

## Knowledge, attitude, and practice in management of childhood fever among Saudi parents, in a rural area in Saudi Arabia.

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### Abstract

**Introduction:** Fever is a common symptom for children globally, accounting for more than 20% of emergency room visits. However, parents' knowledge, practice, and attitude towards it are still not convinced in many societies. The study aimed to assess the knowledge, attitude, and practice in managing childhood fever among parents in a rural area.

**Methodology:** A community-based, cross-sectional study was conducted among Saudi parents in the Bisha area, southern Saudi Arabia. A standardized questionnaire form was used to collect information related to parents' socio-demographics and their knowledge, attitudes, and management of childhood fever. Descriptive statistics were applied, and a chi-square test was used to evaluate the observed difference between data sets.

**Results:** A total of 862 parents (521 mothers and 341 fathers) participated in the survey. Most parents (94.2%) had poor knowledge about the fever, 20% had a good attitude about the fever, and 42.9% had the experience to manage the childhood fever. About 56 % of parents used a digital thermometer to measure temperature. Paracetamol (90%) was the commonly used drug to reduce fever, and about 80% of parents administered the antipyretics through the oral route. More the half (57.7%) of parents believed that antibiotics might reduce high fever. Compared with the other age groups, parents with age less than 20 years had significantly ( $p=0001$ ) highest rate (53.3%) of good knowledge. Attitude and management toward childhood fever were not statistically differed ( $p>0.5$ ) in terms of parents gender, age, education level, number of children.

**Conclusion:** This study showed a poor knowledge about childhood fever among the parents, although most of them shared worries about high fever and its consequences. For better control of childhood fever, extensive effort is needed to educate parents in such rural communities and enhance their awareness about fever and how to manage and deal with it.

**Keywords:** Childhood fever, Parental management, Rural area, Saudi Arabia.

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### Introduction

Fever is a definition of elevated core body temperature in response to an infectious agent, inflammatory process, or other pathological stimuli [1]. It is a common presenting sign and symptom of a disease in children globally [2]. Fever is a common reason to visit primary care, accounting for more than

70% of pediatrics and emergency department complaints [3]. Although there is no consensus among pediatricians about the definition of fever, the elevation of body temperature above the normal in response range due to pathological process might be considered as fever [1,4]. Most authors considered fever when body temperature is above 38°C and treat it only with specific purposes and under certain guidelines [5-7]. It is not easy to

label a child as febrile without considering many factors such as age, day and night difference in body temperature, type of daily activities, and finally, the site of measuring whether oral or rectal [4].

Fever can lead to anxiety, concern, and wearies among parents [1]. However, parents' failure to define fever and manage its conditions can make unnecessary clinic visits, leading to an extra challenge to healthcare facilities [8]. Worldwide literature indicated that parents have varied conceptions about fever in childhood [1]. In Saudi Arabia, a limited number of studies addressed the issue of fever among children. Al-Eissa indicated that more than 70% of parents demonstrated a poor understanding of the definition of fever, high fever, the maximum temperature of untreated fever, and threshold temperature warranting antipyresis. Almogbel et al. [9] found that parents have inadequate knowledge about fever, its assessment, and the decision of giving a medication. However the data in scarce about parent's knowledge, attitude and practice towards childhood fever in Bisha, is a rural region in Southern Saudi Arabia. This study, therefore, aimed to analyze parental knowledge, believes and behavior towards the fever in children. In addition, we aimed to determine parents' perception about the appropriated practice procedures used to manage high grade fever of childhood.

## Methodology

### *Study design and setting*

A community-based, cross-sectional study was conducted among parents in Bisha, Aseer region, Saudi Arabia, for six months from June to December 2020. Bisha is a large province located in the Aseer region with a population estimated at 40,000,398,256. This province includes about 240 villages and 58 centers and is considered a rural area [10,11].

### *Study population*

The study population was the parents from different age groups who live in Bisha and its suburbs. In addition, parents whose children presented or experienced fever before were enrolled in the study.

### *Data collection and processing*

Data were collected using a questionnaire adapted from previous studies in the literature [2,8,12,13]. The questionnaire form was divided into two sections. The first part includes questions related to the demographic characteristics of the participants. The second part consisted of ten questions that developed to assess three domains related to parent perceptions about knowledge, attitudes, and management of childhood fever. The knowledge domain consisted of three items: site/ mode of measurement, type of thermometer used for measuring the temperature, antibiotics that can reduce the fever. The attitude domain contains two questions: harmful effects of fever, level of temperature if left untreated. Finally, the practice domain includes five questions: physical measures,

use of medications for fever, route of administration of antipyretics and the instrument to measure the correct dose.

### *Definitions and score calculation*

The fever and its temperature were adopted from previous studies [6,9,14] plus parts adopted by consensus among authors. The childhood fever was defined to body temperature  $>38^{\circ}\text{C}$  and considered a high-grade fever when it reaches  $>40^{\circ}\text{C}$ . While rectum, armpit and mouth are considered the correct site for measuring body temperature in children, mercury or digital thermometer were deemed appropriate for measuring body temperature. Administering antipyretics (paracetamol or ibuprofen) were considered appropriate drugs for managing fever. To broaden the understanding of parents' knowledge, their behavior and beliefs, and general practices adopted for the management of childhood fever, a domain score was constructed using questions from respective domains.

Based on previous studies [15,16] daily practice, and experts' opinions, the research team graded the knowledge, attitude and practice of participants as good or poor. The team was considered overall good knowledge, practice and attitude when the participant answered two out of the three questions for the knowledge domain, four out of the five questions for the attitude domain, and one of the two questions of the practice domain.

However, the expected good answers for knowledge, attitude, and practice are as follows: rectum is site/mode of fever measurement; digital is a type of thermometer used; antibiotic agents are not the drug of choice to reduce the fever, brain damage is harmful effects of fever, fever, if left untreated, can reach  $>40.6^{\circ}\text{C}$ ; When the child has a fever go to the clinic; the bath is the physical measures, paracetamol is used drug to reduce the fever, rectal is a route of administration of antipyretics; spoon is an instrument to measure the correct dose.

### *Statistical analysis*

Data were entered and stored on a Microsoft Excel spreadsheet then analyzed using the Statistical Package for Social Sciences (SPSS; SPSS Inc., Chicago, IL, USA) program version 16. Descriptive statistics were applied to evaluate the observed difference between data sets. Chai-square test was used to compare the proportion of good or poor knowledge between the variables. The test considered  $P<0.05$  as a level of significance.

### *Ethical approval*

Ethical approval was obtained from the research ethics local committee at the UBCOM (Ref No.:UBCOM/H-06-BH-087(04/22)). Verbal informed consent was taken from the participants before the start of the survey.

## Results

### Demographic Characteristics

A total of 862 parents who lived in Bisha and suburb areas participated in the survey. Of these participants, 521(60.4)

were mothers, 327 (37.9%) were in the age group 31-40 years, and 309(35.8%) were in the >40 years group. Most parents (643; 74.6%) had a university degree, and half (50.2%) of them had 1-3 children (Table 1).

Variable	Description	n%
Parents	Fathers	341 (39.6)
	Mothers	521 (60.4)
Age groups in years	<20	15 (1.7)
	21-30	211 (24.5)
	31-40	327 (37.9)
	>40	309 (35.8)
Education level	University degree or above	643 (74.6)
	Secondary	167 (19.4)
	Less than secondary	52 (6.0)
Number of children	<3	330 (38.3)
	3-6	433 (50.2)
	>6	99 (11.5)

**Table 1.** Characteristics of participants.

### Knowledge, attitudes, and management of childhood fever

Table 2 summarizes the parental knowledge, attitude, and practice for managing childhood fever. Most parents responded

correctly to the definition of fever (578; 67.1%). Touching the forehead (43.5%), followed by using the armpit (26.1%) and mouth (25.6%) were the most common reported regard to the site used for the recording of temperature. Over half (56.3%) of parents reported using a digital thermometer to measure temperature.

Item	n (%)
<b>Knowledge</b>	
Site/mode of fever measurement	
Armpit	225 (26.1)
Rectum	30 (3.5)
Ear	11 (1.3)
Mouth	221 (25.6)
Forehead	375 (43.5)
Type of thermometer used	
Mercury-in-glass	129 (15.0)
Digital	485 (56.3)
Auricular	94 (10.9)
Skin infrared	9 (1.0)
Plastic strip placed on the forehead	92 (10.7)
Dummy-pacifier style	35 (4.1)
No thermometer owned/recommended	18 (2.1)
Antibiotics can reduce the high fever	
Yes	497 (57.7)
No	365 (42.3)
Attitude	
Harmful effects of fever	

Seizure	680 (78.9)
Brain damage	29 (3.4)
Coma	11 (1.3)
Dehydration	7 (0.8)
Really sick	35 (4.1)
Delirium	82 (9.5)
Death	2 (0.2)
None	16 (1.9)
Fever, if left untreated, can reach	
≤ 40.6°C	40 (4.6)
>40.6°C	70.5 (81.8)
Do not know	117 (13.6)
Practice	
When the child has a fever	
Go to clinic	180 (20.9)
Go to pharmacy	64 (7.4)
Go to the emergency room	295 (34.2)
Wait at home	323 (37.5)
Physical measures	
Cold sponging	385 (49.9)
Non-cold sponging	258 (33.5)
Bath	219 (28.4)
Use of drugs for fever	
Paracetamol	776 (90.0)
Ibuprofen	37 (4.3)
Aspirin	20 (2.3)
Cortisone	2 (0.2)
Antibiotics	27 (3.1)
Route of administration of antipyretics	
Oral	696 (80.7)
Rectal	166 (19.2)
Instrument to measure the right dose	
Spoons	60 (7.0)
Dosimeter of antipyretic drug	747 (86.6)
Dosimeter of other drugs	55 (6.4)

**Table 2.** Parental knowledge, attitude, and practice towards childhood fever.

Regarding parent's attitudes and beliefs about the potential consequences of high fever, most of them (78.9%) understood that seizure was the main outcome of untreated fever. About 90% of the parents believed that a high dose of the antipyretic drug is dangerous. Around one-third (34.22%) of parents prefer to go to the emergency room in case of fever. Concerning fever management, cold sponging (40.0%) was the most common procedure adopted by the parents. Paracetamol (90%) was the commonly used drug to reduce fever, and about 80% of parents administered the antipyretics through the oral route (Table 2).

### ***Comparison of knowledge, attitude, and management of fever by parental characteristics***

According to the score formulation, most parents (812, 94.2%) had poor knowledge about the fever. On the other hand, 20% (n=172) had a good attitude about the fever, and 42.9% (n=370) had an experience managing the childhood fever (Table 3). Compared with the other age groups, parents with age less than 20 years had significantly (p=0001) highest rate (53.3%) of good knowledge. Attitude and management toward childhood fever were not statistically differed (p>0.5) in terms of parents' gender, age, education level, number of children.

Factor	Description	Knowledge			Attitude			Practice		
		Poor (812)	Good (50)	P	Poor (690)	Good (172)	P	Poor (492)	Good (370)	P
Parents	Father	324(39.9)	17(34.0)	0.407	273(39.6)	68(39.5)	0.994	195(39.6)	146(39.5)	0.958
	Mother	488(60.1)	33(66.0)		417(60.4)	104(60.5)		297(60.4)	224(60.5)	

Age	<20	7(0.8)	8(16.0)	0.001	12(1.7)	3(1.7)	0.999	9(1.8)	6(1.6)	0.059
	21-30	199(24.5)	12(24.0)		169(24.5)	42(24.4)		120(24.4)	91(24.6)	
	31-40	310(38.1)	17(34.0)		262(38.0)	65(37.8)		187(38.0)	140(37.8)	
	>40	296(36.4)	13(26.0)		247(35.8)	62(36.0)		176(35.8)	133(35.9)	
Education	Primary	49(6.0)	3(6.0)	0.993	41(5.9)	11(6.4)	0.974	30(6.1)	22(5.9)	0.994
	Secondary	157(19.3)	10(20.0)		134(19.4)	33(19.2)		95(19.3)	72(19.5)	
	University	606(74.6)	37(74.0)		515(74.6)	128(74.4)		367(74.6)	276(74.6)	
Number of children	<3	311(38.3)	19(38.0)	0.97	264(38.3)	66(38.4)	0.996	188(38.2)	142(38.4)	0.994
	3-6	408(50.2)	25(50.0)		347(50.3)	86(50.0)		247(50.2)	186(50.3)	
	>6	93(11.4)	6(12.0)		79(11.4)	20(11.6)		57(11.6)	42(11.4)	

**Table 3.** Comparison of knowledge, attitude, and practice in relation to the socio demographic characteristics of the parents (n=862).

## Discussion

Significance differences were observed in this study regarding parents' knowledge, practice, and attitude towards fever, and this difference related to the gender of the parents, their ages, educational levels, and the numbers of children they have. In contrast to other studies done in KSA [8], we avoid conducting the survey during febrile illness to prevent parents' stress and misconception or perception while their children were febrile to avoid conflicting results due to parent's stress challenges to the results. Lockley enough, more than 90% of our enrolled parents did not depend on one method for the recognition of fever. They used measurement by the device and touching procedures without significant differences in gender, age, educational level, and hominy children.

This finding contrasts with another study done among Palestinian parents by Zyoud et al. [13]. This difference might be explained by the high income and socio-economic status.

Regardless of their children's numbers or age, most of our parents agree with other studies regarding the normal level beyond which a child would be considered febrile [17] however parents across their educational level significantly differ in their estimation to the normal body temperature. In this era of technology and information, it is not strange to get most parents aware of the average level of body temperature.

However, a level of education might allow educated people to think of different methods and sites for temperature measurement. Like other parents elsewhere, most parents believe that fever is harmful [18]. In fact, mothers, fathers, parents' ages, and educational levels made a significant difference in their perception. Always mothers have more worries, an educated person through their knowledge usually has access to more information and many young parents might exaggerate the harmful effect of fever. 60% of the parents reported health facilities with the first 24-hour, similar to the Indian study [19]. Significant difference observed between parents regarding the early report to the health facility, usually the mother who believes in the urgent visit to a health facility during febrile illness, which is expected from mothers. Only half of our patient has experience in providing antipyretic at home, in contrast, to a study done in Louisiana State where

most parents are aware of how to administer this situation [14]. Since health facilities in the form of primary health care usually exist near accommodation places. Usually, more mothers than fathers are interested in health facilities visits.

In contrast to the previous study [14] most of our parents perceived fever negatively. Highly educated parents differed significantly from others due to their depth of knowledge. Our findings showed that more than half of parents agreed that antibiotics could reduce the fever. The parents always like the best management for their children to avoid drug abuse in general and antibiotics in particular. In contrast to Maria et al. study in Ireland [6], Maria et al. study in Spain [20] showed that: age of the parents, their demographic, and socioeconomic status affect the perception of parents towards fever. The misperception of parents towards antibiotic treatment for their febrile children is in agreement with a local study done in the Holy Makah region in Saudi Arabia, Jordanian, palatine and Dutch studies. The anxiety of the parents, pressure on treating doctors and poor knowledge towards adverse effects of antibiotics made that bad practice possible. Of course, this malpractice made a significant burden to all health workers to address it carefully. It was advised by WHO and other authors to empower patients in their therapeutic decisions; ultimately, this would not happen without proper health education [21].

## Conclusion

This study showed a poor level of knowledge about childhood fever among the parents. Most parents were aware of the normal body temperature, recognizing it and dealing with it. Moreover, most of them shared worries about high fever. For better control of childhood fever, extensive effort is needed to educate parents in the rural area and enhance their awareness about fever and how to manage and deal with it.

## Strength

The large size sample, being randomized, good response rate and being community-based study

## Limitation

Being conducted through the link might subject it to some bias and violate randomization and finally might be those who are educated have good access to the net.

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