

## Abstract

**Back ground :** Fever is a common medical problem in children. parents have been shown unrealistic fears of harmful effects of fever in their children. Resulting in inappropriate management of fever in their children.

**Objective:** the objective of this study was to survey parents about their knowledge and attitude concerning fever in their children.

**Methods :** The study involved random selection of parents who brought their febrile children to emergency department or out-patient clinics of five teaching and non teaching hospitals in Baghdad from first of October to end of December 2002.

Parents of 400 febrile children were interviewed using a standard questionnaire to obtain sociodemographic information and current knowledge of fever.

**Results:** Approximately 69% of the respondents were female, 68% their age was in the range of 21-35 years. Seventy seven percent of parents had two or more children. More than 70% of parents demonstrated a poor understanding of definition of fever , maximum

temperature of untreated fever and threshold temperature requiring antipyretics . Twenty seven percent of parents considered temperature less than 38.0 c° to be fever, another 27% did not know, the definition of fever, 61% felt that temperature of less than 40,0 c° could be dangerous to a child, and 27% could not define high fever. Another 28% believed that if left untreated, temperature could rise to 42.0 c° or higher, but 39% could not provide an answer, and about 60% did not know the minimum temperature for administering antipyretics. And 60% did not know the minimum temperature for bathing , or sponging.

Approximately 93% of parents demonstrated fear of consequent body damage from fever , including convulsion ,brain damage ,coma, blindness and even death.

**Conclusion:** parental misconception about fever reflects the lack of active health education. Health professionals have apparently not done enough to educate parents on this common medical problem and it's consequences.

**Key Words:** fever , hyperthermia, hyperpyrexia.

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## Introduction

Fever is extremely common in childhood. It is an elevation of body temperature mediated by an increase of hypothalamic heat regulatory set-point.<sup>(1)</sup>

In most cases , a fever is the body's reaction to an acute viral or bacterial infection. It is not necessarily a dangerous condition, Rather, it is a sign that body defending itself against infectious invader. Since viruses and bacteria do not survive as well in body with an elevated temperature, fever is actually an ally in fighting infection.<sup>(2)</sup>

The definition of normal body temperature is complex. DuBois found the normal body temperature for children to be from a low of 36.2 c° to a high of 38.0c° when measured rectally, and from 36.0 to 37.5c° when taken orally.<sup>(3)</sup> the maximum temperature for children occur between 5 and 7 p.m., and minimum temperature occur between 2 and 6 a.m. hence it is not unusual for an active normal child temperature to be as high as 38.0c° rectally in late afternoon. A rise in temperature above 38.0c may also be caused by physical exercise , warm clothing , hot or humid weather, or warm food / drink.<sup>(4)</sup> such external factors should be eliminated before measuring temperature.

The body temperature is controlled by a thermoregulatory center in the hypothalamus via complex feed back system.<sup>(5)</sup> this hypothalamic “ thermostat”

if influenced by complicating circumstances (e.g heat stroke or drugs ), seems to exert a shutoff valve phenomenon so that high temperatures , are generally kept below a level that would seriously damage body tissues .Most temperatures above 41.1c° in children are due to human errors from excessive heat load or from interference with heat loss . Examples are wrapping a febrile child in too much clothing or blankets ,placing a baby near a heat radiator , or placing a child in a car in direct sun light.<sup>(6)</sup>

Parents have been shown unrealistic fears of the harmful effects of fever in their children, and generally see it as main component of an illness.<sup>(4,6)</sup>

They are unable to define fever accurately , tend to over estimate it's dangers, making unnecessary clinic visits and leading to excessive utilization of health care services.<sup>(7,8)</sup>

## Methods

Parents bringing their febrile children to hospital-based emergency departments or out-patient clinic between 8.00 a.m. to 2.00 p.m.(when research assistants were available ).

Febrile children who were judged to be critically ill were excluded from the study. The study was carried out in five hospitals in different areas of Baghdad, namely the Child Protection Pediatric Hospital, Central Child Pediatric Hospital, Al-Elwia Pediatric

Hospital, Ibn-Al-Bildy Pediatric and Maternal Hospital, Al-Saader General Hospital. A total of 400 parents of febrile children were interviewed.

These hospitals were selected to ensure participation of a truly representative Iraqi population sample of all socioeconomic group. Each eligible male or female parents was interviewed in arabic by a male or female research assistant, using questionnaire design to obtain sociodemographic background information and current knowledge of fever.

Demographic data obtained included age of both parents, accompanying parent, level of education attained, current occupation of parents and number of children cared by the parent.

The questionnaire items were designed to ascertain parents knowledge, attitude and fear concerning fever in their children. The questions asked were as follows : how do you know if your child has a fever? ; what is the temperature reading that constitutes a fever in a child ? ; what do you consider a high fever ?; how high could the fever go if it is not treated ?; what is the greatest harm that fever can cause to a child.

Fever was defined as documented axillary temperature of 37.2 c° or higher ,or as documented oral temperature of 37.5 c° or higher. the appropriateness of responses to questions was determined on basis of current medical literature.

## Results

**Table-1** shows a description of sociodemographic characteristics of the studied parents. The majority of the parents surveyed were living in Baghdad city (67.5%).

A wide range in parental age , educational level ,occupation and family size was noted. 70.5 % of parents participating in the study were housewives.

Approximately 43% of parents are between the age of 21-30 year ,with 13% of mothers and 11% of fathers are illiterate.

Only 7.5% of fathers brought their febrile children to hospital. Roughly one third of respondents cared for four children or more.

The majority of parents believed that they could tell whether their child had a fever by the flashing of face or touch of the child. only 15% of the parents had their childs' temperature measured at home wether; in **Table- 2** shows data concerning parental knowledge and attitude about fever. Twenty-seven percent of the parents considered body temperature of less than 38.0 c° to be fever, 30 % considered 38.0 c° to be fever , and 27.5 % did not know the definition of fever. A dangerous fever was said to be a temperature of 40.0 c° or less by 61 % of parents , and 39.0 c° or less by 34 % .

Approximately 27 % of all parents thought an untreated fever could keep rising to 42.0 c° or higher ,

4 % responded that body temperature could climb to 50.0 c.

In **Table- 2** shows that 6.5 % of all parents would give antipyretics for body temperature less than 38.0 c° ( i.e. possibly normal body temperature ) .

About 22.5 % of all parents would give treatment for a body temperature of 38 – 39 c° , and 11.5 % felt that a body temperature of 39.0 c° and above should be treated . Surprisingly about 60 % of the parent could not determine the minimum temperature for initiation of antipyretics. 10.5 % of parents stated they would bathe or sponge their child if temperature reached 38.0 c° – 38.9 c°, an additional 12 % would do same if it reached 39.0 c-39.9 c° . Only 11.5 % of the respondents indicated their readiness to bathe or sponge their child if it reached 40.0 c° or more. About 60 % of the parents did not know the threshold body temperature for bathing or sponging their febrile child

**Table-3** shows that 93.5 % of the parents believed fever can cause harm, and 16 % believed it cause death , specific types of fear includes convulsion ( 73.5 %), brain damage and stroke (31.5 % ) , loss of consciousness (36.5 %), blindness (4.5 %) and serious illness (28.5 %).

No significant difference in pattern of response to questions were found among parents with regard to their sociodemographic features such as educational level , occupation or family size.

## Discussion

The randomly selected parents presented abroad demographic and socio-economic spectrum . They were surveyed at the time when their children were febrile , not when they are well. It might be argued that parents anxiety and misunderstanding would be exaggerated by the development of fever in their children , that their real fear and misconception would be overestimated. However, our concern was the potential consequences of parents attitude when their children actually developed a fever.

The results of this study are in agreement with findings of other studies in Saudia Arabia and in developed countries <sup>(6,8,9,11)</sup> .

These findings confirm the fact that parental misconception about fever are common world wide.<sup>(10,13,14)</sup>;such misconceptions can lead to inappropriate treatment and potential overutilization of health care services.

In this study, parents showed little understanding of the normal body temperature ,and as well demonstrated an inadequate knowledge of what actually constitute a fever or high fever. The results of this study are in agreement with finding of study in Saudia Arabia.<sup>(9,11)</sup>

We were also surprised that parents of high socioeconomic group and those with many children and ,therefore, with previous experience with fever, were not different in items of knowledge of fever from parents of lower socioeconomic background and limited previous experience. In this study , most parents showed poor knowledge regarding minimum temperatures for administering antipyretic drug or sponging / bathing with water of the correct temperature. Also most parents demonstrated a poor understanding of appropriate frequency for checking child's temperature and administering antipyretics. It seems that health care providers have not done enough in educating parents in this basic information.

Fever is defined as a temperature above the normal range. A rectal temperature of 38.0c° or more , an oral temperature of 37.5c° or more and an axillary temperature of 37.2c° or more , are all considered fever .About 27 % of the study parents identified fever as temperature of 37.9c or less and another 27 % did not know the temperature level that constituted a fever. Although the definition of high fever is fever more than 40.0c° , 61% of the parents defined high fever as 40.0 or less. Also of the great concern is the misconception on the part of 28 % of the study parents who indicated that untreated fever could reach 42.0c° and even above 44 c° and those parents did not know the effects of untreated fever .With these misconceptions of fever , it is not surprising that parents would treat fever aggressively.

An analysis of temperature charts during febrile illnesses before the advent of antimicrobial therapy showed that peak temperatures almost never exceeded 41.1c.<sup>(3)</sup> Hyperpyrexia is defined as a temperature of 41.0c° or greater . fever of this range is rare . it is in an incidence of only 0.05 %.<sup>(12)</sup>

Our study showed that the majority of parents were overly concerned about the harmful effects of fever. The type of harms included convulsions, coma , brain damage , dehydration , blindness and death. The same fears were found among parents in other previous studies.<sup>(6,7,11)</sup> The adverse effects of fever include discomfort , mild dehydration , febrile delirium and uncomplicated seizures .

Heat stroke , a catastrophic circulatory failure characterized by hyperpyrexia , delirium , coma , and anhidrosis , rarely occur in children , and is mostly caused by environmental factors such as over heating or too much clothing.<sup>(4)</sup>

## **Conclusion**

This study indicate that child health care providers have apparently not done enough in educating parents about fever and its consequences , and considerable efforts will be required to correct such misconceptions .use of well designed health education aids that present information in a clear ,consistent and entertaining manner would be more effective . Hence, an audio-visual health education message on fever would be superior to the written material containing the same information.

(Table1)  
Sociodemographic . Characteristics of 400 Studied Parents

<i>Characteristic</i>	<i>no.</i>	<i>%</i>
Accompanying parent		
Mother	275	68.7
Father	30	7.5
Both parents	95	23.7
Residence		
Baghdad city	270	67.5
Out side Baghdad	130	32.5
Age of mother	<i>no.</i>	<i>%</i>
16-20	46	11.5
21-25	88	22.0
26-30	86	21.5
31-35	96	24.5
36-40	58	14.5
≥ 41	24	6.0
Age of father	<i>no.</i>	<i>%</i>
16-20	32	8.0
21-25	80	20.0
26-30	124	31.0
31-35	88	22.0
36-40	50	12.5
≥ 41	26	6.5
<b>Mothers Education</b>	<i>no.</i>	<i>%</i>
illiterate	52	13.0
Read and write	40	10.0
Primary school	86	21.5
Intermediate Scholl graduate	84	21.0
Secondary school graduate	66	16.5
Institute graduate	46	11.5
University graduate	26	6.5
Fathers education	<i>no.</i>	<i>%</i>
Illiterate	44	11.0
Read and write	56	14.0
Primary school graduate	92	23.0
Intermediate school graduate	82	20.5
Secondary school graduate	64	16.0
Institute graduate	32	8.0
University graduate	30	7.5

<i>Mothers Occupation</i>	<i>No.</i>	<i>%</i>
Employed	94	23.5
House wife	282	70.5
Student	24	6.0
Fathers occupation	number	<i>%</i>
Skilled	124	31.0
Semi skilled	146	36.5
Unskilled	104	26.0
student	16	4.0
retired	10	2.5
<b>Number of Children</b>	<i>No.</i>	<i>%</i>
One child	62	15.5
Two child	92	23.0
Three child	106	26.5
Four child	70	17.5
Five child and above	70	17.5

(Table-2)  
Parental Knowledge and Attitudes about Fever

Minimum Temperature Considered as Fever (30.0c -41.00 C )		
Temperature	No.	%
<37.00 C	16	4.0
37.0-37.9 0 C	92	23.0
38.0 0 C	122	30.5
38.1-39.00 C	50	12.5
>39.00 C	10	2.5
Un known	110	27.5
Temperature Considered as High Fever (range, 35.0 –50. 0 c)		
Temperature	Number	%
< 38.00 C	44	11.0
38.0-39.0 0 C	94	23.5
39.1-40.00 C	108	27.0
40.1-41.0 0 C	30	7.5
>41. 00 C	18	4.0
unknown	106	26.5
How High Could Temperature go with out Treatment(range, 37.0-500 C )		
Temperature	No.	%
<40. 00 C	10	2.5
40.0-40.90 C	76	19.0
41.0 –41.9 0 C	44	11.0
42.0-43.90 C	86	21.5
>44.00 C	26	6.5
Unknown	158	39.5

(Table 3)

Parental Conception of Principal Complications of Fever.

Complication	No.	%
Convulsion	226	73.5
Death	56	16.0
Brain damage/stroke	126	31.5
Loss of concionsness	146	36.5
Dehydration	70	17.5
Blindness	18	4.5
Weight loss	44	11.5
Serious illness	114	28.5
No response	26	6.5

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