

Mother Approaches to Children with Fever

Ateşi Olan Çocuklarda Anne Yaklaşımları

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ABSTRACT

Objective: Fever, one of the most common symptoms of childhood, is a complaint that the families worried about the most. The families want to know its reason, and it constitutes a significant part of visits to emergency department. In this study, it has been aimed to investigate the knowledge, attitude, antipyretic drug status of the families who bring their children with the complaint of fever, the doses of antipyretic drug and the factors affecting them.

Methods: The mothers of 300 children without known chronic disease, who were brought to the Children's Emergency Department of our hospital with complaints of fever between 1-31 March and between the hours of 08:00 to 16:00 and who agreed to complete a questionnaire, were included in the study.

Results: One hundred and twenty-seven (42.3%), 173 (57.7%) and 52% of 300 patients enrolled in the study were female, male and under the age of three, respectively. It has been determined that 96% of mothers thought that fever was harmful to children and the cause of the most common fear due to fever for 95% of them was the risk of febrile convulsion. As the level of education of mothers was increasing, the rate of measuring the temperature at home was found to be higher ($p = 0.01$). It has been observed that more than half of the mothers measured the temperature once an hour, but the frequency of temperature measurement was independent of mothers' education level ($p = 0.76$). It has been determined that the statistical rate of giving antipyretic with the recommendation of a doctor significantly increased as the maternal education level decreased ($p < 0.01$). The rate of using antibiotics without a doctor's recommendation was significantly higher in mothers having sons than mothers having daughters ($p = 0.02$).

Conclusion: It has been determined that the fear of fever was common in mothers; this concern has negatively affected the state of children with fever, increased unnecessary visits and unnecessary treatments of the emergency department. Health workers should inform the mothers one to one about fever during hospital admission in order to rectify this situation caused by the mothers' lack of knowledge. In addition, the fear of mothers about fever may be reduced by using the mass media with the help of health education programs, which will be organized, by reaching more people and this contributes to the prevention of erroneous procedures. However, more studies are needed to be conducted on how all of these information and training should be done and the effectiveness of these initiatives.

Key Words: Emergency, mother applications, fever, antipyretic, child.

Received: 05.21.2014

Accepted: 05.30.2014

ÖZET

Amaç: Çocukluk çağıının en yaygın bulgularından biri olan ateş ailelerin en çok endişe duydukları ve nedenini bir an önce bilmek istedikleri bir yakınma olup acil servis başvurularının da önemli bir kısmını oluşturmaktadır. Bu çalışmada, çocuklarını ateş yakınması ile getiren ailelerin ateş konusundaki bilgileri, tutumları, ateş düşürücü ilaç kullanma durumları, verilen ateş düşürücü ilaç dozları ve bunları etkileyen faktörlerin incelenmesi amaçlanmıştır.

Yöntem: Çalışmaya 1-31 Mart 2014 tarihleri, 08.00-16.00 saatleri arasında hastanemiz Çocuk Acil Servisi'ne ateş yakınması ile getirilen, bilinen kronik hastalığı olmayan ve verilen anket formunu doldurmayı kabul eden 300 çocuğun annesi alınmıştır.

Bulgular: Çalışmaya alınan 300 olgunun 127'si (%42,3) kız, 173'ü (%57,7) erkek ve %52'si üç yaş ve altında idi. Annelerin %96'sının ateşin çocuk için zararlı olduğunu düşündüğü ve %95'inin ateşten en sık korkma nedeninin çocuğunun havale geçirme riski olduğu öğrenildi. Eğitim düzeyi arttıkça annelerin evde ateş ölçme oranının daha yüksek olduğu saptandı ($p = 0,01$). Annelerin yarısından fazlasının saatte bir ateş ölçtüğü, ancak ateş ölçüm sıklığının annelerin eğitim düzeylerinden bağımsız olduğu görüldü ($p = 0,76$). Doktor önerisi ile ateş düşürücü verme oranının annelerin eğitim düzeyi düştükçe istatistiksel olarak arttığı saptandı ($p < 0,01$). Doktor önerisi olmadan antibiyotik kullanım oranı erkek çocuğu olan annelerde, kız çocuk sahibi annelere göre anlamlı olarak yüksek bulundu ($p = 0,02$).

Sonuç: Annelerde ateş korkusunun yaygın olduğu, bu endişe halinin ateşli çocuğa yaklaşımı olumsuz etkilediği, yanlış uygulamalar ve gereksiz acil servis başvurularını artırdığı saptanmıştır. Annelerin bilgi eksikliğinden kaynaklanan bu durumların düzeltilmesi için sağlık çalışanları ateşle ilgili bilgileri hastane başvuruları esnasında annelere birebir vermelidirler. Ayrıca kitle iletişim araçları kullanılarak düzenlenecek sağlık eğitim programları yardımıyla daha çok kişiye ulaşılarak annelerin ateşe yönelik korkuları azaltılabilir ve hatalı uygulamaların önlenmesine katkıda bulunulabilir. Ancak tüm bu bilgilendirme ve eğitimlerin ne şekilde yapılması gerektiği ve bu girişimlerin sonuçları hakkında daha fazla çalışmaya ihtiyaç vardır.

Anahtar Sözcükler: Acil, anne uygulamaları, ateş, ateş düşürücü, çocuk

Geliş Tarihi: 21.05.2014

Kabul Tarihi: 30.05.2014

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doi: <http://dx.doi.org/10.12996/gmj.2014.18>

INTRODUCTION

The increase in body temperature is called fever (1). Fever is one of the body's defense tools, not a disease in itself, regarded as one of the symptoms of the disease. It is a symptom caused by imbalance in thermoregulatory centers regulating the body temperature due to reasons such as infection, edema, tissue damage and vaccines (2).

Fever, one of the most common symptoms of childhood, is a complaint that the families worried about the most: They families want to know its reason; and, fever constitutes a significant part of visits to emergency departments (3). However, although it is known that fever is a natural defense mechanism and an effective warning for doctors, it remains as an important cause of fear for families. Due to this fear, even the slightest increase in temperature in a child triggers the idea that it requires immediate intervention. If fever could not be reduced, it causes extreme concern that it can lead to serious problems such as febrile convulsion, brain damage and even death. Families can apply fever reduction methods which may be wrong and / or harmful with this fear and panic (4). Physicians can recommend antipyretics for the mild fever that is not accompanied by the symptoms of severe infection, and this raises the wrong idea that the families have about the fever (5).

In a small number of children with fever, while serious bacterial infections, which are life-threatening or subsequently affect the quality of life, such as pneumonia, joint and bone infections, urinary tract infections may be found; and, the risk of occult bacteremia may be found in patients without a fever focus. Factors affecting the approaches to children with fever are the following: parents' and especially mothers' level of knowledge about fever and its treatment, education level, family income, number of children and characteristics of living environment (1,6).

It has been reported that the most common reason for the visit of children under three years of age to emergency departments was fever (7-9). It has been stated that an important part of these visits to emergency departments with fever were not necessary and the reason of most of these visits was the thought of fever that may harm the child. In studies, it has been shown that fever was not found in the majority of these children (7,10,11).

Here, in this questionnaire study, it has been aimed to investigate the knowledge, attitude, antipyretic drug status of the families who bring their children with the complaint of fever, the doses of antipyretic drug and the factors affecting them.

METHODS

In this study, the mothers and children who were brought to the Children's Emergency Department of our hospital with complaints of fever between 1 to 31 March were included. Before starting this questionnaire study, the permission from the Ethics Committee of our hospital (KEAHEK/26.02.2014/511) was taken.

Written informed consent was taken by providing information to families about the study. Then a 30-question survey was administered to the mothers. The survey was formed of two types of questions, open-ended and multiple-choice questions. Children with known chronic illness, and the families who refused to participate in the study and did not want to answer questions at any stage of the survey were excluded from the study. The survey questions were asked by the person applying the survey (AAY, BO, FTY, OH) without manipulation by interviewing the family face to face. The survey was carried out with questions of age, sex, weight, parents' age, education level, number of children, income level, fever starting time, other accompanying symptoms, history of febrile convulsion, fever measurement methods, the interventions performed for reducing the fever, the antipyretic given, the dose and the frequency. In addition, it has been determined how the dose of antipyretic drug was decided, whether they would still come to the emergency department, if they could reduce the fever, the reasons why they were afraid of fever and whether there was a use of antibiotics without a doctor's recommendation.

The body weight of patients was determined by weighing with electronic weighing (SECA®, China, 2012) in the emergency department of our hospital in order to calculate the exact dose of antipyretic drug given. The body temperature on admission was recorded by measuring with tympanic thermometer (Braun®, Germany, 2012). Suitable antipyretic doses for paracetamol and ibuprofen have been recognized as 10-15 mg/kg/dose/4-6 hours and 5-10 mg/kg/dose/6-8 hours, respectively (4,13).

Normal body temperature measurement values were accepted as 36.8 ± 0.7 °C in the axillary measurement, 37.5 ± 0.4 °C in the tympanic membrane measurement and 37.8 ± 0.5 °C in the rectal measurement; and, the body temperatures that were above these values were evaluated as "fever" (12).

For statistical evaluation, number-percentage distributions and chi-square tests were performed in the computer program (SPSS Inc., Chicago, IL, United States) called "SPSS (Statistical Package for Social Sciences) 15.0 for Windows". The relationship between variables was assessed by Pearson's correlation analysis, the values of under *p* = 0.05 were considered statistically significant.

RESULTS

Forty-two-point-three %, 57.7% and 52% of 300 patients enrolled in the study were female, male and under the age of three, respectively; and, the mean age was 3.7 ± 3.4 years. The socio-demographic characteristics of the children with fever and their families are given in Table 1 and Table 2.

Table 1. The socio-demographic characteristics of the children with fever and their families

Characteristics	Number of patients (%)
<i>Sex</i>	
Female	127 (42.3)
Male	173 (57.7)
<i>Age</i>	3.7 ± 3.4 year*
0-6 months	34 (12)
7-12 months	42 (14)
13-36 months	81 (27)
37-60 months	70 (23)
61-144 months	67 (22)
>144 months	6 (2)
<i>Body weight (kg)</i>	16.6 ± 9.4*

* mean ± standard deviation

Table 2. The socio-demographic characteristics of the families.

Characteristics	Number of cases (%)
<i>Maternal age</i>	29.4 ± 5.8 year*
< 20 years	6 (2)
20–40 years	277 (92)
>40 years	17 (6)
<i>Paternal age</i>	33.0 ± 5.8 year*
20–40 years	258 (86)
>40 years	42 (14)
<i>Mothers education level</i>	
Illiterate	8 (3)
Secondary school graduates	15 (51)
High school graduate	91 (30)
College / University degree	47 (16)
<i>Fathers education level</i>	
Illiterate	3 (1)
Secondary school graduates	129 (43)
High school graduate	97 (32)
College / University degree	71 (24)
<i>Number of children</i>	1.91 ± 0.86*
1	103 (34)
2	139 (46)
3	46 (16)
≥4	12 (4)
<i>Income level (TL)</i>	
< 1000	120 (40)
1000–2000	120 (40)
>2000	60 (20)

* mean ± standard deviation

It has been determined that 75% of the families measured the patient's fever at home before coming to the emergency room, despite the previous febrile convulsion ratio was 9%. For 95% of families the fear of fever was the risk of febrile convulsion. The assessments of patients about fever on admission were given in Table 3.

Table 3. The assessments of patients about fever on admission.

Characteristics	Number of cases (%)
Frequency of measuring the fever at home	225 (75)
Presence of fever at admission	210 (70)
Temperature value of the body that is thinking as a fever (°C)	37.7 ± 0.63*
Accurate knowledge of the fever limits	92 (31)
Fever duration (0–72 hour)	12.7 ± 15.7*
The highest fever	38.7 ± 0.8*
History of febrile convulsions	28 (9)
The ratio of parents who says to admitting to hospital also they controlled the fever	188 (63)
Ratio of parents thinking that fever has harmful effects	289 (96)
<i>Reasons of fever fear</i>	
Febrile convulsion	284 (95)
Serious illness	138 (46)
Brain damage	115 (38)
Death	83 (28)

* mean ± standard deviation

It has been found that the average temperature measurement range was 1.6 ± 1.7 hours. More than half of the families controlled the temperature per hour. It has been determined that 75% and 19% of families decided that the child had fever by thermometer and hands, respectively. The 6% did not measure the patient's temperature before coming. The 98% detected fever and applied one or more antipyretic drug methods by giving antipyretics. Temperature measurement and intervention methods of fever are summarized in Table 4.

Table 4. Temperature measurement and intervention methods of fever.

Characteristics	Number of cases (%)
<i>Measuring methods</i>	
By touching	58 (19)
By thermometer	225 (75)
Unmeasured	17 (6)
<i>Type of thermometer at home</i>	
Digital axillary thermometer	175 (70)
Digital tympanic thermometer	48 (19)
Digital skin thermometer	10 (4)
Mercury axillary thermometer	18 (7)
<i>Temperature measurement interval (hours)</i>	
0–1 hour	169 (56)
2–3 hour	80 (27)
4–6 hour	49 (16)
>6 hour	2 (1)
<i>Intervention methods of fever</i>	
At least one application method	293 (98)
Remove clothes	187 (62)
Application of warm shower	210 (70)
Application of vinegar water	27 (9)
Giving antipyretics	267 (89)

* mean ± standard deviation

Paracetamol (73%) and ibuprofen (49%) were found to be the most commonly used antipyretics. The rate of alternate utilization of paracetamol and ibuprofen was 36%. It was found that 68% of families decided the antipyretic type and the dose of this medication with a doctor's proposal. Despite more than three-quarters of the families knew the body weight of children correctly and gave the antipyretic drug in the range of appropriate dose, it has been observed that only 42% of them knew the appropriate dose of the drug for the weight of the children. The data of the name and dose of active substance of antipyretics used and the child's body weight are given in Table 5.

Table 5. The data of the name and dose of active substance of antipyretics used and the child's body weight.

Characteristics	Number of cases (%)
<i>Active substance of antipyretics</i>	
Paracetamol	220 (73)
Ibuprofen	148 (49)
Paracetamol and ibuprofen	107 (36)
Ketoprofen	4 (2)
Metamizol sodium	3 (12)
<i>Rate of giving antipyretics at the appropriate dose.</i>	
	125 (42)
<i>The use rate of antipyretics in appropriate dosage interval</i>	
	238 (79)
<i>The source of information about antipyretics and dosage</i>	
Doctor's r proposal	205 (68)
Nurse's proposal	11 (4)
Pharmacist's proposal	11 (4)
Drug prospectus	15 (5)
Previous knowledge	58 (19)
<i>The ratio of the parents who knows the child's body weight correctly</i>	
	233 (78)

It was found that the most common accompanying symptom of fever was cough (61%) and the most common diagnosis in patients was upper respiratory tract infection (57%). The accompanying symptoms of fever and diagnoses in patients are shown in Table 6.

Table 6. The accompanying symptoms of fever and diagnoses in patients

Characteristics	Number of cases (%)
<i>Accompanying symptoms</i>	
Cough	182 (61)
Sore throat	103 (34)
Diarrhea	55 (18)
Vomiting	87 (29)
<i>Diagnoses</i>	
Upper respiratory tract infection	171 (57)
Lower respiratory tract infection	57 (19)
Acute gastroenteritis	54 (18)
Urinary tract infection	15 (5)
Central nervous system infection	3 (1)

The rate of fever measurement at home was found to increase in proportion with the level of education of mothers ($p = 0.01$). Administration of antipyretic drug has been shown to be independent of the education level ($p = 0.12$). The rate of knowing body weight of the children was significantly higher in educated mothers ($p < 0.01$). There was no significant relationship between knowing the fever limit correctly and the administration of appropriate doses of antipyretic drug for weight and the level of education ($p > 0.05$). The rate of giving antipyretic drug with a doctor's recommendation increased with the decrease in the mothers' level of education and this relation was found to be statistically significant ($p < 0.01$). The comparison of fever related information and the education level of visiting mothers are given in Table 7.

Table 7. The comparison of fever related information and applications with education level of mothers

Mother's years of education	1-8 year	9 years or more	P value
Frequency of measuring the fever at home	112 (69%)	113 (82%)	0.01
Rate of giving antipyretics at the appropriate dose.	72 (44%)	53 (38%)	0.29
The ratio of the parents who knows the children's body weight correctly	116 (72%)	117 (85%)	<0.01
Accurate knowledge of the fever limits	46 (28%)	46 (33%)	0.36
Rate of giving antipyretics	140 (86%)	127 (92%)	0.12
Ratio of the families believed that fever has harmful effects	158 (98%)	131 (95%)	0.23
The ratio of parents who says to admitting to hospital also they controlled the fever	108 (67%)	80 (58%)	0.12
Use of antibiotics without a doctor's recommendation	7 (5%)	12 (9%)	0.12
The ratio of giving antipyretics without doctor's recommendation	125 (77%)	80 (58%)	<0.01

The rates of the use of antibiotics without a doctor's recommendation with the fear of exposure to febrile convulsion or brain damage were found to be higher in mothers having sons than those having daughters ($p = 0.02$). The evaluation of fever-related visits according to the gender of patients are shown in Table 8.

Table 8. The evaluation of applications related to fever according to the gender of patients

Sex	Female	Male	p value
Presence of fever at admission	75 (59%)	96 (56%)	0.53
Frequency of intervention to fever	125 (98%)	168 (97%)	0.45
Remove clothes	81 (64%)	106 (61%)	0.65
Application of warm shower	64 (50%)	104 (60%)	0.09
Application of vinegar water	12 (9%)	15 (9%)	0.81
Giving antipyretics	111 (87%)	156 (90%)	0.44
Use of antibiotics	3 (2%)	16 (9%)	0.02
Fear of febrile convulsion	116 (91%)	168 (97%)	0.03
Fear of serious illness	65 (51%)	73 (42%)	0.12
Fear of brain damage	40 (32%)	75 (43%)	0.04
Fear of death	32 (25%)	51 (30%)	0.41

DISCUSSION

Fever, although it is known as a natural defense mechanism, is a major source of fear for parents. It has been shown that a large number of families of children with fever had many wrong practices and ideas. These ideas which are inconsistent with the facts are named as "fever phobia" (13). This fear and a state of panic may cause the mothers' to apply cold water or vinegar to children even at normal body temperatures, unnecessary and even harmful interference such as the administration of wrong dose of antipyretic drugs or at a wrong frequency or giving antibiotics without a doctor's recommendation (14, 15).

Fear of fever has been shown to be a widespread perception in parents in various studies (7,16, 17). It has been determined in a study conducted by Crocetti et al. that fever phobia continued today. Ninety-one % of families believed that fever had harmful effects. The body temperature was often controlled during febrile illness. The sleeping child was awakened to give antipyretic drug. Antipyretic drugs were given at frequent intervals, and mostly at normal body temperatures (4). It has been observed in our study that 96% of parents thought that fever was harmful to children and was afraid of fever. However, a significant relationship between this idea and the educational level of the mother was not found. The most feared situation during high fever was observed to be the risk of febrile convulsion with a rate of 95%. Although the incidence of febrile convulsion in children with fever is 4-5%, the rate of previous history of febrile convulsion in our patients was 9%. Febrile convulsion is mostly benign and does not cause permanent damage. The parents' intense febrile convulsion fear in our study was thought to be caused by lack of knowledge on fever regardless of the level of education. Similar results were found in other studies conducted in Turkey (3, 18). Unlike these results, it has been determined in the study of Crocetti et al. that the parents mostly worried that fever may lead to brain damage (4, 7).

It was found in studies conducted in Turkey that the children with fever brought to the emergency department were mostly in the range of 0-3 years (14, 19, 20). It has been reported in the study of McErlean et al. that 74% of patients brought due to fever had fever (10). Consistent with these results, it has been found in our study that nearly half (52%) of the children brought to the emergency department due to fever and included in the study were 3 years old and below; and, the temperature of 70% of these cases measured at hospital was at the limit considered to be fever. It has been established again with these results that fever was a complaint which was often prominent.

The temperature should be measured by thermometer in order to define the fever correctly (2). It has been reported in some of the studies that most of the families did not have thermometer and the temperature was measured by touching. On the other hand, the rate of having a thermometer at home for temperature measurement was between 71-85 % (3, 15, 20). Consistent with this rate, it has been observed in our study that 75 % of parents measured the child's body temperature with a thermometer at the home. In our study, 77% of the families thinking that their children had fever measured the body temperature from axillary with digital or mercury thermometer. This result was found to be consistent with the results obtained (%71-77) in similar studies (15,21,22). Again similar to the results of two previous studies, it has been shown in our study through comparisons that while mother's education level increased the rate of temperature measurement at home increased (15, 23).

Based on the result of previous studies, the normal measurement values of normal body temperature were considered to be 36.8 ± 0.7 ° C for axillary, 37.5 ± 0.4 ° C for tympanic membrane and 37.8 ± 0.5 ° C for rectum. The measured values above these cut-off points were taken as "fever" (12). In our study, only 31% of parents successfully knew the right cut-off points for fever. In other studies conducted in Turkey, this ratio was found to be 55% and 58% (15, 21). This difference was considered to be due to the fact that families did not know the difference between the measurement of regional body temperature (axillary, tympanic etc.) thinking that all measurement results give a single value. This lower ratio reveals families' lack of knowledge on this subject and shows that there are families who can accept the normal body temperature as fever as well as families who can delay interventions without realizing the heightened fever.

The roles of physicians during the examination, and pharmacists during the take of medication, are very important as a source of information about the normal body temperature and fever. It has been found in one study that the source of information about 78% of mothers about fever was healthcare professionals (3). Therefore, the necessary training should be given during health checks due to any illness or routine health checks, about where and how body temperature can be measured, which values will be accepted as fever and the interventions that can be done in the case of fever. This information can be given one to one, or more people can be reached through collaborative efforts of health care provider training units in the form of public meetings or seminars. It is expected that as the level of education of the mother increases, the possession of fever related information also increases. It has been found in one study that while the level of education of mothers increased, the rate of knowing the limit of fever increased (11). In another study, there was no significant difference between the level of education and the knowledge about the limit of the fever(15). In our study also, there was no significant difference between the knowledge of knowing the right fever limit and the educational level of the mother. This situation was thought to be related to the consideration of very slight increases in body temperatures as fever regardless of the mothers' level of education, insufficient knowledge about it and/or worry and fear of fever.

It has been shown in many studies conducted that most of the parents, who noticed the fever on children, applied some interventions immediately (2, 3, 15). Almost all of the families (98%) in our study applied at least one method at home for the child with fever. Antipyretic drug use and application of a warm shower were shown to be the most commonly performed operations. Similar to a previous study, antipyretic drug use, and the rate of using this medication in the proper dosage was found not to be associated with the maternal education level (15).

As in previous studies, it has been seen that the most frequently used antipyretics by the families were paracetamol and ibuprofen or alternate combinations of these two drugs (16, 21). Alternately antipyretic drug administration is widely used especially in recent years in children's medicine (24,25). There are some studies reporting that alternate medication administration is more effective in reducing the temperature as compared with a single drug administration. There are some studies suggesting that there is no difference between them(24-26). Other than these drugs as antipyretic, it was found that the use of ketoprofen and metamizole sodium was too low. The use of sodium salicylate did not exist. Although salicylate is a strong antipyretic, parents do not give this medication for fever control to their children. This was recognized as a pleasing result in the raising of awareness about fever in children. That is because, it has been observed for the last three decades that the use of salicylates in viral infections may cause significant side effects such as Reye's syndrome (27).

It has been found in similar studies that less than half of parents gave antipyretic drugs at the appropriate doses (4, 16). It has been determined in our study that despite 78% of parents knew the children's body weight correctly, only 42% of them gave antipyretics at the appropriate dose. The use rate of antipyretics in suitable dosage ranges was high such as 79%. The basic cause was thought to be the fact that the drug dose information did not get updated with the increased age and the body weight of the children. It has been found in comparisons performed in our study that the rate of mothers' knowledge of the correct body weight increased with their level of education. However, there was no relationship between the education level of mothers and giving the appropriate dose of antipyretic drug. These results have been similar to the results of previous studies (16).

Similar to the results of previous studies, the rate of giving antipyretic drugs with an incorrect frequency (repeated doses in less than four hours) in the families of our study was found to be 21 % (15, 16). It has been shown in another study conducted in Turkey that the level of knowledge about fever in families was not sufficient and the use of antipyretic drugs was incomplete and inaccurate (28). In our study, there was no significant relationship between giving antipyretics with an erroneous frequency and the level of education of the mothers. While similar results were obtained in a study of Halicioğlu et al. (14), it has been reported in a study conducted in Greece that as mothers' education level increased, the frequent intermittent administration of the drug decreased (29). Seventy-seven % of the mothers in that study (46% in our study) had at least upper secondary education level. The difference with the studies performed in Turkey could be explained by this fact.

It has been reported that physicians located in the first place as a source of information about antipyretic drugs and dosages for the parents (16, 21, 28). In our study, this ratio was found to be as 68 % in the families enrolled. Missing information that families lack regarding fever and the dosage of drugs should be provided to them during their visits to the hospital by the medical staff and / or while they are about to take the medication by pharmacists. However, new studies and methods on its effectiveness and in what manner it can be performed may be considered. It has been shown in a study aiming to increase the accuracy rates of information about dosage that a written notification about the use of antipyretic drugs with dosing recommendations together with the use of graphics could largely avoid the dose errors, but could not completely prevent the mistakes (30,31). It has been found in our study that the rate of taking into account the doctor recommendations while giving antipyretic drugs was higher in mothers with lower levels of education than in mothers with higher levels of education. This result may be due to the fact that mothers with low levels of education may think that it would be incorrect to do something other than the doctor's recommendation and better recognize their lack of knowledge on fever.

In our study, the rate of starting antibiotics without consulting a doctor was found to be higher in parents having sons than those having daughters. No results on this subject was reported in earlier studies. This result can be explained by the continuation of the traditional protectionist approach in some families in Turkish society toward male children. Similarly, the most frequent causes of fear of fever in parents having male children was found to be febrile convulsion and brain damage and this fear was found to be higher in parents having sons than those having daughters. It was thought that the educational and socio-cultural level of the people in the study area significantly affected these results.

CONCLUSION

As a result; it has been observed that the fear of fever was common in mothers, this concern has negatively affected the state of children with fever and caused unnecessary and repetitive emergency room visits. More antipyretic drug use, using improper dose or frequency, initiation of antibiotics before going to the doctor revealed a lack of knowledge of the families on this subject. Giving information to parents by health professionals about the definition, and the causes of fever, its role in diseases, the high temperature criteria, the locations of fever measurements and the differences between them, the home care of children with fever, the first intervention, the cases requiring health care provider visits, the dose, frequency and duration of antipyretics, and various formulas containing antipyretic drugs is highly important. These briefings as well as health education programs which can be propagated by mass media can reduce the fear of mothers due to fever and contribute to the prevention of erroneous interventions. However, more studies should be done on how all these information and education should be given and the results of these initiatives.

Conflict of Interest

No conflict of interest was declared by the authors.

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