level was significantly associated with higher knowledge regarding febrile convulsions (P-value=0.008). Almost all the participants (99%) agreed that parents should know how to manage children with febrile convulsions. **Conclusion:** Knowledge of mothers was insufficient in the aspects of febrile convulsion. The concerns and believes were generally encouraging. Therefore, health education campaigns are needed to raise awareness regarding febrile convulsions and first-aid management among parents.

1. Introduction

Febrile convulsions are occurring typically in 2-5% of the children aged between six months to five years (Armon, et al., 2003), associated with high fever, without any underlying condition such as electrolyte imbalance or central nervous system infection (Sadleir, et al., 2007). The febrile convulsion peak age of incidence is (18) months and the occurrence after age of six years is not common

(Najimi, et al., 2011). Febrile convulsions generally have a good prognosis and rarely lead to brain damage (Palliana, et al., 2010). They occur during child development when the convulsion threshold is low. Furthermore, children are more susceptible to frequent infections such as urinary tract and upper respiratory infections which are usually accompanied by high fever (Al-Ajlouni, et al., 2000). Viral infections are more likely to result in febrile convulsions. It was reported that Roseola

infection by herpes simplex virus-6 is responsible for almost 20% of first febrile convulsions (Millichap & Millichap, 2006), while influenza A virus has been associated with recurrent febrile convulsions (Kwong, et al., 2006). Febrile convulsions may happen early in the illness and may be the presenting symptom of the, they also can occur during or after the onset of fever. There is no evidence relating the fever acceleration or temperature peak to febrile convulsions development. It is also unclear threshold for the diagnosis of febrile convulsion as previous reports fluctuate between 38°C and >38.4°C (Abdulla & Abdulhadi, 2015). The role of genetic basis of febrile convulsions has been suggested as well. Having a sibling who have developed febrile convulsions increase the risk by 10% and having a parent with a positive history increases the risk up to 50% (Kheir, et al., 2014). Most parents have low levels of awareness regarding febrile convulsions management and prevention (Ling, 2000). Parental knowledge has a critical value as they are the first caregivers dealing with the condition. The term “fever phobia” was described by Schmitt in 1980 who linked parents’ fears with several misconceptions about the management (Schmitt, 1980). Several studies conducted investigated parental fear of fever suggested that most parents believe that febrile convulsions can result in brain damage and fatality (Sadleir, et al., 2007; Al-Nouri & Basheer, 2005; Betz Grunfeld, 2006; Langer, et al., 2011; Parmar, et al., 2001). Parental panics contributed to the failure to control fever and its complications (Parmar, et al., 2001). This study was carried out to identify the level of knowledge, concerns and beliefs regarding febrile convulsion and its management among mothers of children aged between six months to five years attending pediatric clinics and primary health care at the King Abdul-Aziz Medical City – Western Region, Saudi Arabia.

2. Subjects and methods

Study design

This study is an observational cross-sectional study that was carried out at the pediatric clinics and primary health care center (Specialized polyclinic and Bahrah) at KAMC-WR of Jeddah.

Study area

Jeddah is a province of Makkah Al-Mukarramah region on the west of Saudi Arabia and is considered the major urban center of western Saudi Arabia. King Abdulaziz Medical city – Western Region (KAMC-WR) is a 751-bed modern facility providing hospital and primary health care services to Saudi Arabian National Guard soldiers and their dependents.

Study population

The targeted population were mothers attending pediatric clinics and primary health care (Specialized polyclinic and Bahrah), KAMC-WR from May to July, 2018. The inclusion criteria were having children aged between six months and five years and literacy. The minimum sample size for this study has been decided according to Swinscow (Swanson & Cohen, 2003). The equation was built with 95% confidence level, 60.4% estimated prevalence of low level of knowledge according to a study from Iraq (Abdulla & Abdulhadi, 2015) and 5% margin of error. The total calculated sample size was (368) which was increased to 400 to compensate for incomplete responses. Two clinics were randomly chosen daily through a simple random technique and five patients were asked to participate daily from each clinic. Women were chosen through a systematic random technique. The sampling interval depended on the total number of women attending the chosen clinic. Thus, 200 mothers from pediatric clinics and 200 mothers from primary health care (100 mothers from specialized polyclinic and 100 mothers from Bahrah clinics).

Data collection

Data were collected using a valid questionnaire composed of five main sections. The first section consisted of sociodemographic data of the parents such as age, consanguinity between parents, residence, education and occupation. The second section included family experiences of febrile convulsions such as history of febrile convulsions among children (age at occurrence and frequency of attacks). The third part includes general questions regarding febrile convulsions. The fourth part included a total of (17) questions assessing the knowledge about febrile convulsions. The fifth part

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included ten statements regarding concerns and beliefs regarding febrile convulsions. The questionnaire with its five sections was validated and previously applied in a study carried out in Iraq (Abdulla & Abdulhadi, 2015). A permission to utilize the questionnaire was asked from the corresponding author. Little modifications were done and were face validated by three consultants in family medicine, pediatrics and preventive medicine

Pilot study

Prior to actual data collection, a pilot study took place to improve the reliability and internal validity of the questionnaire, anticipate possible obstacles to procedure, data collection and analysis. The questionnaire was pilot tested on a small group of volunteers (40 women) who were similar to the target population. The participants were asked for feedback and the responses of the questionnaire were checked. In addition, time was taken to complete the questionnaire was recorded, approximately (10) minutes were needed to complete the questionnaire. The data gained from the pilot study were not included in the main analysis.

Statistical analysis

Collected data were entered into the statistical package for the social sciences (SPSS, version 25.0). The data were presented as frequency and percentages. Continuous variables were presented as mean and standard deviation (SD). Pearson's Chi-square and Fisher Exact tests were used to find statistical associations between the variables. Responses were assigned a score of "1" for correct answers and score of "0" for incorrect or missing answers. Maximum score for knowledge was 17. Total score was computed and tested for normality using Shapiro-Wilk test. The distribution of knowledge total scores was not normal, for which non-parametric tests were operated. Mann-Whitney and Kruskal-Wallis tests were used to find differences in knowledge between the groups. Spearman's correlation was used to test for the correlation between the continuous variables.

Ethical considerations

Official approvals from the program of family medicine in National Guard Hospital, KAMC-WR

and King Abdullah International Medical Research Center's (KAIMRC) research and ethics committees were obtained. The informed consent of participants was considered as a prerequisite to be enrolled in the study. After explaining the study purpose verbally and through descriptive information document, consent forms were distributed to all the participants. After gaining the consent, the questionnaires were distributed by the investigators in the clinics waiting area. The main tool of the study included a short covering message clarifying the goal of the study without obtaining the participants' names to insure confidentiality.

3. Results

Out of 400 mothers, the mean age of mothers was 31.7 ± 5.8 years. Of the total, 45.8%. The mean age of fathers was 37.6 ± 7.7 years. More than half 217 54.3% reported consanguinity, and 387 96.8% lived in urban areas. The details are demonstrated in (Table 1). Only (52/400, 13%) child reported previous history of febrile convulsions. The mean age at the first attack was 1.2 ± 1.2 years. Among those who reported previous history of febrile convulsions, more than half were male 53.8%, about two thirds 61.5% had one attack, 78.8% reported no sibling and 90.5% had no family member with previous febrile convulsion. The details about previous history of febrile convulsions are shown at (Table 2). Only forty-nine mothers (12.3%) reported that they had enough information about febrile convulsions. The main sources of information were internet 51.6%, families 30.9%, then education 17.5%. The majority (82%) reported having medical thermometer at house, mainly axillary 69.2%. Regarding knowledge questions, the highest statement answered correctly by the participants was agreement with "fever can cause convulsion" by 86.8%, while the lowest correctly answered statement was disagreement with "febrile convulsions can lead to brain damage" by 4%. The details of the knowledge statements are shown in (Table 3). Overall, the knowledge score was abnormally distributed as evidenced by significant Shapiro-Wilk test, (P -value <0.001). It ranged between zero and 14, out of a possible maximum of 17. Its mean \pm SD was 6.1 ± 2.9 and its median (IQR) was 6 (4-8). The distribution of knowledge scores of the participants is shown in (Figure 1). Higher

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maternal educational level was significantly associated with higher knowledge regarding febrile convulsions (P-value=0.008). There was a significant positive correlation between time in formal education of parents and their knowledge regarding febrile convulsions, (P-value=0.014). Working mothers were more knowledgeable regarding febrile convulsions compared to housewives, (P-value<0.001). Participants who self-perceived of having enough information about febrile convulsion were more knowledgeable about it than those who perceived having no information,

(P-value<0.001). Other studied factors were not significantly associated with knowledge regarding febrile convulsions. The results are detailed in (Table 4). Regarding the concerns and believes about febrile convulsions, where the highest agreement statement was the following: “parents should know how to manage their child during febrile convulsion” by 99% and the lowest agreement were for “febrile convulsions could be infectious” by 3%. The details about concerns and beliefs are shown in (Table 6).

Table 1: Socio-demographic characteristics of the participants

Variable	Mean± SD	Rang (min-max)
Maternal age	31.7±5.8	(19-48)
Paternal age	37.6±7.7	(20-70)
Time in formal education	14.0±4.0	(2-23)
Variable	N	%
Marital status		
Married	391	97.8
Divorced/widowed	9	2.2
Maternal education		
Primary school	42	10.5
Intermediate school	41	10.3
Secondary school	134	33.5
University	173	43.3
Postgraduate	10	2.5
Maternal occupation		
Working	82	20.5
Housewife	318	79.5
Paternal education		
Illiterate	10	2.5
Primary school	27	6.8

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Intermediate school	39	9.8
Secondary school	191	47.8
University	123	30.8
Postgraduate	10	2.5
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Paternal job status		
Working	362	90.5
Not working	38	9.5
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Number of children		
One	80	20.0
Two	99	24.8
Three	91	22.7
More than 3	130	32.5
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Consanguinity		
Yes	217	54.3
No	183	45.7
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Residency		
Urban	387	96.8
Rural	13	3.2

Table 2: Family experience with febrile convulsions (n=52)

Variable	Mean± SD	Rang (min-max)
Age of the child at occurrence of first febrile convulsion attack (years)	1.2±1.2	(3 months-5 years)
Variable	N	%
Gender of the child(n=52)		
Male	28	53.8
Female	24	46.2
Frequency of attack by years (n=52)		
One	32	61.5

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Two	10	19.2
Three	3	5.8
More than 3	7	13.5
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Number of febrile convulsions in siblings		
None	41	78.8
One	8	15.4
Two	1	1.9
More than 3	2	3.8
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Number of febrile convulsions in family members		
None	47	90.4
One	3	5.8
Two	1	1.9
More than 3	1	1.9

Table 3: Response of the mothers to knowledge statements regarding febrile convulsion (n=400)

Statements with correct answer	Correct answers	
	N	%
Fever can cause convulsion (True)	347	86.8
Febrile convulsion is epilepsy (False)	193	48.3
Febrile convulsion at 3 months-5 years is risky (True)	297	74.6
Febrile convulsion is common at age 5 year (False)	93	23.3
Recurrent fever does not increase risk of febrile convulsion (False)	180	45.0
Higher fever increases the risk of febrile convulsion (True)	318	79.5
Febrile convulsion can progress to epilepsy (False)	55	13.8
Growth retardation increase risk of febrile convulsion (False)	64	16.0
Family history of convulsive disorder has no effect on the risk of febrile convulsion (False)	121	30.3
Febrile convulsion is fatal (False)	60	15.0

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Febrile convulsion can lead to brain damage (False)	16	4.0
Children with febrile convulsion can receive vaccination on schedule (False)	102	25.5
Electroencephalography or computer tomography is necessary in child with febrile convulsion (False)	22	5.5
It is not necessary to put a protective device into the mouth to prevent tongue injury during convulsion (True)	236	59.0
It is necessary to do the mouth-to-mouth resuscitation during convulsion (False)	83	20.8
Medications are needed for every child with febrile convulsion (False)	36	9.0
Traditional medication is necessary as therapy (False)	235	58.8

Figure (1) Participants` knowledge score about febrile convulsions (n=400)

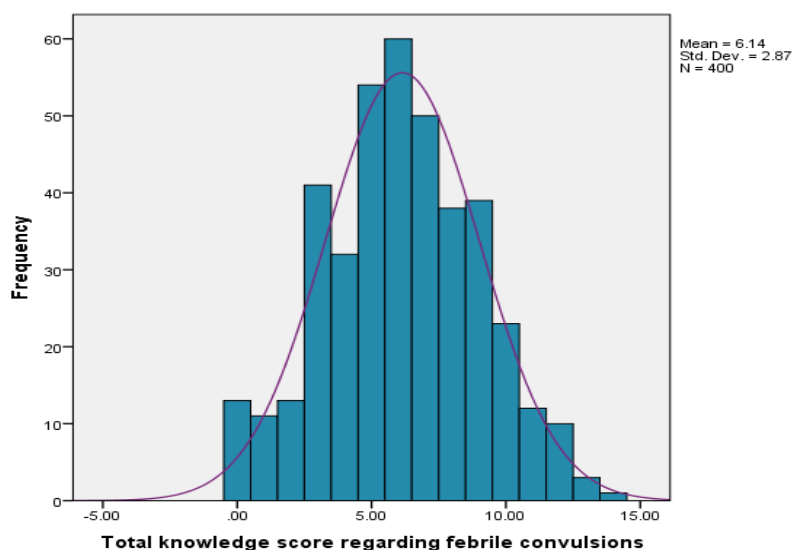


Table 4: Factors affecting parental knowledge regarding febrile convulsion

Variable		Median	IQR	Mean rank	P value
Marital status	Married	6	4-8	200.02	0.580*
	Divorced/widowed	7	4.5-10	221.44	
Number of children	One	5	3-8	177.60	0.131**
	Two	6	5-9	216.48	
	Three	6	4-8	208.30	

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	More than three	6	5-8	196.96	
Consanguinity	Yes	6	5-8	206.86	0.228*
	No	6	4-8	192.95	
Residency	Urban	6	4-8	201.55	0.317*
	Rural	6	3.5-7	169.12	
Maternal education	Primary school	6	4.75-8.25	208.86	0.008**
	Intermediate school	5	4-7	172.13	
	Secondary school	5.5	3-8	179.28	
	University	7	5-8	218.50	
	Postgraduate	8.5	4.5-9.25	254.70	
Maternal occupation	Working	7	6-9	247.12	<0.001*
	Housewife	6	4-8	188.48	
Parental education	Illiterate	7	5-8.5	243.65	0.088**
	Primary school	6	5-8	198.89	
	Intermediate school	6	4-8	202.29	
	Secondary school	6	4-8	184.38	
	University	7	5-9	222.22	
	Postgraduate	6	4.75-7	195.40	
Paternal occupation	Working	6	4-8	198.20	0.217*
	not working	7	5-8.25	222.41	
History of febrile convulsion of any of your children	Yes	6	5-9	219.94	0.186*
	No	6	4-8	197.53	
Having information about febrile convulsion?	Yes, enough	8	5.5-9	254.60	<0.001*
	Yes, but not enough	7	5-9	226.71	
	No	5	3-7	162.65	
Do you give fever medications at home when your child has fever?	Yes	6	4-8	200.56	0.951
	No	6	4-8.5	198.58	

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Do you use a medical thermometer at the house to check your child's temperature if he/she developed fever?	Yes	6	4-8	205.16	0.083
	No	5.5	3.25-8	179.25	

*P-value was calculated using Man-Whitney test

** P-value was calculated using Man Kruskal-Wallis test

Table 6: Concerns and believes about febrile convulsion

	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)
Parents should know the use of thermometer correctly	331 (82.7%)	63 (15.8%)	4 (1%)	0 (0%)	2 (0.5%)
Febrile convulsion is due to possession by spirits	10 (2.5%)	25 (6.3%)	54 (13.5%)	149 (37.3%)	162 (40.4%)
Parents should take their children's temperature frequently	166 (41.5%)	171 (42.7%)	32 (8%)	25 (6.3%)	6 (1.5%)
Parents should know how to manage their child during febrile convulsion	326 (81.4%)	70 (17.5%)	1 (0.3%)	2 (0.5%)	1 (0.3%)
A febrile convulsion attack is a life-threatening event	190 (47.4%)	145 (36.2%)	41 (10.3%)	19 (4.8%)	5 (1.3%)
More attention and care are needed for a child with febrile convulsion	265 (66.2%)	111 (27.7%)	10 (2.5%)	9 (2.3%)	5 (1.3%)
It is shameful to have a child with febrile convulsion	16 (4%)	14 (3.5%)	16 (4%)	126 (31.5%)	228 (57%)
Folk medicine is helpful to manage febrile convulsion	11 (2.8%)	34 (8.5%)	93 (23.3%)	123 (30.7%)	139 (34.7%)
Febrile convulsion could be infectious	4 (1%)	8 (2%)	36 (9%)	182 (45.5%)	170 (42.5%)
Relative of child with febrile convulsion expect to get the disease	12 (3%)	69 (17.3%)	73 (18.3%)	145 (36.3%)	101 (25.3%)

4. Discussion

Mother, as the primary caregiver of the child should have sufficient knowledge, appropriate concerns and believes regarding childhood fever and febrile convulsions to deliver a proper care with no panic during the attacks. Therefore, we sought to assess their knowledge, concerns and believes about febrile convulsions (Ghasemi et al., 2005). Febrile convulsions are the commonest type of seizure among children (Laino et al., 2018). In this study, 13.3% of mothers reported previous attacks of febrile convulsions among their children. Higher rate (29%) has been reported in Iraq (Abdulla & Abdulhadi, 2015). The main source of information about febrile convulsions in the present study was the internet, followed by families. In a study carried out in Iraq (Abdulla & Abdulhadi, 2015), the commonest reported source of information was health care workers, followed by relatives and mass media. In Malaysia (Ling, 2000), the main source of information about febrile convulsions was friends/relatives. Health care workers were the main source of information about febrile convulsions in Sudan (Kheir, et al., 2014). However, in Saudi Arabia, healthcare workers, particularly physicians and nurses are encouraged to participate more effectively in providing mothers with sufficient information regarding febrile convulsions and its management. The majority (82%) of mothers in the present study uses a medical thermometer at the house to check their child's temperature. In India (Parmar, et al., 2001), only 15% of parents had thermometer at home and 20% of them knew the normal range of body temperature. The difference could be due to economic and socio-demographic variations. However, this indicates good practices of mothers in Saudi Arabia. In the present study, majority of mothers could recognize that higher fever temperatures increase the risk of febrile convulsions. However, about half of them could recognize that febrile convulsion is not epilepsy and majority of them believed that febrile convulsion could lead to brain damage and progress to epilepsy. Similar findings were observed in studies carried out in Sudan (Kheir, et al., 2014) and Iraq (Abdulla & Abdulhadi, 2015), indicating that some misconceptions in the Arab world regarding febrile convulsions need correction. Internationally, many studies reported that most mothers considered

febrile convulsions a fatal condition and felt panic at the time of occurrence (Ling, 2000; Al-Nouri & Basheer, 2005; Betz Grunfeld, 2006; Langer, et al., 2011; Parmar, et al., 2001; Ofovwe, et al., 2007; Ravanipour, et al., 2014). However, better knowledge in this regard was observed in other studies carried out in developing countries (Balslev, 1991; Kelly, et al., 2016; De, et al., 2014). Unfortunately, low percentage of mothers in the present study could recognize that electroencephalography or computer tomography is not necessary in child with febrile convulsion, there is no need to do mouth-to-mouth resuscitation during convulsion and medications are not needed for all children with febrile convulsions. In other studies, carried out in Libya (Zeglam, et al., 2010), Malaysia (Ling, 2000) and Sudan (Kheir, et al., 2014), most of mothers rushed their child to the doctor immediately once febrile convulsions occur. These findings indicate lack of first aid knowledge regarding febrile convulsions. Therefore, educating mothers about the possibility of febrile convulsions with high fever and how to manage the situation calmly using tepid sponging and administering anti-pyretic agents is essential (Fields, et al., 2013). Also, in Nigeria, most of mothers believed that febrile convulsions could progress to epilepsy (Ofovwe, et al., 2007). This wrong belief could result in increasing anxiety and panic of mothers and unnecessary utilization of health care services.

The overall knowledge score regarding febrile convulsion in this study ranged between 0 and 14, out of 17. The mean \pm SD were 6.1 ± 2.9 and its median (IQR) was 6 (4-8), indicating insufficient knowledge. In a study carried out in Iraq (Abdulla & Abdulhadi, 2015), the overall mean score was 66.2 ± 18.1 . Similar scores were reported by a Turkish study (Kayserili, et al., 2008). Comparison between these studies and the present one is not practical due to the usage of a different tool and other variations in the demographic characteristics of the participants. In the present survey, as expected, higher educated and working mothers were more knowledgeable regarding febrile convulsions. This could be attributed to their dependence on internet as the main source of information regarding febrile convulsions. In another study carried out in India, knowledge of febrile convulsion and its preventive measures was

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significantly associated with socio-economic status of parents (Parmar, et al., 2001). Improvement in knowledge, concerns, and beliefs of mothers regarding febrile convulsions has been observed among parents after an interventional educational and training program of febrile convulsion (Huang, et al., 1998). Health education intervention is highly recommended. Fortunately, majority of mothers in the current study believed that parents should know how to manage their child during febrile convulsions and how to use of thermometer correctly. This positive attitude necessitates their training in measuring temperature correctly and manages fever and febrile convulsions appropriately. In the current study, only 8.8% of mothers believed that febrile convulsion is due to possession by spirits, particularly lower educated, rural areas residents, housewives and those who experienced more frequency of febrile convulsions. In a similar study carried out in Sudan (Kheir, et al., 2014), also only 14% of mothers in believed that the cause of fever is supernatural spirits, while in Nigeria, 75% of the mothers from rural areas attributed febrile convulsions to evil spirits (Ofofwe, et al., 2002). This difference could be attributed to the fact that in Arabic countries, awareness of the role of evil spirits is better compared to African countries. In the present study, mothers who did not use medications for fever or utilize thermometer to measure temperature at home, believed that folk medicine is helpful to manage febrile convulsions. In contrast to that finding, majority of mothers in Iraq (Abdulla & Abdulhadi, 2015) and India (Parmar, et al., 2001) believed that herbal medicine should be used to control febrile convulsions. Up to our knowledge, this is the first study of its kind in Jeddah that aims to determine through a questionnaire the knowledge, concerns and believes regarding febrile convulsions. However, some limitations of this study can be addressed in the cross-sectional design with inherited limitation of not determining the temporal relationship between the cause and effect. Also, conduction of the study in one healthcare setting could impact the generalizability of results. The practice of the participants regarding febrile convulsions was not assessed in this study.

5. Conclusion

In conclusion, knowledge of mothers attending the pediatric clinics and primary health care centers at KAMC-WR was insufficient in the important aspects of febrile convulsions such as management and prognosis. Housewives were less knowledgeable than working mothers. Wrong concerns and beliefs about febrile convulsion were identified by few mothers such as febrile convulsion is due to possession by spirits. However, positive attitude in general was observed towards febrile convulsion among most of mothers. Health education and training campaigns are needed to raise awareness regarding febrile convulsions and their first-aid management. Finally, health care workers are encouraged to contribute with a more active role in providing information regarding first-aid management of febrile convulsions, relieve anxiety and increase self-confidence of parents to manage the cases of febrile convulsion.

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