

Perception and Parent's Knowledge about High Body Temperatures in Children and Treatment Methods at Home

Saleh M. Alqahtani

Correspondence:

Dr. Saleh M. Alqahtani,
Department of Child Health,
King Khalid University, Abha,
Kingdom of Saudi Arabia.

Email: salehalqahtani641@gmail.com; smuadi@kku.edu.sa

Received: March 2019; Accepted: March 2019; Published: April 1, 2019

Citation: Saleh M. Alqahtani. Perception and Parent's Knowledge about High Body Temperatures in Children and Treatment Methods at Home. *World Family Medicine*. 2019; 17(4): 4-10. DOI: 10.5742/MEWFM.2019.93630

Abstract

Background: Fever is one of the most common medical problems in children that needs immediate medical attention. The objective of the study was to gauge the knowledge of parents about fever in their children and what treatment methods they do at home to treat it through a questionnaire.

Patients and Methods: The study involved random selection of Saudi parents who have had febrile children. Parents were interviewed using a standard questionnaire to obtain sociodemographic information and to assess their knowledge about fever. The study also determined methods that the parents were using at home to treat fever.

Results: A total of 353 parents completed the questionnaires. The study sample consisted mainly of mothers (62.3%). Most of the parents who participated in the study have one child (47.3%) followed by parents who have two children (42.8%). There were only three parents who have more than four children (.8%). Most of the parents were between 18-30 years old (46.7%) followed by parents between 31-40 years old (40.5%). There were only seven parents who were older than fifty years (2%). Most of the parents attained a college/university degree (47.9%) followed by parents who had secondary certificate (34.6%). Interestingly, eight parents had a post graduate degree (2.3%). Fifty four percent of the parents are working (192) while the other forty five percent are not (161). A total of 38% of the parents believed that the best place to take the temperature of the child is the ear (tympanic) followed by armpit (axilla) 37.1%. The rest of the parents took temperature orally (21%) and rectally (4%). In this study, about 43% believed that 37 degrees Celsius is the normal body temperature of a child followed by 36 degrees Celsius (20.4%). Approximately 30% of the parents considered a child with a temperature of 38-38.4 degrees Celsius as feverish followed by 38.5-39.90 degrees Celsius (26.3%).

In this study, 73.1% of the parents did not believe that alternating drugs is useful in cases where the temperature did not lower after administering an antipyretic drug. Almost 50% of the parents believed that seizure is the complication of fever followed by brain damage, dehydration, coma, and death. Parents' most frequently reported measurement of a child's temperature was best by using an electronic thermometer (34.8%) followed by an ear thermometer (28.3%). Other parents measured the temperature of their child by using their hands and with a mercurial thermometer. Most parents measured the temperature every 30 minutes to 1 hour (37.4%) followed by every 15 to 30 minutes (23.2%). When asked about the drug usually given to the child to reduce fever, the majority of the parents reported giving paracetamol (80%) while the others gave antibiotics (9.3%), ibuprofen (4.8%), and aspirin (1.1%). We also found that most of the parents use physical methods to relieve and treat fever such as tepid sponge bath with cold water (38.8%), cold showering (24.9%), tepid sponge bath with hot water (21.5%) and other methods. In order to determine the right dose of the antipyretic drug administered to the feverish child, 85% of the parents used a specific measuring spoon or syringe containing the drug. Others used a regular teaspoon or tablespoon.

Most of the parents when asked how the right fever lowering drugs and doses was decided, they indicated that they would follow the previous advice from the pediatrician (43.6%, 39.4%). Others consulted a pharmacist, or others, or relied on information gathered from media.

Conclusions: This study shows that parents should be more aware about high body temperatures and its consequences. There should be more health education among parents to correct the misconceptions they have about fever. Also, parents should be informed about different home treatments and their consequences. There is a need to develop programs that educate parents and provide them with information they need to better address the fever of their children.

Key Words: Fever, Methods, High body temperature

Introduction

Our body temperature is controlled by the hypothalamus. There are two types of signals being received by the hypothalamus. These signals are assimilated by the thermoregulatory center of the hypothalamus to maintain normal temperature. The human metabolic rate produces more heat than is necessary to maintain the core body temperature in the range of 36.5–37.5°C (97.7–99.5°F) in a neutral temperature environment (1, 2).

Fever is defined as an elevation of the body temperature above the normal variation. Normal temperature in children is about 98.6°F (37°C) when taken by mouth and 99.6°F (37.5°C) when taken by anus. Many doctors define a fever as an oral temperature above 99.5°F (37.5°C) or a rectal temperature above 100.4°F (38°C). (3)

Body temperature measurement is most commonly done to confirm the presence or absence of fever. Many decisions concerning the investigation of children are based on the results of the temperature measurement alone. An incorrect temperature measurement could result in delayed detection of a serious illness or alternatively an unnecessary infection.

A number of researchers published in the international literature have reported that parents have different conceptions, often erroneous, in relation to the exact temperature values considered as fever in childhood. Thus, concerns about fever are composed of incorrect associations between the peak of the fever and severity of the disease.

Concerns about fever by parents may be real or imagined and therefore assessment and monitoring of temperature is essential for decision making at home and in hospital settings (4).

There are different methods in taking the temperature of children. You can get the most accurate temperature reading by taking their temperature rectally. According to Harrison et al., rectal temperatures are generally 0.4°C (0.7°F) higher than oral readings. The lower oral readings are probably attributable to mouth breathing, which is a factor in patients with respiratory infections and rapid breathing. Lower-esophageal temperatures closely reflect core temperature. Tympanic membrane thermometers measure radiant heat from the tympanic membrane and nearby ear canal and display that absolute value (unadjusted mode) or a value automatically calculated from the absolute reading on the basis of nomograms relating to the radiant temperature measured to actual core temperatures obtained in clinical studies (adjusted mode). These measurements, although convenient, may be more variable than directly determined oral or rectal values. Studies in adults show that readings are lower with unadjusted-mode than with adjusted-mode tympanic membrane thermometers and that unadjusted-mode tympanic membrane values are 0.8°C (1.6°F) lower than rectal temperatures. (2)

The study was made to assess the understanding of the parents with children regarding high body temperatures and to know the methods they use at home as treatment aside from giving medications.

Results

Demographic Data

A total of 353 parents completed the questionnaires. The distribution of the socio-demographic characteristics of the parents who participated in the study is shown in Table 1.

The study sample consisted mainly of mothers (62.3%). Most of the parents who participated in the study have one child (47.3%) followed by parents who have two children (42.8%). There are only three parents who have more than four children (.8%). Most of the parents are between 18-30 years old (46.7%) followed by parents between 31-40 years old (40.5%). There were only seven parents who are greater than fifty years old (2%). Most of the parents attained a college/university degree (47.9%) followed by parents who had secondary certificate (34.6%). Interestingly, eight parents had post graduate degree (2.3%). Fifty four percent of the parents are working (192) while the other forty five percent are not (161).

Parent's Beliefs about Fever and Its Treatment

Table 2 shows that 38% of the parents believed that the best place to take the temperature of child is the ear (tympanic) followed by armpit (axilla) 37.1%. The rest of the parents took temperature orally (21%) and rectally (4%) respectively. In this study, about 43% believed that 37 degrees Celsius is the normal body temperature of a child followed by 36 degrees Celsius (20.4%). Approximately 30% of the parents considered a child with a temperature of 38-38.4 degrees Celsius as feverish followed by 38.5-39.90 degrees Celsius (26.3%).

In this study, 73.1% of the parents did not believe that alternating drugs is useful in cases where the temperature did not lower after administering an antipyretic drug. Almost 50% of the parents believed that seizure is the complication of fever followed by brain damage, dehydration, coma, and death.

Parents' Methods in Managing Fever

As shown in Table 3, parents' most frequently reported measure of child's temperature was by using an electronic thermometer (34.8%) followed by an ear thermometer (28.3%). Other parents measured the temperature of their child by using their hands and mercurial thermometer. Most parents measured the temperature every 30 minutes to 1 hour (37.4%) followed by every 15 to 30 minutes (23.2%). When asked about the drug usually given to the child to reduce fever, the majority of the parents reported giving Panadol/Fevadol (80%) while the others gave antibiotics (9.3%), ibuprofen (4.8%), and aspirin (1.1%). We also found that most of the parents use physical methods to relieve and treat fever such as tepid sponge bath with cold water (38.8%), cold showering (24.9%), tepid sponge bath with hot water (21.5%) and others.

In order to determine the right dose of the antipyretic drug administered to the feverish child, 85% of the parents used a specific measuring spoon or syringe containing the drug. Others used regular teaspoon or tablespoon.

Parents' Practices in Managing Fever

Most of the parents when asked how the right fever lowering drugs and doses were decided indicated that they would follow the previous advice from the pediatrician (43.6%, 39.4%). Others consulted a pharmacist, consulted others, or relied on information gathered from media.

Predictors of Some Practices of Fever Management

Overall, the prevalence of administering fever-lowering medications orally among this study sample of parents was 63% (Table 4). The route used to administer fever-lowering drugs was found to be significantly associated with age, gender, and number of children.

Table 1: Socio-demographic data of parents participating in the study

Variable	Frequency	Percentages
Number of Children		
1	167	47.3
2	151	42.8
3	32	9.1
4+	3	.8
Age of Parents		
<18	2	.6
18 – 30	165	46.7
31 – 40	143	40.5
41 – 50	36	10.2
>50	7	2.0
Educational Level		
Illiterate	13	3.7
Less than secondary	14	11.6
Secondary Certificate	122	34.6
College/University degree	169	47.9
Postgraduate degree	8	2.3
Working		
Yes	192	54.4
No	161	45.6

Table 2: Beliefs about fever and its treatment as reported by parents (N=353)

Variable	Frequency	Percentages
Belief about the best place where temperature is taken		
Ear	134	38.0
Armpit	131	37.1
Mouth	74	21.0
Rectum	14	4.0
Belief about the normal body temperature		
36°	72	20.4
37°	151	42.8
38°	53	15.0
39°	53	15.0
40°	16	4.5
I do not know	8	2.3
Belief about the high fever temperature		
37 – 37.4°	17	4.8
37.5 - 37.9°	71	20.1
38 – 38.4°	107	30.3
38.5 – 39.90°	93	26.3
40°	56	15.9
I do not know	9	2.5
Belief about the usefulness of alternating drugs		
Yes	95	26.9
No	258	73.1
Beliefs about the side effects of fever		
Seizure	173	49.0
Brain damage	91	25.8
Dehydration	44	12.5
Coma	19	5.4
Death	16	4.5
Nothing will happen	10	2.8

Table 3: Parent's methods in managing childhood fever (N=353)

Variable	Frequency	Percentages
Methods to measure the temperature		
Electronic thermometer	123	34.8
Hand	79	22.4
Ear thermometer	100	28.3
Mercury thermometer	30	8.5
I do not measure	8	2.3
I do not know	18	3.7
Frequency of measuring the temperature		
Less than 15 minutes	39	11.0
From 15 to 30 minutes	82	23.2
From 30 minutes to 1 hour	132	37.4
From 1 to 2 hours	69	19.5
More than 2 hours	31	8.8
Drug administered for fever		
Panadol/Fevadol	283	80.2
Antibiotics	35	9.3
Ibuprofen/Voltaren	17	4.8
Aspirin	4	1.1
Nothing	16	4.5
Remedies used in addition to drugs		
Tepid sponge with cold water	137	38.8
Cold showering	88	24.9
Tepid sponge with hot water	76	21.5
Using medications only	29	8.2
Using ice cubes	17	4.8
Others	6	1.7
Site of medication administration		
Oral	228	64.6
Rectally	125	35.4
Instrument used to administer the medication		
Regular tablespoon or teaspoon	33	9.3
Specific measuring spoon or syringe of the drug	300	85.0
Measuring spoon or syringe of other drug	20	5.7

Table 4: Demographic of parents by route of administering fever lowering medication (N=353)

Variable	Total N = 353 (%)	Administer		Chi-square P value
		Orally N = 199 (63.0%) (Row%)	Rectally N = 117 (37.0%) (Row%)	
Sex				.024*
Male	133 (37.7)	95 (71.4)	38 (28.6)	
Female	220 (62.3)	133 (60.5)	87 (39.5)	
Educational Level				.046*
Illiterate	13 (3.7)	11 (84.6)	2 (15.4)	
Less than secondary	14 (11.6)	31 (75.6)	10 (24.4)	
Secondary Certificate	122 (34.6)	79 (64.8)	43 (35.2)	
College/University degree	169 (47.9)	100 (62.1)	61 (37.9)	
Postgraduate degree	8 (2.3)	7 (87.5)	1 (12.5)	

* Statistically Significant

Discussion

The level of knowledge about high body temperatures and methods used by parents to treat fever at home were identified through the questionnaire provided to them.

The data gathered indicates that the parents had a good level of understanding regarding high body temperatures. Most of the parents who answered the questionnaire knew the correct normal body temperature and can determine whether their child is febrile or not. Parents expressed that taking temperature alone was sometimes the basis for administering medications especially antipyretics. Most of the parents believed that giving antipyretics is necessary when there is high grade fever.(5) For them, if high grade fever is not treated accordingly, it will result in complications such as seizures, coma, and even death, as similar to previous research.(11,12) These results are similar to study findings in other countries such as Kuwait and Palestine. However, it is not evident that the parents are aware that lowering the body temperature or giving medications for fever such as antipyretics guarantees the prevention of convulsions (6,7,8,9). Although febrile convulsions are terrifying to parents, they do not affect the neurological function and will not cause disabilities(10). Also, no parents were able to mention any side effects of taking antipyretics. A study in Denmark showed that parents were hesitant in giving medication to their febrile children due to some side effects (13). Lack of awareness and misinformation about the inability of antipyretics to prevent convulsions, and that these medications have side effects may be the reason for the significant use of antipyretics (14). Medication histories of the respondents revealed that most of the children were given antipyretics. According to Okposio, intake of antipyretics and antimalarials is only by perception of the mother regarding fever (15). Some of the parents give antipyretics even when there is minimal or no fever because they believe that a child must always maintain a normal temperature (16). Out of 353 parents, only 79 use hands

in determining if their children have fever. Therefore, it is not the preferred method for assessing body temperature. Similar results have been seen in some other studies. A 33% PPV (Positive Predictive Value) for touch technique was declared unreliable as found by Katz-Sidlow (17). In an Indian study by Chatuverdi, only 38% PPV endorsed that the tactile technique is an unreliable screening test for fever. It is recommended that the use of thermometer should be encouraged in assessing fever (18).

Studies found that there are home treatments used by parents when it comes to fever, such as showering, cold sponge bath, ice bag application and even rubbing the body with alcohol. These methods may actually increase fever and can result in shaking, shivering and may lead to coma (19)(20) However, more than 90% of parents in the study answered that they use these methods to reduce their child's fever.

This study shows that parents should be more aware about high body temperature and its consequences. There should be more health education among parents to correct the misconceptions they have about fever. Also, parents should be informed regarding different home treatments and their consequences. There is a need to develop programs that educate parents and provide them with information they need to better address the fever of their children.

References

1. Dinarello CA, Wolff SM. Pathogenesis of fever in man. *N Engl J Med* 1978; 298: 607-12.
2. Harrison's Principles of Internal Medicine, 19e Dennis L. Kasper, Anthony S. Fauci, Stephen L. Hauser. www.amazon.com/Harrisons-Principles-Internal-Medicine-Vol-1/dp/0071802150.
3. Family Doctors.org. Fever in Infants and Children. <https://familydoctor.org/condition/fever-in-infants-and-children/>. Retrieved 15 January 2019.
4. Betz MG, Grunfeld AF. Fever phobia in the emergency department: a survey of children's caregivers. 2016
5. De S, Tong A, Isaacs D, Craig JC. Parental Perspectives on evaluation and management of fever in young infants: an interview study. 2014
6. Fields E, Chard J, Murphy MS, Richardson M. Assessment and initial management of febrile illness in children younger than 5 years. 2013
7. Richardson M, Pursell E. Who's afraid of fever? *Arch Dis Child* 2015. 818-20
8. Strengell T, Uhari M, Tarkka R, et al. Antipyretic agents for preventing recurrences of febrile seizures. Randomized controlled trial. 2009 700-804
9. de Bont EG, Brand PL, Dinant GJ, van Well GT, Cals J. Risks, and benefits of paracetamol in children with fever. 2014
10. Al- Eissa YA. Febrile seizures: rate and risk factors of recurrence. 1995 315-9
11. Schmitt BD. Fever phobia: misconceptions of parents about fevers. 1980 134 176-81
12. Kramer MS, Maimark L, Leduc DG, Parental phobia and its correlates. *Pediatrics*. 1985 75 1110-3
13. Sahm LJ, Kelly M, McCarthy S, O'Sullivan R, Shiely F, Romsing J. Knowledge, attitudes and beliefs of parents regarding fever in children. A Danish interview study. 2015 69-73
14. Li SF, Lacher B, Crain EF. Acetaminophen and Ibuprofen dosing by parents. 2000 394-7
15. Okposio MM, Abhulimhen-Iyoha BI. Accuracy of mother's touch in assessing the presence of fever in children. *Niger J Paed* 2012 39 56-9
16. Sullivan JE, Farrar HC. Fever and antipyretic use in children. *Pediatrics* 2011 127 580-7
17. Katz-Sidlow RJ, Rowberry JP, Ho M. Fever determination in young infants: prevalence and accuracy of parental palpation 2009; 25:12-14
18. Chatuverdi D, Vilhekar KY. Reliability of perception of fever by touch. *Indian J Pediatr* 2003 70 871-3
19. Meremikwu M, Oyo-Ita A. Physical methods for treating fever in children. 2003 CD004264
20. Baby Center. How can I reduce my child's fever without using medicine? https://www.babycenter.com/404_how-can-i-reduce-my-childs-fever-without-using-medicine_10338495.bc