The Relationship between the Health Literacy Levels of Parents Having Children Aged 1 Month to 5 Years and their Fever Management-Related Knowledge and Practices*

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Abstract

Aim: The aim of this study was to investigate the relationship between the health literacy levels of parents having children aged 1 month to 5 years and their fever management-related knowledge and practices.

Method: The research was conducted with 120 parents who agreed to participate in the study, which was applied to the child outpatient clinics of a state hospital in the Ödemiş district of Izmir. The data were collected between July 16 and December 31, 2019 by the face-to-face interview method. Data was collected using the sociodemographic questionnaire, the Fever Management Scale of Parents, and the Rehealth Literacy Scale.

Results: Of the parents participating in the study, 91 (75.8%) were mothers of their children, 63 (52.5%) were boys. 75.8% of the families had previously presented to the hospital due to fever, and 37.5% of the children were hospitalized due to high fever. It was determined that 53.3% of the parents who participated in the study had previously received information about fever, and 85.9% of the people who received information received information from healthcare professionals. It was found that 95.8% of the families were afraid of fever and 52.5% were afraid that the child had seizures. The correlation between the mother's age variable and the Parental Fever Management Scale scores and between the father's age variable and the Parental Fever Management Scale scores was negative.

Conclusion: Although the families have a good level of knowledge about the fever, they are afraid when their children have a fever. There was no relationship between health literacy and fever management knowledge levels.

Keywords: Health literacy, temperature regulation, body temperature regulations

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ETHICAL STATEMENT: In order to carry out the study, approval was obtained from the Non-Interventional Research Ethics Committee of Izmir Katip Çelebi University (Decision date: May 30, 2019, Decision No. 246), institutional permission was obtained from State Hospital (dated 11.07.2019, numbered 44223992-772.99) where the study was to be conducted, and informed consent was obtained from the families.

1 Ay-5 Yaş Arası Çocuğu Olan Ebeveynlerin Sağlık Okuryazarlığı Düzeyi ile Ateş Yönetimi Konusundaki Bilgi ve Uygulamaları Arasındaki İlişki

Öz

Amaç: Bu çalışmanın amacı 1 ay-5 yaş arası çocuğu olan ebeveynlerin sağlık okuryazarlığı düzeyi ile ateş yönetimi konusundaki bilgi ve uygulamaları arasındaki ilişkinin incelenmesidir.

Yöntem: Araştırma İzmir'in Ödemiş ilçesinde bir devlet hastanesinin çocuk polikliniklerine başvuran çalışmaya katılmayı kabul etmiş 120 ebeveynle gerçekleştirilmiştir. Veriler yüz yüze görüşme yöntemi ile 16 Temmuz 2019 ile 31 Aralık 2019 tarihleri arasında toplanmıştır. Veri toplama aracı olarak sosyodemografik soru formu, ateş konusunda bilgi formu, Ebeveynlerin Ateş Yönetim Ölçeği ve REALM sağlık okuryazarlığı ölçeği kullanılmıştır.

Bulgular: Araştırmaya katılan ebeveynlerin %75,8'inin anne olup, çocukların %52.5'inin erkek olduğu bulunmuştur. %75,8'inin daha önce ateşlendiği için aileleri tarafından hastaneye getirildiği, %37,5'inin daha önce hastaneye yattığı bulunmuştur. Araştırmaya katılan ebeveynlerin %53,3'ünün daha önce ateşle ilgili bilgi aldığı, bilgi alan kişilerin %85,9'unun sağlık çalışanlarından bilgi aldığı saptanmıştır. Ailelerin %95,8'inin ateşten korktuğu, %52,5'inin çocuğun nöbet geçirmesinden korktuğu bulunmuştur. Annenin yaşı ile Ebeveyn Ateşi Yönetimi Ölçeği puanı arasında ve baba yaşı ile Ebeveyn Ateşi Yönetimi Ölçeği puanı arasında negatif korelasyon vardır.

Sonuç: Ailelerin ateşle ilgili bilgi düzeylerinin iyi olduğu buna rağmen çocuklarının ateşi yükseldiğinde korktukları, sağlık okuryazarlığı ve ateş yönetimi bilgi düzeyleri arasında bir ilişki olmadığı belirlendi.

Anahtar Sözcükler: Sağlık okuryazarlığı, sıcaklık düzenlemesi, vücut sıcaklığı düzenlemesi

Introduction

The increase in body temperature as the threshold value controlled by the hypothalamic temperature regulation center in the body based on the information it receives from the peripheral neural receptors increases is called "fever"[1]. Fever is one of the responses given to diseases by the metabolism. Fever, one of the most common causes of emergency admissions in childhood[2], is a common event[3]. Fever, one of the most common causes of emergency admissions in childhood, frightens families because of its risks such as convulsions and brain damage[2]. Fever phobia is defined as "*fears/anxieties of families about fever and false/incorrect information about fever management*"[4]. Fever phobia was first mentioned in 1980[4]. In their study conducted 20 years after Barton and Schmitt's study[5], Crocetti et al.[6] found that fever phobia persisted, that the number of parents who were afraid of febrile seizures was higher than in the past, and that they woke up children to check their temperature, and gave antipyretics and a lukewarm sponge bath to lower their body temperature to normal. Families' high levels of anxiety cause them to use antipyretics unconsciously. Most of the poisoning cases present to the pediatric emergency service are due to drug poisoning resulting from various mistakes in the storage and use of antipyretics. The leading one is paracetamol poisoning[7]. According to the data released by the National Poison

Center in 2008, of the admissions, 6.78% were due to paracetamol poisoning, and 3.93% were due to the misuse of drugs[8].

In several studies conducted on the issue, mothers measured the temperature by palpation[9-11], with a digital thermometer[12] or by placing the thermometer in the armpit[13,14]. In a study conducted by Arslan and Aydın[9], most of the mothers considered that fever posed a risk for the development of febrile seizure, followed by death, meningitis, stroke, brain damage, polio, and potential cerebral hemorrhage respectively. To reduce fever, mothers gave a lukewarm sponge bath, had the child take a lukewarm shower, or gave antipyretics, gave a lukewarm sponge bath and antipyretic in combination, or took the child to the physician, and covered the child with a blanket[9,14,15].

As reported in a study, more than half of the mothers learned how to manage fever from health workers, and some of the mothers used cold water, or lukewarm water mixed with vinegar while giving a sponge bath, or rubbed alcohol on the child's skin[9]. Of the mothers, 31.9% gave ibuprofen, 31.9% gave paracetamol, 3% gave antibiotics as antipyretic, and 33.3% did not know what to give[9]. In another study, while 83.8% of the mothers preferred paracetamol to reduce fever, 27.5% of them used acetylsalicylic acid to reduce fever[2].

As is seen in the aforementioned studies, in Turkey, families lack knowledge about how to manage fever. In the present study, it was aimed to investigate the relationship between the families' knowledge and practices of fever, and their level of health literacy. Being inadequate in health literacy (Inadequate in health literacy) leads to not making right (or wrong) choices, increases risky behaviors, worsens health, lowers self-management, and increases hospitalizations. Therefore, human and financial resources in the health system have been consumed significantly[16]. The following broad and inclusive definition developed by the European Health Literacy Consortium in 2012 is used to describe health literacy[16]:

"Health literacy is linked to literacy and requires people's knowledge, motivation and competences to access, understand, evaluate and apply health information to make judgments and decisions in everyday life related to health, disease prevention, and health promotion throughout the lifespan."

Health literacy has been one of the topics that have attracted researchers' interest in recent years. In a study conducted with 5877 parents having 4- to 10-year-old children in California in 2007, it was determined that a good level of health literacy affected children's health positively[17]. In a study conducted on fever, fever- and fever-management-related knowledge of the parents of children aged 3 months to 5 years was determined as inadequate, and the level of health literacy did not lead to a significant difference in fever management[18]. Morrison et al.[19] reported that 39% of 299 parents presented to the emergency service because of fever even though it was not an emergency, that 63% of the parents had a low health literacy level, that the incidence of presenting to the

emergency service for non-emergency reasons was 1.8 times more often among parents whose health literacy level was low, and that this incidence was even higher among parents whose children were ≥2 years old. When Emmerton et al. reported that 39% of 299 parents presented to the emergency service because of fever even though it was not an emergency, that 63% of the parents had a low health literacy level, that the incidence of presenting to the emergency service for non-emergency reasons was 1.8 times more often among parents whose health literacy level was low, and that this incidence was even higher among parents whose children were ≥2 years old. When Emmerton et al.[20] gave a scenario about fever to families having children in the preschool period, they determined that the majority of the parents read the medication package insert, that 93.8% and 66.7% of the parents correctly determined how frequently paracetamol and ibuprofen should be administered respectively, and that 50.8% of them calculated the correct dose according to weight. As is seen, the approach to fever, which is the most common symptom experienced by children in early childhood, has not been resolved from the past to the present, and the issues affecting fever management have been investigated. The aim of this study was to investigate the relationship between the health literacy levels of parents with children aged 1 month to 5 years and their fever management-related knowledge and practices.

Research Questions

How good is the knowledge and practice of parents on fever management?

What is the health literacy level of the parents?

Is there a relationship between health literacy and fever management?

What are the sociodemographic characteristics that (sociodemographic characteristics) affect health literacy?

What are the sociodemographic characteristics that (sociodemographic characteristics) affect fever management?

Material and Methods

Setting: The research was conducted with the parents of children aged 1 month to 5 years who presented to the pediatric outpatient clinics at Ödemiş State Hospital. In the pediatric outpatient clinics, there is a children's playground, a family waiting room, and baby care room.

Population and Sample of the Study: In 2018, 40 625 patients presented to the pediatric outpatient clinics. Since the distribution of patients according to age groups was not known, the total number of patients admitted to the outpatient clinics was taken into account for the calculation of the sample size which was made using the OpenEpi program (confidence interval: 95%, margin of error: 5%). According to the calculation, it was aimed at reaching 381 people. However, the study was concluded with 120 people. Of the parents, those who had children aged

1 month to 5 years who were able to understand and speak Turkish and volunteered to participate in the study were included in the sampling.

Data Collection Tools: Data were collected using the sociodemographic characteristics and Fever Management Questionnaire prepared based on the literature, Parental Fever Management Scale, and the Rapid Estimate of Adult Literacy in Medicine - REALM.

Sociodemographic Characteristics and Fever Management Questionnaire: The questionnaire prepared based on the literature included questions on the education level of the parents, health status of the children, age and fever management[21-23].

Parental Fever Management Scale: The Scale originally developed in Australia by Walsh et al. consists of eight items whose responses are rated on a 5-point Likert type scale in 2008. The validity and reliability study of the Turkish version of the scale was conducted by Çınar et al.[23]. The minimum and maximum possible scores that can be obtained from the scale are 8 and 40 respectively. High scores indicate that parents experience anxiety and fever phobia about their child's fever. The Cronbach's Alpha coefficient was 0.80 in the validity and reliability study of the Turkish version of the scale. In this study, the Cronbach alpha value of the scale was found to be low at 0.66.

Rapid Estimate of Adult Literacy in Medicine – REALM: The REALM was developed by Davis et al. The validity and consistency study of the Turkish version of the REALM was performed by Özdemir et al.[24]. The REALM is a word recognition test in which 66 medical words are ranked in the order of difficulty.

Scoring is carried out by considering the number of correctly expressed words. A score between 0 and 18 is the lowest and indicates that the person's health literacy level is low. Scores between 19 and 44 indicate the 4th to 6th grade health literacy level, between 45 and 60 indicate 7th to 8th grade health literacy level, and between 61 and 66 indicate the 9th grade or above of health literacy.

Data Collection Process: Data were collected between July 16, 2019 and December 31, 2019. After the permissions to use the data collection tools were obtained, the data were collected by the researcher using the face-to-face interview method. The researcher filled in the questionnaires in a quiet, empty room in the outpatient clinics, face to face with families, during working hours on weekdays, or during the busy hours of the morning.

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Analysis of the Data: The data were analyzed in the "Statistical Package for the Social Sciences" (SPSS) 25.0 program. In the analysis of the data, numbers, percentages, and mean values were used. The analysis of the scores obtained from the Parental Fever Management Scale and REALM performed using the Kolmogorov-Smirnov test demonstrated that they were not normally distributed (p=0.000). Since the value obtained in the Skewness and Kurtosis analysis was not between -2 and +2, it was interpreted that the data were not normally distributed. The comparison of the sociodemographic variables and scale scores, and the comparison of the scores obtained from the Parental Fever Management Scale and the scores obtained from the Rapid Estimate of Adult Literacy in Medicine were performed using the Spearman Correlation, Mann Whitney U test, and Kruskal Wallis analysis. Correlation values 0.00 no correlation, 0.01 - 0.29 low correlation, 0.30 - 0.70 moderate relationship, 0.71 - 0.99 high correlation, 1.00 was interpreted as a perfect relationship. Statistical significance was accepted at $p < 0.05$.

Results

Of the parents participating in the study, 91 (75.8%) were mothers of their children, 63 (52.5%) were boys, 85 (70.8%) were 1 to 36 months old and 35 (29.2%) were 37 to 72 months old. Of the mothers, 75.8% (n=91) were between the ages of 20 and 33 years and 24.2% (n=29) were between the ages of 34 and 47 years (Mean: 29.6±5.19 years). Of the mothers, 0.8% (n=1) were literate but not a graduate of any school, 21.7% (n=26) were primary school graduates, 17.5% (n=21) were middle school graduates, 30.8% (n=37) were high school graduates, 1.7% (n=2) had the associate degree, 25.8% (n=31) had undergraduate education, 1.7% (n=2) had postgraduate education. Of the mothers, 68 (56.7%) were homemakers, 16 (13.3%) were workers, 13 (10.8%) were self-employed, 10 (8.3%) were nurses, 8 (6.7%) were civil servants, 2 (1.7%) were teachers, 2 (1.7%) were health technicians, and 1 (0.8%) was a lawyer. While 70.8% (n=85) of the fathers were between the ages of 25 and 36 years, 29.2% (n=35) were between the ages of 37 and 48 years (Mean: 34.2±5.8). Of the fathers, 20% (n=24) were primary school graduates, 14.2% (n=17) were middle school graduates, 37.5% (n=45) were high school graduates, 27.5% (n=33) had undergraduate education, 0.8% (n=1) had postgraduate education. Of the fathers, 0.8% (n=1) was a lawyer, 1.7% (n=2) were teachers, 1.7% (n=2) were nurses, 2.5% (n=3) were health technicians, 15.8% (n=19) were workers, 20% (n=24) were civil servants, and 57.5% (n=69) were self-employed. Of the families, 96 (80%) lived in the district, 22 (18.3) lived in the village, 2 (1.7%) lived in the city, 97 (80.8%) were nuclear families, 23 (19.2%) were extended families, and 85% (n=102) had health insurance. Of the parents who answered the questionnaires, 54 (45%) had only one child, 48 (40%) had 2 children, and 18 (15%) had 3 children. The children for whom the parents responded to the questionnaires, 50.8% (n=61) were the first child, 38.3% (n=46) were the second child, and 10.8% (n=13) were the third child.

91 of the families had previously presented to the hospital due to fever. 21 (17.5%) of the children were hospitalized due to high fever. While 98 (81%) of the parents who participated in the study

thought that their children might develop convulsions as a result of high fever, 13 (10.8%) thought that their child might develop meningitis, 6 (5%) thought that the severity of the disease might increase, 3 (2.5%) did not know what disease their child might develop as a result of high fever, and 115 (95.8%) said that they were afraid of their children's having high fever.

Table 1. Fever-related knowledge status of families*

Characteristics		**n**	**%**
Receiving Information about Fever	Yes	64	53.3
	No	56	46.7
	Total	120	100
Source of the Information about Fever	Physician	13	20.3
	Nurse/midwife	18	28.1
	Physician / Nurse/Midwife	24	37.5
	Book, magazine, newspaper	2	3.1
	Neighbor, relative, sibling	4	6.2
	School	1	1.6
	Nurse, midwife, television	1	1.6
	Books, magazines, newspapers, television	1	1.6
	Total	64	100.0
Body Temperature Considered as Fever (°C)	≥37.4° C	22	18.3
	≥38° C	38	31.7
	≥38.5° C	44	36.7
	≥39° C	6	5.0
	Does not know	10	8.3
	Total	120	100
Sites for measuring body temperature	In the mouth	1	.8
	In the ear	1	.8
	In the armpit	79	65.9
	On the forehead	37	30.8
	In the rectum	1	.8

	Palpation	1	.8
	Total	120	100
Type of the thermometer used to measure body temperature	Digital thermometer	78	65.0
	Mercury-in-glass (Mercury) thermometer	2	1.7
	Infrared thermometer	28	23.3
	Palpation	11	9.2
	Tympanic thermometer	1	.8
	Total	120	100
Intervention implemented when the body temperature rises	Administrating antipyretic	37	30.8
	Lukewarm sponge bath	27	22.5
	A sponge bath with lukewarm water mixed with vinegar	7	5.8
	Having the child take a lukewarm shower	47	39.2
	Taking the child to the physician	2	1.7
	Total	120	100

** Numbers and percentages are given in the table.*

Of the 120 parents who answered the questionnaire, 64 (53.3%) had previously received information about high fever. Of these 64 parents, 24 (37.5%) received information from a physician, nurse or midwife. Of the parents, 79 (65.9%) measured their child's temperature in the armpit, 37 (30.8%) measured their child's temperature on the forehead. Of these parents, 78 (65%) used a digital thermometer and 28 (23.3%) used an infrared thermometer. 11 (9.2%) parents did not use a thermometer.

Table 2. Families' antipyretic administration*

Characteristics		**n**	**%**
Causes of Administrating Antipyretics	To relieve fever and symptoms	25	20.8
	To prevent the child from having a seizure (going into convulsion)	56	46.7
	To improve the child's general condition	31	25.8
	To cure (treat) the disease	8	6.7
	Total	120	100
At what body temperature is an antipyretic administered?	37.0-37.9°C	17	14.2
	38.0-38.9°C	85	70.8
	≥39.0°C	11	9.2
	Does not know	7	5.8
	Total	120	100
Which Antipyretic Do You Use?	Aspirin (acetylsalicylic acid -ASA)	3	2.5
	Paracetamol	80	66.7
	İbuprofen	21	17.5
	Does not know	16	13.3
	Total	120	100
How Do You Adjust Your Antipyretic Dose?	According to the severity of the fever	2	1.7
	According to the child's weight	24	20
	According to the child's age	21	17.5
	According to the prescription	35	29.2
	According to the dosing spoon provided with the medicine bottle	38	31.7
	Total	120	100
How Do You Obtain Antipyretic?	On prescription from a physician	83	69.2
	From the pharmacy without prescription	3	2.5
	Always available at home	34	28.3
	Total	120	100

* *Numbers and percentages are given in the table.*

While 56 (46.7%) of the parents gave antipyretics to prevent their children from having seizures, 31 of them gave antipyretics to improve their general condition. 85 (70.9%) of the parents who participated in the survey stated that they gave antipyretics to their children if the child's temperature was in the range of 38-38.9°C. Of the 120 families participating in the study, 80 (66.7%) gave paracetamol, 21 (17.5%) gave ibuprofen, 3 (2.5%) gave aspirin (acetylsalicylic acid - ASA), 16 (13.3%) did not know what antipyretic to give. 83 (69.2%) of the parents obtained the antipyretic with a physician's prescription (Table 2).

Table 3. Parental Fever Management Scale-Related Responses given by the families*

Scale items	**Responses**											
	Always		**Often**		**Sometimes**		**Rarely**		**Never**		**Total**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
I take the child's temperature	101	84.2	9	7.5	-	-	-	-	10	8.3	120	100
I want to know what the child's temperature is	97	80.8	9	7.5	-	-	4	3.3	10	8.3	120	100
I want to make sure that the child drink plenty of fluids	77	64.2	31	25.8	7	5.8	3	2.5	2	1.7	120	100
I give antipyretics	27	22.5	55	45.8	36	30	2	1.7	-	-	120	100
I check the child's temperature during the night	80	66.7	34	28.3	2	1.7	3	2.5	1	0.8	120	100
I sleep in the same room with the child	85	70.8	18	15	15	12.5	1	0.8	1	0.8	120	100
I wake up the child during the night for medications to reduce fever	17	14.2	18	15	60	50	23	19.2	2	1.7	120	100
I take the child to the physician	8	6.7	58	48.3	50	41.7	4	3.3	-	-	120	100

** Numbers and percentages are given in the table.*

Of the parents participating in the study, 101 (84.2%) always measured their child's temperature, 97 (80.8%) always wanted to know what degree their child's temperature was when he or she had a fever, 77 (64.2%) always wanted to make sure that the child take plenty of fluids when he or she had a fever. Of the parents participating in the study, 55 (45.8%) often used antipyretics, 80 (66.7%) always checked the child's temperature during the night when he or she had a fever, 85 (70.8%) always slept in the room with their child when he or she had a fever, 60 (50%) sometimes woke up the child to give him or her antipyretics, and 58 (48.3%) often took their fevered child to the physician (Table 3). The scores the participating parents obtained from the REALM ranged between 49.00 and 66.00. The REALM score of 19 parents was 63.00.

Table 4. Child's age, mother's age, father's age and scale scores correlation analysis*

		Child's Age (months)	Mother's Age	Father's Age	Parental Fever Management Scale Total score	REALM score
Child's Age (months)	Correlation	1,000				
	Sig. (2-tailed)	.				
Mother's Age	Correlation	0,337	1,000			
	Sig. (2-tailed)	0,000	.			
Father's Age	Correlation	0,322	0,832	1,000		
	Sig. (2-tailed)	0,000	0,000	.		
Parental Fever Management Scale Total score	Correlation	-0,227	-0,230	-0,258	1,000	
	Sig. (2-tailed)	0,012	0,012	0,04	.	
REALM score	Correlation	0,322	0,307	0,271	-0,131	1,000
	Sig. (2-tailed)	0,000	0,001	0,003	0,154	.

* Correlation analysis was shown in the table.

The correlation between the age of the children and the scores the parents obtained from the Parental Fever Management Scale was negative and weak (Correlation Coefficient:-0.227). There was a positive moderate correlation relationship between the child's age variable and the parents' REALM scores (Correlation Coefficient: 0.322). The correlation between the mother's age variable and the Parental Fever Management Scale scores and between the father's age variable and the Parental Fever Management Scale scores was negative. The correlation between the mother's ages and the REALM score was moderate (0.307). There was a negative weak correlation between the scores the parents obtained from the REALM and Parental Fever Management Scale, but it was not statistically significant. (REALM and Parental Fever Management Scale Correlation Coefficient:-0.131). The REALM scores obtained by the parents of girls and the parents of boys were distributed similarly. There was no difference between the REALM scores of the parents of the girls and those of the parents of the boys (Mean REALM Score of the parents of the girls ($\bar{x}$): 60.98±3.56; Mean REALM Score of the parents of the boys ($\bar{x}$): 60.90±3.74).

There was no difference between the Parental Fever Management Scale scores of the parents of the girls and those of the parents of the boys (the mean score the parents of the girls obtained from the Parental Fever Management Scale ($\bar{x}$): 15.22±3.28; the mean score the parents of the boys obtained from the Parental Fever Management Scale ($\bar{x}$): 14.09 ±3.14).

Discussion

In the present study, conducted to investigate the relationship between the families' knowledge and practices and their health literacy levels related to fever, which causes families to fear for their children and which they think is harmful to the child, data were collected from 120 families with children aged 1 month to 5 years.

In the present study, 75.8% of the children had previously presented to the hospital due to fever, and 17.5% of them were hospitalized for fever. Almost all of the families participating in the study were afraid of their children having fever. Half of these families stated that the reason for the fever phobia was that the child might have seizures. Fever phobia was first described by Barton and Schmitt[5]. Barton and Schmitt[5] determined that most of the parents were worried about moderate fever, and about half of them thought that moderate fever would cause serious neurological problems. Işık Esenay et al.[25], Çöl Araz[26], and Thompson et al.[27] also stated that parents had fever phobia due to neurological sequelae. As in the study of Barton and Schmitt[5], the families participating in the present study were worried about fever and brought their children to the emergency room. It can be said that the families' fever phobia levels have not decreased over the years.

Of the families, 53.3% had previously received information about fever, and 85.9% of those who received information received the information from healthcare professionals. In Işık Esenay et al.[25] and Celasin et al.[22] studies, most of the families received information from health professionals. The mean score obtained from the Parental Fever Management Scale demonstrated that the families had a good level of knowledge of fever management, and 68.4% of them considered a body temperature above 38°C as fever. In their systematic review, Thompson et al.[27] stated that most of the parents did not know what degree should be accepted as fever correctly, and that the rate of false information varied between 55% and 81%. The fact that about half of the families participating in the present study received information from health professionals may have enabled them to have high knowledge scores about fever. Based on this, the importance of family education can be emphasized once again.

While 65.8% of the families measured their child's temperature in the armpit, 65% used a digital thermometer. Yıldırım et al.[12], Çöl Araz[26] and Halıcıoğlu et al.[21], Celasin et al.[22], and Işık Esenay et al.[25] also found that families mostly measured their children's temperature in the armpit and with a digital thermometer. In the present study, 23.3% of the participants used an infrared thermometer. However, even though it is known that it does not give precise clear results, 9.2% of them took temperature by palpation. It will be useful to inform families that fever measurements should be made using valid and reliable tools.

In the present study, having the child take a lukewarm shower and giving antipyretics were the main applications when the child's fever rose. Most of the families who gave antipyretics stated

that they gave antipyretics to prevent the child from having seizures, and most of them gave paracetamol. In several studies, the mothers mostly gave lukewarm sponge baths to reduce fever[15,25]. Families used paracetamol and ibuprofen alone, or alternately in combination[27]. National Institute for Health and Clinical Excellence (NICE)[3] recommends that medication such as paracetamol and ibuprofen should be used to reduce fever. Families adjusted the antipyretic dose for the child mostly using the dosing spoon provided with the medicine bottle, followed by the dose ordered in the prescription. In Çöl Araz's study[26], families gave the antipyretics mostly in the wrong dose. In the study by Emmerton et al.[20], half of the families gave antipyretics according to the child's weight.

As is seen in the results, there was a weak negative correlation between maternal and paternal age, and Parental Fever Management Scale scores. Young parents may have learned more about fever, and their use of technology may have increased their knowledge levels. While Wilson et al[28] found parental age to be related to fever management, Castellano et al.[29] did not find it to be related. Maternal and paternal age was positively related to health literacy. Thus, we can say that the parents' experiences and health literacy levels may have increased as their age increased. Similarly, as the child's age increased, so did the parents' health literacy levels. The negative correlation between the age of the child and fever management may have stemmed from the fact that younger children are more sensitive to fever and that they suffer fever more frequently than do older children due to factors such as cutting a tooth or having vaccines, etc. For example, Chefdeville and Pages[30] found that the fever management knowledge of parents of infants under 3 months was at a better level than the parents of older children. Kelly et al[31] did not find a relation between years of parenting experience and knowledge-attitude about fever management. The results demonstrated that there was no correlation between the parents' REALM scores and their Parental Fever Management Scale scores. In a study conducted on fever, it was found that the parents of children aged 3 months to 5 years with low and high health literacy levels had inadequate knowledge about fever and fever management and that the health literacy level did not lead to a significant difference in fever management[18]. Alqudah et al.[32] compared two groups with low and high health literacy and determined that the level of knowledge about fever in families was insufficient in both groups.

Limitations of the Study: The study was conducted at a single center. In order to generalize the results of the study to İzmir, a province in the west of Turkey, and Turkey, it is recommended to conduct multicenter studies. Research data were collected in the outpatient clinics. Because the children were sometimes near the families while the data was collected, the data collection process was interrupted from time to time.

Conclusion

It was determined that the participating families knew the body temperature value correctly, which is mostly considered as fever, measured their child's temperature in the armpit with a

digital thermometer, had their children take a lukewarm shower and gave antipyretics when the child's fever rose or when the body temperature was in the range of 38-38.9°C, adjusted the dose using the dosing spoon provided with the medicine bottle or according to the dose ordered by the physician in the prescription. obtained antipyretics from a pharmacy with a doctor's prescription, that the families' health literacy levels increased as their children got older, that there was a relationship between the mothers' age and their health literacy levels, that the level of fever phobia increased as the maternal age decreased, that there was a relationship between the fathers' age and their health literacy levels, and that the level of fever phobia increased as the father's age decreased. The majority of the families participating in the study stated that they received information about fever from health professionals. Counseling services provided by health professionals for families of young children should be increased. In order to generalize the results, future studies should be carried out in various centers. In the present study, whether the families used thermometers was questioned, but no observations were made regarding how they used them. In the future, observational studies can be carried out to observe how families use thermometers.

REFERENCES

1. Sünter A, Dündar C, Ağaç R, Uysal S, Gürses N. Annelerin ateş hakkındaki bilgi ve davranışları. *Journal of Experimental and Clinical Medicine*. 2010;14(2):1-17.

2. Suluhan D, Taşal C, Yıldız D, et al. 0-6 yaş arası çocuğa sahip annelerin ateş düşürücü kullanımına ilişkin bilgi ve tutumlarının belirlenmesi. *Florance Nightingale Hemşirelik Dergisi*. 2016;24(2):90-96.

3. Feverish illness in children: assessment and initial management in children younger than 5 years, NICE Clinical Guideline, Update in 2019. https://www.nice.org.uk/guidance/ng143/evidence/may-2013-full-guideline-pdf-6960663038 (30.06.2020).

4. Chiappini E, Venturini E, Remaschi G, et al. 2016 update of the Italian pediatric society guidelines for management of fever in children. *The Journal of Pediatrics*. 2017;180:177-183.

5. Barton D, Schmitt MD. Fever phobia misconceptions of parents about fevers. *Am J Dis Child*. 1980;134(2):176-181.

6. Crocetti M, Moghbeli N, Serwint J. Fever phobia revisited: have parental misconceptions about fever changed in 20 years? *Pediatrics*. 2001;107(6):1241-1246.

7. Erkozan F. Çocukluk Çağı Zehirlenmelerinin Retrospektif Analizi [Uzmanlık Tezi]. Diyarbakır, Türkiye: Dicle Üniversitesi Tıp Fakültesi Çocuk Sağlığı ve Hastalıkları Anabilim Dalı; 2012:85.

8. Ulusal Zehir Danışma Merkezi 2008 Yılı Çalışma Raporu Özeti. http://www.journalagent.com/turkhijyen/pdfs/THDBD_66_3_29_58.pdf (30.06.2020)

9. Arslan S, Aydın M. Annelerin ateş fobisi ve yönetimi. *Düzce Üniversitesi Sağlık Bilimleri Enstitüsü Dergisi*. 2015;5(1):1-6.

10. Kılınç D. Çocuk Acil Servisine Başvuran Hasta Yakınlarının Ateş Yönetimi ve Antipiretik Kullanımı Hakkında Bilgi Düzey ve Tutumlarının Belirlenmesi [Yüksek Lisans Tezi]. İstanbul, Türkiye; Medipol Üniversitesi Sağlık Bilimleri Enstitüsü Hemşirelik Anabilim Dalı; 2016:67.

11. Temel B, Arabacı Z, Kahveci T. Annelerin çocuklarında ateş yönetimi ile ilgili bilgi, tutum ve değerlendirmesi. *Kastamonu Sağlık Akademisi*. 2016;1(1):1-17.

12. Yıldırım A, Bozaykut A, Dalkan C. 6 ay–6 yaş arası yüksek ateşli çocukların annelerinin ateş bilinç seviyesinin değerlendirilmesi. *Türkiye Çocuk Hastalıkları Dergisi*. 2014;8(4):201-207.

13. Altınkalem DY. Annelerin Ateş ve Ateşli Havale ile İlgili Bilgi Düzeyleri [Aile Hekimliği Uzmanlık Tezi]. İstanbul, Türkiye; Bakırköy Dr. Sadi Konuk Eğitim ve Araştırma Hastanesi; 2007:68.

14. Öztürk Ö, Topan, A, Ayyıldız T. Ateş şikayeti ile acil servise getirilen çocuklarda ateş olgularının değerlendirilmesi. *Sağlık Bilimleri ve Meslekleri Dergisi*. 2015;2(3):285-296.

15. Baş NG, Karatay G, Karatay M. Beş yaş altı çocuğa sahip annelerin ateş yönetimine ilişkin bilgi ve uygulamaları. *Hemşirelikte Eğitim ve Araştırma Dergisi*. 2016;13(3):258-263.

16. WHO, Why Health Literacy is İmportant. http://www.euro.who.int/en/health-topics/disease-prevention/health-literacy/why-health-literacy-is-important (30.06.2020)

17. DeWalt DA, Dilling MH, Rosenthal MS, Pignone MP. Low parental literacy is associated with worse asthma care measures in children. *Ambul Pediatr*. 2007;7(1):25–31.

18. Alqudah M, Johnson M, Cowin L, George A. Measuring health literacy in emergency departments. *Journal of Nursing Education and Practice*. 2014;4(2):1.

19. Morrison AK, Chanmugathas R, Schapira MM, Gorelick MH, Brousseau DC. Caregiver low health literacy and non-urgent use of the pediatric emergency department for febrile illness. *Acad Pediatr*. 2014;14(5):505–509.

20. Emmerton, L, Chaw XY, Kelly F, et al. Management of children's fever by parents and caregivers: practical measurement of functional health literacy. *Journal of Child Health Care*. 2014;18(4):302-313.

21. Halıcıoğlu O, Koç F, Akman SA, Teyin A. Ateşli çocuklarda; annelerin evde ateşe yaklaşımı, bilgileri ve sosyodemografik özellikler ile ilişkisi. *İzmir Dr. Behcet Uz Çocuk Hast. Dergisi*. 2011;1(1):13-19.

22. Celasin NŞ, Ergin D, Atman Ü. Yüksek ateş şikayeti ile hastaneye yatırılan 0-6 yaş grubu çocukları olan annelerin yüksek ateşe ilişkin bilgi ve tutumları. *Fırat Üniversitesi Sağlık Bilimleri Dergisi*. 2008;22(6):315-322.

23. Çınar ND, Altun I, Altınkaynak S, Walsh A. Turkish parents' management of childhood fever: a cross-sectional survey using the PFMS-TR. *Australasian Emergency Nursing Journal*. 2014;17(1):3-10.

24. Özdemir H, Alper Z, Uncu Y, Bilgel N. Health literacy among adults: a study from Turkey. *Health Education Research*. 2010;25(3):464-477.

25. Işık Esenay F, İşler A, Kurugöl Z, Conk Z, Koturoğlu G. Annelerin ateşli çocuğa yaklaşımı ve ateş korkusu. *Türk Arch Ped*. 2007;42:57-60.

26. Çöl Araz N. Ailelerin ateşli çocuğa yaklaşımı: bilgi, tutum ve uygulamaları. *Çocuk Hast Derg/Turkish J Pediatr Dis*. 2013;1:27-32.

27. Thompson AP, Nesari M, Hartling L, Scott SD. Parents' experiences and information needs related to childhood fever: a systematic review. *Patient Education and Counseling*. 2020;103:750–763.

28. Wilson KM, Beggs SA, Zosky GR, Bereznicki LR, Bereznicki BJ. Parental knowledge, beliefs and management of childhood fever in Australia: A nationwide survey. *J Clin Pharm* Ther. 2019;44(5):768-774.

29. Castellano VE, Talamona N, Giglio ND, Sabbaj L, Gentile Á. Knowledge and management of fever in parents of children under 5 years of age at a children's hospital. *Arch Argent Pediatr*. 2020;118(2):89-94.

30. Chefdeville E, Pages AS. Parental management of children's fever: Assessment of knowledge and use of health record information. *Arch Pediatr*. 2019;26(5):275-281.

31. Kelly M, Sahm LJ, Shiely F, et al. Parental knowledge, attitudes and beliefs on fever: a cross-sectional study in Ireland. *BMJ Open*. 2017;7(7):e015684.

32. Alqudah M, Cowin L, George A, Johnson M. Child fever management: A comparative study of Australian parents with limited and functional health literacy. *Nurs Health Sci*. 2019;21(2):157-163.