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KNOWLEDGE, ATTITUDE, AND PRACTICES REGARDING FEBRILE CONVULSIONS AMONG SAUDI PARENTS: A CROSS-SECTIONAL STUDY

Nemer Alotaibi[1], Musaad Abukhaled[2], Fahad M. Aldehaim[3*], Abdulaziz Alfarhan[4], Atheer Alhamoud[5], Abdulaziz Alruways[4], Falwah Alrhiman[5], Saleh Almunyif[4], Aseel Muaddi[6], Khames T. Alzahrani[7]

1. ***Department of Clinical Medicine, Shaqra University, Saudi Arabia.***
2. ***Department of Neuroscience, King Faisal Specialist Hospital & Research Center, Saudi Arabia.***
3. ***College of Medicine, Shaqra University, Dawadmi, Saudi Arabia.***
4. ***College of Medicine, Shaqra university, Shaqra, Saudi Arabia.***
5. ***College of Medicine, King Faisal University, Al-Ahsa, Saudi Arabia.***
6. ***College of Medicine, King Khalid University, Abha, Saudi Arabia***
7. ***Saudi Board of Endodontic SR, King Faisal Specialist Hospital & Research Centre, Riyadh, Saudi Arabia.***

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ABSTRACT

Febrile convulsions FC or febrile seizures are common in children aged 6 months to 5 years who have a body temperature of or above 38 °C (100.4 °F) with the absence of an underlying CNS abnormality. This study aims to assess parental knowledge, attitude, and practice toward febrile convulsions while also Identifying the sociodemographic factors associated with the level of knowledge of parents in the Kingdom of Saudi Arabia. This is a cross-sectional study that was conducted in all regions of the Kingdom of Saudi Arabia. A self-administered online questionnaire was distributed amongst Saudi parents who have one or more children. All statistical analyses were carried out using Statistical Package for Social Sciences Version 20. The survey found that 44.2% of respondents reported having a child who was five years old or younger, with 19.1% reporting that their child had experienced a febrile seizure. The majority of respondents (59.9%) selected fever and the child's age as a cause, while 49.7% selected abnormal electrical currents in the brain, and 39.7% selected hereditary factors. Only 14.7% of participants had high knowledge scores of febrile convulsions, 28.7% had moderate knowledge, and 56.6% had low knowledge scores. In conclusion, understanding the knowledge, attitudes, and practices regarding febrile convulsions among Saudi parents is crucial for improving the management of this common childhood condition. Our study revealed that the majority of participants had low knowledge, low practice, and moderate attitude.

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Introduction

Children frequently present with febrile convulsions (FC) or febrile seizures, which are characterized as seizures in children aged 6 months to 5 years who have a body temperature of or above 38 °C (100.4 °F) [1] in addition to the lack of other factors like CNS infection or an acute electrolyte imbalance [2]. Febrile convulsion can manifest in the form of loss of awareness, aberrant motor movements, behavioral abnormalities, sensorial disruption, or autonomic malfunction [3]. Febrile seizures are commonly encountered [4]. The percentage of children under the age of four in Saudi Arabia's population is about 10 percent, leading to a considerable rate of pediatric diseases such as fever [5]. A study of children in the Kingdom of Saudi Arabia (KSA) published in 2020 reported that the prevalence of febrile convulsions was 6.8% with females being significantly more

Corresponding Author: Fahad M Aldehaim; College of Medicine, Shaqra University, Dawadmi, Saudi Arabia. E-mail: Dartfhd@gmail.com.

affected than males [6]. Kids of families with a previous history of seizures are at up to three times the risk compared to the rest of the population [7]. Two types of febrile convulsions exist, Simple febrile seizures, sometimes referred to as generalized tonic-clonic seizures, are characterized by fever, persist for no longer than fifteen minutes, and do not return within 24 hours. The second is complex febrile seizures; they are focused, exceed fifteen minutes, and may return within 24 hours [8].
While brain injury from febrile convulsions is quite rare, the lack of understanding of fever and febrile convulsions is the cause of parental fear and stress [9]. Studies have evaluated parents' knowledge of febrile convulsion and it has been estimated that as many as 26% of them felt unaware of how to treat and manage the condition [10]. Further research reveals that the key determinants of parents' awareness and practice of children's febrile illness are their academic achievement, social standing, and ethnic origin [11]. Furthermore, misuse of nonprescribed fever medicine is a potential strain on healthcare resources [12]. A study elaborated that a baby born to parents who had febrile seizures raises the risk to 50%, as compared to a 10% increased risk if the child had a sibling with FC [13]. On the other hand, a Saudi Arabian study stated that seizures are present in 20% of the cases of confirmed bacterial meningitis [14]. Once parents witness the child's convulsion, they understandably become anxious and overwhelmed. Knowledge of the pathological basis of FC and its true prognosis is crucial in educating parents and caregivers regarding the symptoms while relieving the child from FC complications [15].
Moreover, most previous studies have focused their investigation on the etiology and natural history of febrile seizures and evaluated management methods, neglecting the sociodemographic, prevalent misconceptions, and life-threatening practices. A recent paper done by Alfahaid *et al*. focused on investigating the parental practices and knowledge in KSA [11]. While this study has targeted the main regions in Saudi Arabia their sample size couldn't reflect the majority of parents in the kingdom. Additionally, it neglected to include specific survey questions regarding fever-measuring methods, types of convulsions seen in these cases, and assessing familial and medical history of epilepsy, seizure, and psychiatric illness. This study aims to report on the knowledge, attitude, and practice of parents toward febrile convulsions in Saudi Arabia while filling in the gaps from previous studies. Identifying the sociodemographic factors associated with the level of knowledge and practice of parents regarding febrile convulsions using larger spectrum scale research aids in enhancing the quality and type of care provided to these patients and spreading education on FC as well as managing the parental anxiety and distress that results from witnessing febrile convulsions in their children. This study aims to identify the knowledge, attitude, and practice of parents' level toward febrile convulsions in the Kingdom of Saudi Arabia.

Materials and Methods

Study Design
This is an observational cross-sectional study which was conducted across the regions of Saudi Arabia.
Study setting: Participants, recruitment, and sampling procedure: During 2023. The study's population was consisting of Saudi parents with one or more kids. Using convenience sampling, a self-administered questionnaire was distributed online.

Sample Size
The sample size was determined using the formula:

$$x = Z(c/100)2r(100 - r) \quad (1)$$

$$n = N\,x/((N-1)E2\ +\ x) \quad (2)$$

$$E = \mathrm{Sqrt}[(\mathrm{N}\ -\ \mathrm{n})\mathrm{x}/\mathrm{n}(\mathrm{N}-1)] \quad (3)$$

Where N is the population size, r is the fraction of responses preferred, and Z(c/100) is the critical value for the confidence level c. The desired sample size was at least 377 of the population of KSA, and confidence intervals of 95% with a 5% margin of error.

Inclusion and Exclusion Criteria
In this study, Saudi parents who have one or more kids across all regions of the Kingdom of Saudi Arabia were included, and non-Saudi parents were excluded.

Method for Data Collection and Instrument (Data Collection Technique and Tools)
Data was collected through a self-administered online survey using a validated questionnaire tool (The assessment of parents' knowledge, attitudes and concerns about febrile seizures in children at tertiary hospitals in Rwanda- A descriptive study) [16] that covers the research objectives. This questionnaire was divided into sections to gather the necessary data.
A written Informed consent was obtained stating the demands of the study before conducting the interview and those who agreed to participate were enrolled.

Scoring System
Part 1: Knowledge Regarding Febrile Convulsions

Eleven statements were employed to evaluate the extent of understanding regarding febrile convulsions.
Each statement will have three answers. A correct choice was given one point, and zero was given for an incorrect choice or "I don't know."
The scoring system was divided as follows: ≥ 9 for a high level of knowledge, 7-8 for a medium level of knowledge, and ≤ 6 for a low level of knowledge.

Part 2: Attitude Toward Febrile Convulsions
In this part, nine questions were used to estimate the attitude toward febrile convulsions.
It was evaluated using a Likert scale. There were nine statements. The scoring scale was measured as follows: strongly agree (5), moderately agree (4), mildly agree (3), moderate disagreement (2), strongly disagree (1), and not applicable (0).
The range of scores observed was from 0 to 45. These scores were categorized into three levels of attitude: positive attitude (scores ranging from 36 to 45), neutral attitude (scores ranging from 28 to 35), and negative attitude (scores ranging from 0 to 27).

Part 3: Practice Regarding Febrile Convulsions
The evaluation of febrile convulsions practice will involve the use of 23 statements. Each statement will have two options, either "yes" or "no." A correct response will earn one point, while an incorrect response will receive zero points. The scoring system will categorize the practice levels as follows: scoring 18 or higher will indicate a good level of practice, scoring 15-17 will indicate a fair level of practice, and scoring 14 or lower will indicate a poor level of practice.

Analysis and Entry Method
Collected Data was entered on a computer using the Microsoft Excel program (2022) for Windows. Data will then be transferred to the Statistical Package of Social Science Software (SPSS) program, version 20. To be statistically analyzed.

Results and Discussion

The first parameter shown in **Table 1** is age, which is divided into six categories ranging from less than 20 to more than 60 years. The majority of participants fall in the age group of 20-30 years (29.5%), followed by 41-50 years (25.4%) and 31-40 years (22.2%). The participants above 60 years of age constitute only 3.2% of the total sample. The second parameter is gender, which shows that 62.4% of the participants are female, while 37.6% are male. The third parameter is nationality, which indicates that 97.5% of the participants are Saudi, and only 2.5% are non-Saudi. The participants' Residence is also recorded, and it shows that the majority of participants are from the East (27.6%) and the Middle (31.2%) regions, while the North and South regions have comparatively fewer participants. The education level of the participants is also recorded, and it reveals that the majority of participants (66.7%) have a postgraduate degree, while only 1.1% have a primary education level. The occupation of the participants is divided into two categories, i.e., related to the health field and not related to the health field. The data shows that 79.9% of the participants have an occupation not related to the health field, while 20.1% have an occupation related to the health field. The marital status of the participants is also recorded, and it shows that the majority of participants (85.4%) are married, followed by divorced (12.3%) and widowed (2.2%). The last parameter is the number of children, which indicates that the majority of participants have 3-4 children (38.3%), followed by more than 5 children (28.0%), 1-2 children (18.2%), and no children (15.5%).

Table 1. Sociodemographic characteristics of participants (n=721)

Parameter		No.	Percent
Age	less than 20	16	2.2
	20_30	213	29.5
	31_40	160	22.2
	41_50	183	25.4
	51_60	126	17.5
	more than 60	23	3.2
Gender	Male	271	37.6
	Female	450	62.4
Nationality	Saudi	703	97.5
	Non-Saudi	18	2.5
Residence	East	199	27.6
	Middle	225	31.2
	North	68	9.4

	South	113	15.7
	West	116	16.1
Education Level	primary	8	1.1
	middle	13	1.8
	secondary	110	15.3
	diploma	109	15.1
	Postgraduate	481	66.7
Occupation	Related to the health field	145	20.1
	Not related to the health field	576	79.9
Marital Status	Married	616	85.4
	Divorced	89	12.3
	Widowed	16	2.2
Number of Children	0	112	15.5
	1-2	131	18.2
	3-4	276	38.3
	More than 5	202	28.0

The data presented in **Table 2** showed the results on the prevalence and characteristics of febrile seizures in children. The survey found that 44.2% of respondents reported having a child who is five years old or younger, with 19.1% reporting that their child had experienced a febrile seizure. Additionally, 6.1% of respondents reported a family history associated with spasticity, 6.8% with epilepsy, and 11.5% with psychological problems. In terms of the frequency of seizures, 80.0% of respondents reported that their child had not experienced a seizure, while 16.0% had witnessed their child having a seizure at least once. When asked about the potential causes of febrile seizures, the majority of respondents (59.9%) selected fever and the child's age as a cause, while 49.7% selected abnormal electrical currents in the brain, and 39.7% selected hereditary factors. A smaller percentage of respondents (14.3%) selected supernatural causes such as magic, evil eye, or jinn, while 17.9% selected the child's abilities as a cause.

Table 2. Participants medical history regarding febrile seizures in children (n=721).

Parameter		**No.**	**Percent**
Do you have a child who was five years old or younger?	Yes	319	44.2
	No	402	55.8
Has any of your children ever had a febrile seizure (febrile seizure)?	Yes	138	19.1
	No	583	80.9
Is there a family history associated with spasticity?	Yes	44	6.1
	No	677	93.9
Is there a family history associated with epilepsy?	Yes	49	6.8
	No	672	93.2
Is there a family history associated with psychological problems?	Yes	83	11.5
	No	638	88.5
If the child has a seizure, how many times has he had a seizure?	Not once	577	80.0
	Once	82	11.4
	Twice	22	3.1
	three times	9	1.2
	More than three times	31	4.3
Have you ever been there when your child has a seizure?	Yes	115	16.0
	No	98	13.6
	He had never been exposed to it before	508	70.5
The nature of the seizure he experienced? (Select all that apply)	Trembling	72	10.0
	Difficulty breathing	68	9.4
	Twirl the eyes	42	5.8
	Unconsciousness	92	12.8

	Foam coming out of the mouth	57	7.9
	The skin becomes pale or blue	57	7.9
	Other	12	1.7
	He had never been exposed to it before	571	79.2
How many family members had febrile convulsion (febrile seizure)?	One	94	13.0
	more than one	8	1.1
	Nothing	619	85.9
1- In your opinion, which of the following is considered a cause of febrile convulsion? (Select all that apply)	Fever and the child's age	432	59.9
	Abnormal electrical currents in the brain	358	49.7
	Hereditary	286	39.7
	Supernatural things include (magic, eyes, jinn)	103	14.3
	child's ability	129	17.9

Table 3 shows that when it comes to dealing with a child's fever, the majority of respondents (58.1%) measured their child's temperature using a thermometer. Only 20.1% of respondents believed that feeling heat by touching the forehead or any area of the body is sufficient. It's also important to continue monitoring a child's temperature until it begins to drop, as only 22.7% of respondents believed this to be true. Additionally, visiting a doctor within 6 hours of the onset of fever is crucial, yet only 32.3% of respondents believed this to be true. When it comes to giving a child paracetamol, it's important to consult with a doctor first. However, only 25.5% of respondents believed this to be true. It's also concerning that 89.0% of respondents believed that if the temperature does not decrease; they would give the child repeated doses of antipyretic or use more than one type of antipyretic. If the temperature does not decrease within 2-3 days, it's important to visit another doctor, which 91.5% of respondents believed to be true. However, it's concerning that 82.0% of respondents believed that they should ask the doctor to give the child an antibiotic. Bathing the baby with cold water is also a common practice, with 78.6% of respondents believing it to be true. It's also important to never shake a convulsing baby or try to wake them up, as this can cause further harm. Only 7.6% of respondents believed this to be true. If a child is experiencing convulsions, it's important to protect them by placing them on a safe surface, which 64.2% of respondents believed to be true. It's also important to monitor their cramp symptoms and duration, which only 40.9% of respondents believed to be true. Lastly, starting CPR is important in case of emergency, which only 33.0% of respondents believed to be true.

Table 3. Practice of participants regarding febrile seizures in children (n=721)

Parameter	Yes	No
Measuring a child’s temperature using a thermometer	419 58.1%	302 41.9%
Feel heat by touching the forehead or any area of the body only	576 79.9%	145 20.1%
Continue monitoring the child's temperature until it begins to drop	164 22.7%	557 77.3%
Visit a doctor within 6 hours of the onset of fever	233 32.3%	488 67.7%
Giving him paracetamol (a fever reducer) without consulting a doctor	184 25.5%	537 74.5%
If the temperature does not decrease, I give the child repeated doses of antipyretic or use more than one type of antipyretic	642 89.0%	79 11.0%
If the temperature does not decrease within 2-3 days, visit another doctor	660 91.5%	61 8.5%
Ask the doctor to give the child an antibiotic	591 82.0%	130 18.0%
Bathing the baby with cold water	567 78.6%	154 21.4%
I shake the convulsing baby or try to wake him up	666 92.4%	55 7.6%
Start CPR	238 33.0%	483 67.0%
Protect the child by placing him on a safe surface	463 64.2%	258 35.8%
Trying to stimulate a convulsive child's senses	609 84.5%	112 15.5%
Monitoring cramp symptoms and duration	295 40.9%	426 59.1%

Table 4 shows that it's crucial to note that febrile convulsions are not considered epilepsy. This is a common misconception, as indicated by the 54.0% of respondents who answered "Don't know" to this statement. Another misconception highlighted in the data is the belief that antiepileptic medications are required for every child presenting with febrile convulsion. The majority of respondents (67.0%) answered "Don't know" to this statement. A significant portion of respondents (69.3%) answered "Don't know" to the statement about the likelihood of another febrile convulsion in the future. Furthermore, there is a misconception about the rarity of febrile convulsions after the age of 5 years. The data indicates that 54.9% of respondents answered "Don't know" to this statement. A significant portion of respondents (53.0%) answered "Don't know" to the statement about the risk of brain damage from repeated febrile convulsions.

Table 4. Knowledge of participants regarding febrile seizures in children (n=721)

	Yes	**No**	**Don't know**
Febrile convulsion is considered epilepsy	106 14.7%	226 31.3%	389 54.0%
Antiepileptic medications are required for every child presenting with febrile convulsion	171 23.7%	67 9.3%	483 67.0%
Every child who has a febrile convulsion will have another febrile convulsion in the future	130 18.0%	91 12.6%	500 69.3%
Febrile convulsion is rare after the age of 5 years	82 11.4%	396 54.9%	243 33.7%
Repeated febrile convulsions will lead to brain damage	260 36.1%	79 11.0%	382 53.0%

Table 5 shows that the most concerning findings are that only 4.6% strongly agree that febrile convulsions was come epilepsy, while 30.5% are neutral and 29.4% disagree or strongly disagree. Additionally, the data shows that there is a significant percentage of parents who do not believe that febrile seizures are life-threatening events (13.3% strongly agree, 35.1% neutral, 15.7% disagree, 3.2% strongly disagree). On a positive note, the majority of respondents (49.8% strongly agree, 27.6% agree) recognize the importance of treatment for febrile convulsions. It is also concerning to see that 30.2% of respondents strongly disagree that it's a shame to have a child with a febrile convulsion.

Table 5. Attitude of participants regarding febrile seizures in children (n=721)

	Strongly Agree	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**	**Unapplicable**
Febrile convulsion was come epilepsy	33 4.6%	69 9.6%	366 50.8%	180 25.0%	32 4.4%	41 5.7%
Parents should take their children's temperature frequently	251 34.8%	270 37.4%	140 19.4%	41 5.7%	6 .8%	13 1.8%
A febrile seizure is a life-threatening event	96 13.3%	220 30.5%	253 35.1%	113 15.7%	23 3.2%	16 2.2%
Febrile convulsion can cause brain damage	97 13.5%	226 31.3%	263 36.5%	91 12.6%	18 2.5%	26 3.6%
Treatment is also important	359 49.8%	199 27.6%	116 16.1%	24 3.3%	12 1.7%	11 1.5%
Febrile convulsion can be overcome	205 28.4%	279 38.7%	191 26.5%	26 3.6%	8 1.1%	12 1.7%
More attention and care are needed for a child with febrile convulsion	321 44.5%	226 31.3%	129 17.9%	24 3.3%	8 1.1%	13 1.8%
If necessary, a spinal cord biopsy is an acceptable option in such a case	123 17.1%	143 19.8%	286 39.7%	111 15.4%	30 4.2%	28 3.9%
It's a shame to have a child with a febrile convulsion	71 9.8%	57 7.9%	128 17.8%	202 28.0%	218 30.2%	45 6.2%

Figure 1 shows participants' knowledge scores where only 14.7% of participants had high knowledge scores of febrile convulsions, 28.7% had moderate knowledge, and 56.6% had low knowledge scores. illustrates participants' attitude scores towards febrile convulsions as 22% had a positive attitude, 51% had a neutral attitude, and 27% had a negative attitude. Practice scores regarding febrile convulsions as 3.7% had good practice scores, 11.5% had fair practice, and 84.7% had poor practice.

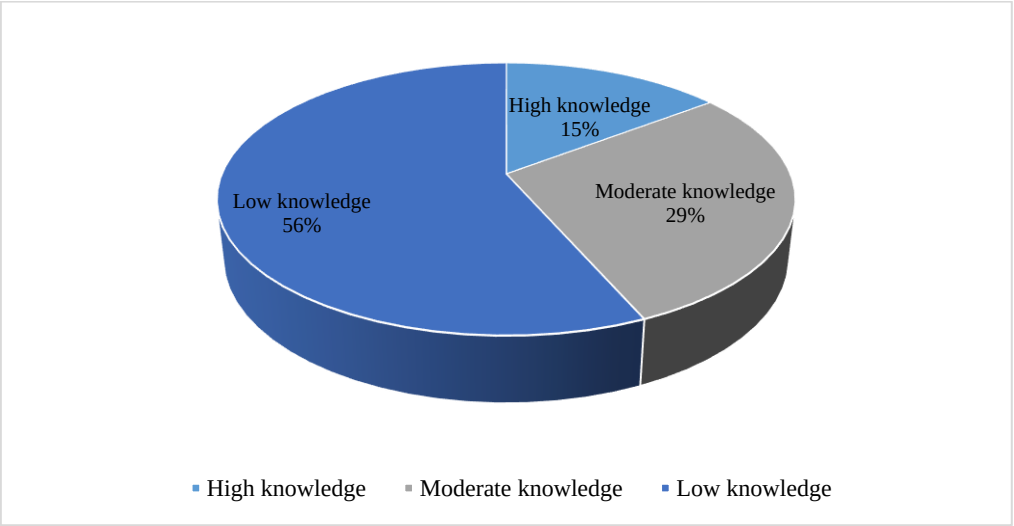

Figure 1. Participants' knowledge level score Regarding Febrile Convulsions

In **Table 6** shows that individuals aged 20-30 and 31-40 have the highest representation in the study sample, with 29.5% and 22.2% respectively. This indicates that the majority of participants fall within these age ranges. On the other hand, individuals aged less than 20 and those over 60 have the lowest representation, with 2.2% and 3.2% respectively. And it exhibits a significant association with a p-value of 0.001. When it comes to marital status, the majority of participants are married, accounting for 85.4% of the sample. This is followed by divorced individuals at 12.3% and widowed individuals at 2.2%. Gender-wise, the data shows that females make up the majority of the sample at 62.4%, while males account for 37.6%. In terms of nationality, the majority of participants are Saudi nationals, representing 97.5% of the sample. Non-Saudi nationals make up only 2.5% of the sample. The data also presents the association between Residence and knowledge level. It shows that individuals from the East region have the highest representation at 27.6%, followed by the Middle region at 31.2%. The North, South, and West regions have lower representation in the study and it exhibits a significant association with a p-value of 0.001. Education level is also associated with knowledge level, with postgraduate individuals having the highest representation at 66.7%. This is followed by secondary education at 15.3%, diploma at 15.1%, middle education at 1.8%, and primary education at 1.1%. This exhibits a significant association with a p-value of 0.002. Occupation related to the health field is associated with knowledge level, with individuals in this field having a representation of 20.1%. On the other hand, those not related to the health field have a higher representation at 79.9% exhibiting a significant association with a p-value of 0.021. Lastly, the number of children is also associated with knowledge level, with individuals having 3-4 children having the highest representation at 38.3%. This is followed by those with more than 5 children at 28.0%, 1-2 children at 18.2%, and no children at 15.5% where it exhibits a significant association with a p-value of 0.001. The highest percentage of individuals with a negative attitude falls within the 31-40 age group, with 22.2% of individuals in this category having a negative attitude. On the other hand, the lowest percentage of negative attitudes is seen in the age group of more than 60, with only 3.2% of individuals having a negative attitude. Marital status also seems to have an impact on attitude scores, with the highest percentage of individuals with a negative attitude being in the divorced category at 12.3%. Meanwhile, the lowest percentage of negative attitudes is seen in the widow category at 2.2%. Gender also plays a role in attitude scores, with 37.6% of males having a negative attitude compared to 18.9% of females. Residence is another factor that appears to influence attitude scores, with the highest percentage of negative attitudes seen in the East region at 27.6%, and the lowest in the North region at 9.4%. Education level and occupation also show some variation in attitude scores, with postgraduate individuals having the highest percentage of negative attitudes at 19.0%, and those not related to the health field having the highest percentage of negative attitudes at 21.8%. Finally, the number of children also seems to impact attitude scores, with the highest percentage of negative attitude seen in the 3-4 children category at 38.3%, and the lowest in the 0 children category at 15.5%. Age, gender, and residence place had a significant effect on the attitude scores of participants. The prevalence of good practices decreases with increasing age, with the highest proportion of good practices seen in the age group 31-40. The differences in practice levels among age groups are statistically significant, as indicated by the P value of 0.001. Moving on to marital status, the data shows that married individuals have the highest proportion of low practice, while divorced and widowed individuals have lower proportions of low practice. However, the P value of 0.200 suggests that the differences in practice levels among marital status groups are not statistically significant. When considering gender, it is interesting to note that females have a higher proportion of good practice compared to males. However, the P value of 0.324 indicates that the differences in practice levels between genders are not statistically significant. Looking at nationality, Saudi individuals have a higher proportion of good practice compared to non-Saudi individuals. However, the differences in practice levels between nationalities are not statistically significant, as indicated by the P value of 0.481. In terms of education level, it is interesting to note that the majority of the population has a postgraduate degree, with 66.7% of individuals falling into this category. This is followed by those with a secondary education at 15.3%, and those with a diploma at 15.1%exhibiting a significant association with a p-value of 0.016.

Moving on to occupation, 79.9% of individuals are in occupations not related to the health field, while 20.1% are in occupations related to the health field. Finally, the data also includes the number of children individuals have. The majority of individuals have 3-4 children, making up 38.3% of the population. This is followed by those with 0 children at 15.5%, 1-2 children at 18.2%, and more than 5 children at 28.0%.

Table 6. Association between sociodemographic characteristics and knowledge (n=721)

		Knowledge score			Total (N=721)	P value
		High knowledge level	Moderate knowledge level	Low knowledge level		
Age	less than 20	2	5	9	16	0.001
		0.3%	0.7%	1.2%	2.2%	
	20_30	62	41	110	213	
		8.6%	5.7%	15.3%	29.5%	
	31_40	17	62	81	160	
		2.4%	8.6%	11.2%	22.2%	
	41_50	18	51	114	183	
		2.5%	7.1%	15.8%	25.4%	
	51_60	6	33	87	126	
		0.8%	4.6%	12.1%	17.5%	
	more than 60	1	15	7	23	
		0.1%	2.1%	1.0%	3.2%	
marital status	Married	94	186	336	616	0.100
		13.0%	25.8%	46.6%	85.4%	
	Divorced	10	19	60	89	
		1.4%	2.6%	8.3%	12.3%	
	widow	2	2	12	16	
		0.3%	0.3%	1.7%	2.2%	
Gender	Male	28	78	165	271	0.029
		3.9%	10.8%	22.9%	37.6%	
	Female	78	129	243	450	
		10.8%	17.9%	33.7%	62.4%	
Nationality	Saudi	103	202	398	703	0.972
		14.3%	28.0%	55.2%	97.5%	
	Non-Saudi	3	5	10	18	
		0.4%	0.7%	1.4%	2.5%	
Residence	East	55	51	93	199	0.001
		7.6%	7.1%	12.9%	27.6%	
	Middle	20	62	143	225	
		2.8%	8.6%	19.8%	31.2%	
	North	3	37	28	68	
		0.4%	5.1%	3.9%	9.4%	
	South	14	25	74	113	
		1.9%	3.5%	10.3%	15.7%	
	West	14	32	70	116	
		1.9%	4.4%	9.7%	16.1%	
Education Level	Primary	0	4	4	8	0.002
		0.0%	0.6%	0.6%	1.1%	
	Middle	2	3	8	13	
		0.3%	0.4%	1.1%	1.8%	
	Secondary	6	29	75	110	

		0.8%	4.0%	10.4%	15.3%	
	Diploma	8	40	61	109	
		1.1%	5.5%	8.5%	15.1%	
	Postgraduate	90	131	260	481	
		12.5%	18.2%	36.1%	66.7%	
Occupation	Related to the health field	11	48	86	145	0.021
		1.5%	6.7%	11.9%	20.1%	
	Not related to the health field	95	159	322	576	
		13.2%	22.1%	44.7%	79.9%	
Number of Children	0	15	27	70	112	0.001
		2.1%	3.7%	9.7%	15.5%	
	1-2	6	36	89	131	
		0.8%	5.0%	12.3%	18.2%	
	3-4	70	86	120	276	
		9.7%	11.9%	16.6%	38.3%	
	More than 5	15	58	129	202	
		2.1%	8.0%	17.9%	28.0%	

Febrile convulsions, also known as febrile seizures, are a common occurrence in young children, typically between the ages of 6 months to 5 years. These seizures are often caused by a sudden spike in body temperature, usually due to a viral infection. While febrile convulsions are generally harmless and do not cause any long-term damage, they can be a frightening experience for both the child and their parents [3]. In Saudi Arabia, it is important to understand the knowledge, attitudes, and practices regarding febrile convulsions among parents. This is because parents play a crucial role in recognizing and managing febrile convulsions in their children. Understanding their level of knowledge, attitudes, and practices can help healthcare professionals design effective educational programs and interventions to better support parents in dealing with febrile convulsions [5, 6].

In our study the score of knowledge levels were unsatisfactory, as almost 57% of the participants exhibited low knowledge levels, another study conducted in Riyadh, Saudi Arabia showed even lower scores, as nearly 89% of participants had poor knowledge [17]. This aligns closely with the findings of the study conducted by AlZweihary *et al*., which showed that approximately 70% of parents residing in the Qassim region indicated a lack of proficiency in FC, whereas 32.2% demonstrated a high degree of knowledge [15]. In contrast to these findings, a study conducted in Ghana revealed that 59% of the respondents have a substantial understanding of FC. Nevertheless, the majority of the administered first-aid yielded no favorable results [3]. This finding has been corroborated by the research done among Iraqi parents revealed that 43% possessed high levels of knowledge, 40% had moderate levels of knowledge, and a mere 17% had low levels of knowledge [18].

Our study revealed a clear deficiency in FC knowledge, necessitating educational assistance by health authorities. In our survey, only 31.3% disagreed that FC is considered epilepsy, and 9.3% disagreed that antiepileptic drugs are needed for every child presented with FC. On the other hand, a study in Riyadh showed that 53.3% of parents disagreed with the notion that "FC is epilepsy," which was the one concept that participants appeared to comprehend effectively. The remaining knowledge items received ratings were deemed unsatisfactory [17].

In our study, most of the participants (60%) said that fever and child's age is the cause of FC, followed by the selection of abnormal electrical currents in the brain, hereditary, and finally supernatural things. In the research conducted in Riyadh, the primary factors contributing to febrile convulsions, as perceived by parents, are fever and the child's age [17]. Similarly, Alfhaid *et al*. conducted a study in which they found that 53.7% of the participants were knowledgeable about the fact that fever recurrence and the child's age were the primary factors contributing to febrile convulsions [11]. According to a study conducted in India, a significant number of parents held incorrect beliefs regarding convulsions. Specifically, 20.9% of parents believed that convulsions were just shivering, 20% believed it to be lethargy, 10.9% associated it with excessive cry tantrums, 8.2% thought it was fainting spells, and 7.2% regarded it to be an evil impact [9]. Nevertheless, a survey conducted in Japan revealed that a greater number of mothers with children who had experienced FC claimed that elevated body temperature was the cause of FC. Additionally, they found that using antipyretic medications not only prevented the progression of the condition but also raised the child's body temperature during bouts of fever [19].

In our study, statistical significance of knowledge was found associated with age, Residence, and number of children, as the 20-30 age group exhibited the highest knowledge compared with the rest, people living in the east had higher knowledge levels, and participants with 3-4 children also had higher knowledge with a p-value of 0.001 for all. Also, gender had a significant association with knowledge, as females exhibited more knowledge than males with a p-value of 0.029. The study in Riyadh showed that the child's firsthand experience of an FC episode, having a brother or sister who has had FC, and possessing a family history of FC were strong indicators of higher knowledge about FC [17]. Another study discovered a noteworthy correlation between knowledge of convulsions and gender and marital status but found no significant correlation

with age and education. The study revealed that sociodemographic characteristics, including parents' gender, age, occupational position, education, and monthly income, did not show any significant correlation with knowledge ($p > 0.05$) [20]. A study conducted by Dogahe *et al*. found that there were no significant variations in socio-demographic characteristics between the control and case groups in terms of knowledge ($p > 0.05$) [21].

Regarding practice, our practice score found that 84.7% of participants exhibited poor practice levels. Another study conducted in Saudi Arabia showed that a significant number of parents reported experiencing febrile seizures. However, only 13.5% of the parents in this study demonstrated knowledge of the appropriate action to take, which is to lower the child's temperature. Nevertheless, a significant majority of 70.1% of the participants concurred that it is imperative for parents to consistently monitor their child's body temperature [11].

In our study, statistical significance of practice was found associated with age and educational level, as the age group 31-40 exhibited good practice more than other age groups, and postgraduates exhibited better practices than participants with lower degrees with p-values of 0.001 and 0.016, respectively. On the contrary, a cross-sectional study conducted in Al-Baha City, Kingdom of Saudi Arabia, examined the level of awareness and parental practices regarding the management of fever in their children. The study revealed that the majority of participants were well-informed and possessed a comprehensive understanding of fever, including its accurate definition, potential complications, and initial treatment methods for febrile illnesses at home [5].

Concerning attitude, our study showed that 21.6% exhibited a positive attitude, and 27% exhibited a negative attitude. Similarly, a study held in Riyadh showed that over one-third of the participants were classified as having a negative attitude, while 15.2% exhibited positive attitudes (mean score = 21.4; SD = 8.89, out of 40 points) [17]. On the other hand, the findings of this survey indicate that the proportion of individuals with negative attitudes in Qassim was 57%, while 43% of participants reported positive attitude levels [15].

Knowledge about febrile convulsions among Saudi parents is essential for early recognition and appropriate management of the condition. Parents need to be aware of the signs and symptoms of febrile convulsions, as well as the appropriate first aid measures to take when their child experiences a seizure. Additionally, understanding the potential causes and risk factors for febrile convulsions can help parents take preventive measures to reduce the likelihood of their child experiencing a seizure [7]. Attitudes towards febrile convulsions can also influence how parents respond to the condition. Some parents may experience fear and anxiety when their child has a febrile convulsion, while others may feel confident in their ability to manage the situation. Understanding these attitudes can help healthcare professionals provide the necessary support and reassurance to parents, as well as address any misconceptions or fears they may have [7]. Practices regarding febrile convulsions encompass the actions that parents take when their child experiences a seizure. This includes seeking medical attention, administering first aid, and implementing preventive measures. It is important to assess the current practices of Saudi parents in managing febrile convulsions to identify any gaps in knowledge or skills that may need to be addressed through education and training [7, 9].

Study Limitations

The study has several limitations that should be taken into consideration. One limitation is the potential for selection bias, as the study only included Saudi parents, which may not be representative of all parents in the region. Additionally, the cross-sectional design of the study may limit the ability to establish causality between knowledge, attitude, and practices regarding febrile convulsions. Furthermore, the self-reported nature of the data may introduce response bias, as participants may not accurately recall or report their knowledge, attitudes, and practices. These limitations should be considered when interpreting the findings of the study and when applying them to broader populations.

Future Implications

This study provides valuable insights into the understanding and management of febrile convulsions in the Saudi population. The findings of this study have significant implications for the future, as they can inform healthcare professionals, policymakers, and educators about the current knowledge gaps and misconceptions among parents regarding febrile convulsions. By addressing these issues, healthcare providers can develop targeted educational interventions to improve parental knowledge and practices in managing febrile convulsions, ultimately leading to better outcomes for children experiencing this condition. Additionally, the study's results can also guide future research efforts in this area, helping to further understand and address the needs of Saudi parents and their children when it comes to febrile convulsions. Overall, this study has the potential to drive positive changes in the healthcare system and improve the well-being of children in Saudi Arabia.

Conclusion

In conclusion, the study revealed that the majority of participants had low knowledge, poor practice, and negative attitudes. Age, gender, educational level, and number of children were significantly associated with participants' knowledge scores. Practice score was significantly associated with age. However, attitude was significantly associated with age, gender, and residence.

By identifying the specific needs and challenges that parents face, healthcare professionals can develop targeted interventions to support parents in recognizing, managing, and preventing febrile convulsions in their children. This can ultimately lead to better outcomes for children and reduce the anxiety and stress experienced by parents when dealing with febrile convulsions.

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