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Fever Management in Preschool Children; What Do the Parents Know? What Are They Doing?

Okul Öncesi Çocuklarda Ateş Yönetimi; Ebeveynler Ne Biliyorlar? Ne Yapıyorlar?

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Abstract

Objective: Fever, one of the most common symptoms of illness in children, causes anxiety in parents and leads to wrong practices in reducing fever. This study was conducted to evaluate parents' knowledge, attitudes and practices regarding fever management.

Material and Methods: Two hundred fifty-three parents with children aged between six months and six years who applied to pediatric outpatient clinics between November 2019 and January 2020 in a university hospital were included. The data were collected by face-to-face interview technique using a questionnaire form consisting of 21 questions.

Results: It was found that when their children had a fever, 56.9% of the participants were very anxious and feared the most of convulsions (55.7%), the fever was mostly evaluated by touching (59.7%) and forehead (41.5%). It was observed that 22.5% of the parents did not know the degree of fever, 43.5% of parents considered temperatures below 38°C as fever, and 30.8% of parents used antipyretic drugs at temperatures below 38°C. The use of antipyretic drugs for the temperatures below 38°C by the university graduate parents was significantly lower than the other parents ($p< 0.05$). First applications in reducing fever; removing clothes (27.3%) and having a bath (27.3%) with warm water. It was found that giving antipyretic before going to the doctor was 73.5%, checking fever more frequently than an hour 73.1% and giving antipyretic drugs by waking up from sleep at night was found as 74.3%. The rate of using different antipyretic drugs alternately was 49%, and the rate of giving antipyretics to prevent fever after the fever subsided was found to be 32.8%.

Conclusion: It was found that most of the parents had insufficient information regarding fever, were extremely anxious, measured fever fre-

Öz

Giriş: Çocuklarda sık görülen hastalık belirtilerinden birisi olan ateş, ebeveynlerde endişeye neden olarak ateş düşürmede yanlış uygulamalara yol açmaktadır. Bu çalışma, ebeveynlerin ateş yönetimi ilgili bilgi, tutum ve uygulamalarını değerlendirmek amacıyla yapılmıştır.

Gereç ve Yöntemler: Kasım 2019-Ocak 2020 tarihleri arasında bir üniversite hastanesinde yapılan çalışmaya, çocuk sağlığı ve hastalıkları polikliniklerine başvuran 6 ay-6 yaş arasında çocuğu olan 253 ebeveyn dahil edilmiştir. Veriler 21 sorudan oluşan anket formu kullanılarak yüz yüze görüşme tekniğiyle toplanmıştır.

Bulgular: Çocuklarında ateş olduğunda, katılımcıların %56.9'unun fazla endişeli olduğu ve en fazla (%55.7) havaleden korktukları, ateşin en fazla (%59.7) dokunarak ve alından (%41.5) değerlendirildiği bulundu. Ebeveynlerin %22.5'inin ateşin derecesini bilmediği, %43.5'inin 38°C'nin altındaki sıcaklıkları ateş olarak değerlendirdiği, %29.3'ünün 38°C'nin altındaki sıcaklıklarda ateş düşürücü ilaç kullandığı saptandı. Üniversite mezunu ebeveynlerin 38°C'nin altındaki sıcaklıklar için ateş düşürücü ilaç kullanmaları diğer ebeveynlere göre anlamlı olarak düşüktü ($p< 0.05$). Ateş düşürmede ilk uygulamalar; kıyafetleri çıkarma (%27.3) ve ılık suyla banyo (%27.3) yaptırmaktı. Doktora gitmeden önce ateş düşürücü verme %73.5, ateşi bir saatten daha sık aralıklarla kontrol etme %73.1 ve gece uykudan uyandırarak ateş düşürücü ilaç verme %74.3 olarak saptandı. Dönüşümlü farklı ateş düşürücü ilaçları kullanma %49, ateş düştükten sonra ateşin çıkmaması için ateş düşürücü verme %32.8 olarak bulundu.

Sonuç: Ebeveynlerin büyük bir kısmının ateş ile ilgili bilgilerinin yetersiz olduğu, fazla endişeli oldukları, ateşi sık aralıklarla kontrol ettikleri, gece uykudan uyandırma, düşük sıcaklık derecelerinde ateş düşürücü kullan-

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quently, used wrong practices such as waking children up at night, using antipyretics at low temperatures, and giving antipyretics alternately.

Keywords: Fever, knowledge, child, parent, fever management

ma ve dönüşümlü olarak ateş düşürücü verme gibi yanlış uygulamalar yaptıkları bulunmuştur.

Anahtar Kelimeler: Ateş, bilgi, çocuk, ebeveyn, ateş yönetimi

Introduction

Fever, which is one of the most commonly seen symptoms in preschool children, generally results from self-limiting viral infections, and most of these diseases improve without any special treatment (1,2). Fever is a physiological response of the body that fastens and eases recovery (3). For a child properly dressed for the ambient temperature, acute fever is defined as body core temperature higher than 38°C without any physical activity (4).

There is no evidence for fever itself to worsen the course of the disease or cause long term neurological complications (5). However, fever in a child is a worrisome condition for parents. It has been reported that main reasons for parents to fear fever are brain damage, febrile seizure and death (6,7).

Excessive concern of the parents regarding fever was defined as "fever phobia" in a study conducted by Schmitt for the first time in 1980 (8). It has been shown in later studies that this concern continued, parents' knowledge on fever was insufficient, and parents tried improper practices to bring the fever down (6,7,9-11).

Negative thoughts of the parents regarding fever may increase their concerns and affect fever management strategies (6). Concerns on fever lead to unreasonable admissions to healthcare centers and inappropriate use of antipyretics (3). It is mandatory for healthcare providers to inform parents on not to panic when their children have fever, not to get overly concerned, and to properly manage fever at home. It is important to determine parents' lack of knowledge on how to bring fever down with up-to-date studies and to detect improper practices performed at home in fever management to give information correctly to parents. This study was carried out to evaluate the knowledge, attitude and practices on fever management in parents with preschool children.

Materials and Methods

This cross-sectional study was performed in Gaziantep University, Medical Faculty, Education and Research Hospital between November 2019 and January 2020. Prior to the study, approval was obtained from the Medical Faculty Ethics Board of Gaziantep University (Decision no:2019/424).

In a recent study conducted in Turkey, the rate of parents' knowledge on the correct definition of fever has been found approximately as 19% (10). Based on the aforementioned study, sample size for this study (95% confidence interval and 5% margin of error) was calculated as 237. Due to shortcomings that could be seen in data, the number was increased at a rate of approximately 10% and planned as 260.

During the study period, parents with children aged 6 months to 6 years who presented to the pediatric health and diseases polyclinic for any reason were informed on the study. Parents with children who had congenital anomalies, chronic diseases, cancer and were immunosuppressive were excluded from the study. A survey was filled out face-to-face with 260 parents agreeing to participate in the study. Seven parents who did not answer some of the questions on the survey were excluded from the study. A total of 253 parents were included into the study.

The survey form prepared by the researcher screening the literature was made up of 21 questions, including mainly multiple-choice questions. The survey had three parts. The first part included questions regarding demographics of the parents (age, sex, education, monthly income, number of children in the family, history of febrile convulsion in the family). The second part of the survey included questions on how temperature is taken, the definition of fever, on which degrees of temperature antipyretics are given, the reasons to fear fever, and the level of concern. The last part of the study included questions on the practices parents carried out at home to bring fever down, how often fever is checked and how antipyretics are given.

Chi-square test was used to analyze the interrelation of two independent variables for categorical variables. As descriptive statistics, mean and standard deviation were used for numerical variables, and number and percentage were used for categorical variables. SPSS 23.0 was sued for statistical analyses, and $p< 0.05$ was considered statistically significant.

Results

Demographics of the Parents

Mean age of the parents was 32.85 ± 6.47 (youngest 19-oldest 54), and 69.2% were mothers (n= 175). Of the participants, 29.6% were primary school graduates (n= 75). Of the parents, 38.7% stated that their income was under 2,500 TL. Majority of the parents in this study (80.2% n= 203) had more than 1 child. History of convulsion in the family was 7.5% (n= 19). Demographic characteristics of the parents are summarized in Table 1.

Parents' Concern on Fever and Definition of Fever

Of the parents, 56.9% stated that they felt very concerned when their children had fever and that they mostly feared fe-

Table 1. Demographics of the parents

Demographics of the parents	n	%
Age		
Under 35 years	154	60.9
35 years and over	99	39.1
Age mean ± SD	32.85 ± 6.47	
Sex		
Male	78	30.8
Female	175	69.2
Level of education		
Primary school	75	29.6
Secondary school	46	18.2
High school	67	26.5
University	65	25.7
Level of income		
Under 2500 TL	98	38.7
2500-5000 TL	95	37.5
Over 5000 TL	60	23.7
Number of children		
1	50	19.8
2	101	39.9
3 and over	102	40.3
Family history of febrile convulsion		
Yes	19	7.5
No	234	92.5

brile convulsion (55.7%). The level of concern of parents with a history of convulsion in the family was found significantly higher compared to those that did not have the same history (p= 0.012). Of the parents, 59.7% (n= 151) replied to the question "how do you understand if your child has fever?" as "by touching". It was found that temperature was mostly evaluated from the forehead (41.5%, n= 105). Parents with a university degree were found to take temperature using a thermometer more than the other parents. Of the parents, 22.5% (n= 57) indicated that they did not know the answer to the question "Over what degree is considered fever?". Table 2 shows the definition and concerns of the parents regarding fever.

Of the parents, 43.5% (n=110) stated that they considered temperature under 38°C as fever, and 29.3% indicated that they used antipyretic drugs for temperatures under 38 ºC. More than half of the university graduate parents (53.8%) stated that they considered temperatures under 38°C as fever. University graduate parents were found to define temperatures under 38°C as fever more than other parents (p= 0.023). The usage of antipyretic drugs for temperatures under 38°C was found to be significantly lower compared to other parents (p= 0.014) (Table 3).

Practices of the Parents on Fever Management

The first practices that parents carried out when the child had fever were found to be taking the child's clothes off (27.3%) and bathing the child in warm water (27.3%). Majority of the parents (73.5%) stated that they gave their children antipyretic drugs before applying to a physician and checked their children's temperature at less than one-hour intervals (73.1%).

Of the parents, 22.9% stated that they had difficulty in choosing the antipyretic drug to use, and 49% indicated that they used different antipyretic drugs alternately if the fever persisted. It was found that mostly paracetamol-containing drugs were used as antipyretics (49%). Of the parents, 74% (n= 188) emphasized that they woke the child up at night to give antipyretic drug, and 32.8% were detected to give antipyretic drug to prevent the temperature going up once the fever dropped. Practices of the parents to bring the fever down are summarized in Table 4.

Discussion

Concerns of the parents and caregivers regarding the serious reasons of fever (like severe bacterial infections) and their illusion regarding the fact that fever is a trigger of brain damage cause fever phobia to continue (12). In a recent study from Saudi Arabia, it has been reported that 99% of the parents consider untreated fever to lead to convulsion, brain damage and death (13). In other studies, it has been demonstrated that the main reasons for parents to fear fever are convulsion, brain damage and death (6,9,14). Similarly, our study also found that parents mostly feared fever due to convulsion (febrile seizures).

Table 2. Parents' concern regarding fever and their definitions of fever

	n	%
General level of concern of the parents when their children have fever		
Slight	20	7.9
Mediate	89	35.2
Excessive	144	56.9
The most feared damage of fever when left untreated		
Worsening of the disease	46	18.2
Brain damage	62	24.5
Febrile convulsion (seizure)	141	55.7
Other	4	1.6
The method of taking temperature		
With thermometer	53	20.9
By touching	151	59.7
Using both methods	49	19.4
Place of temperature taking		
Armpit	94	37.2
Ear	14	5.5
Forehead	105	41.5
Mouth	5	2.0
Anus	0	0.0
More than one place	35	13.8
The degree that is considered as fever		
Do not know	57	22.5
36.5°C	6	2.4
37°C	53	20.9
37.5°C	51	20.2
38°C	65	25.7
38.5°C	10	4.0
39°C	11	4.3

Fever in children is evaluated by touching by most parents (15). In a study conducted in Palestine, it has been detected that 65.4% of the parents evaluate the temperature of their children only by touching (7). In a study from New York, it has been reported that measuring temperature by touching with hand is used by 57% of the parents and mostly, the forehead is being preferred (15). Erkek et al. have reported in their study that 56.5% of the parents evaluated temperature by touching the forehead (16). Similarly, our study found that more than half of the parents (59.7%) evaluated temperature by touching and mostly by touching the forehead (41.5%).

The degree of body temperature may change depending on the place the temperature is taken. It also varies among individuals and during the day (17). In the literature, body temperature to be referred to as fever in children has been defined as over 38°C (4, 17-19). Coretti et al. have reported that half of the caregivers considered temperature under 38°C as fever and one fourth of them used antipyretics in temperatures under 37.8°C (9). In a study conducted in Ireland, it has been found that two thirds of parents consider temperature under 38°C as fever (20). In a study by Polat et al. it has been reported that approximately one third of parents consider temperature under 37.8°C as fever (21). Similarly, this study also found that 22.5% of the parents did not know what degree is considered as fever and 43.5% considered temperature under 38°C as fever.

It has been reported that level of education is important in the parents' management of fever (22). In a study, it has been detected that delaying the administration of antipyretics until the fever reaches 38.5°C was more in parents with high level of education (23). In a study by Hiller et al. positive perception of fever is related to the education level of the parents (24). In a study by Arıca et al., a significant relation has been established between the mothers' education level and correct evaluation of fever (25). In our study, defining temperature under 38°C as fever was found to be more frequent in parents that had graduated from university compared to others but their usage of antipyretics was found significantly lower compared to others ($p< 0.05$).

According to the American Pediatric Academy, primary objective of using antipyretic drugs in a child with fever is to increase general comfort (26). In order to bring fever down, parents tend to use antipyretics more frequently than recommended, at improper dosages, and in combination or alternately unnecessarily (9). Combined or alternate usage of two antipyretic drugs may increase the risk of drug toxicity (12). In

Table 3. Comparison of the parents' education level and the method used in taking temperature

		No university degree	University graduates	p
How do you understand if your child has fever?				
Use thermometer	n	37	16	**0.002**
	%	19.7	24.6	
By touching	n	123	28	
	%	65.4	43.1	
Both	n	28	21	
	%	14.9	32.3	
In your child, over what degree do you consider as fever?				
Do not know	n	50	7	**0.023**
	%	26.6	10.8	
Under 38°C	n	75	35	
	%	39.9	53.8	
38°C and over	n	63	23	
	%	33.5	35.4	
At what temperature do you use antipyretic drugs?				
I decide by touching	n	42	6	**0.014**
	%	22.3	9.2	
Under 38°C	n	58	16	
	%	30.9	24.6	
38°C and over	n	88	43	
	%	46.8	66.2	

a study by Hiller et al, it has been found that parents alternately use paracetamol and ibuprofen to bring fever down (24). In a study from Turkey, the rate of using antipyretics alternately by parents has been found as 44% and most parents have stated that they gave the drugs as such with the recommendation of the pediatricians (21). Similar to other studies, our study found that approximately half of the parents used different antipyretics alternately.

In a study from Taiwan, 89.5% of the parents have been found to give antipyretic drugs prior to the clinic visit (6). Wallenstein et al. indicate that 89% of the caregivers give antipyretic drug to a febrile child who looks comfortable (26). Çınar et al. have found that 58.5% of the parents sleep in the same room with the child when he/she has fever and 33.2% wake the child up to give the antipyretic drug (27). Similarly, our study found that a majority of the parents (73.5%) gave antipyretics before visiting the physician and woke the child up at night to give the antipyretic drug (74%).

Parents frequently practice physical methods to bring the fever down including removing the clothes, giving a bath, applying cold and wet towels (10,28,29). Forty-seven percent of the Sudanese mothers have been found to apply wet towels to bring the fever down, and most have been reported to use the water in the refrigerator or earthenware jar (30). In some studies, it has been determined that parents also use liquids like vinegar, cologne or alcohol to bring the fever down (14,25,31,32). However, physical practices like cold baths and alcohol application are not recommended due to their possibility of causing side effects (33). Similarly in our study, it was found that parents removed clothes, gave warm baths, and applied the child with water-soaked wet towel, and despite rarely, the parents also wiped the child with cologne/alcohol and vinegar.

This study has some limitations, First, since this was a single-center study, the results cannot be generalized. Second, data obtained in the study rely on the expressions of the parents.

To conclude, it was found in the study that parents' knowledge on fever was insufficient, they were concerned over fever, checked the fever frequently, woke the child up at night, gave antipyretics even at low temperatures, and alternately used antipyretics. Our results show the need for parents to be informed by healthcare providers on the proper management of fever at home and prevent misguided antipyretic practices. Proper fever management at home should be provided by giving parents health education on fever in children.

Table 4. Parents' practices on fever management

Questions	Answers	n	%
What is your first approach in fever?	Removing the clothes	69	27.3
	Water-soaked towel	55	21.7
	Bath with warm water	69	27.3
	Bath with cold water	0	0.0
	Wiping with vinegar	23	9.1
	Wiping with cologne or alcohol	7	2.8
	Taking to the doctor immediately	14	5.5
	Just monitoring	4	1.6
	Removing the clothes and applying wet towel	12	4.7
Do you give antipyretic drugs before taking the child to the physician?	Yes	186	73.5
	No	67	26.5
Over what degree do you give antipyretic drug?	I decide by touching	48	19.0
	36.5°C	2	0.8
	37°C	45	17.8
	37.5°C	27	10.7
	38°C	86	34.0
	38.5°C	20	7.9
	39°C	25	9.9
What is your antipyretic drug-of-choice?	Drugs with paracetamol	124	49.0
	With ibuprofen	36	14.2
	Preferring both groups	87	34.4
	Other	6	2.4
How of the do you check the temperature?	More than 1 hour	185	73.1
	1 hour-2 hours	41	16.2
	3 hours or more	27	10.7
How often do you give antipyretic drugs?	At 1-2-hour intervals	60	23.1
	At 3-hour intervals	63	24.9
	At 4-hour intervals	78	30.8
	At 5-hour intervals	23	9.1
	At 6-hour intervals and more	29	11.5
What do you have difficulty in while giving antipyretic drug/syrup?	Drug choice	58	22.9
	Make the child drink the syrup	109	43.1
	Adjusting the dosage of the drug	37	17.6
	How often the drug should be given	38	15.0
	No difficulty	11	4.3

Ethics Committe Approval: This study approval obtained from Gaziantep University Faculty of Medicine Ethical Committee (Decision no: 2019/424).
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