



Research Article

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Parents' Knowledge, Attitudes and Beliefs Regarding Fever in Children: A Cross-Sectional Study In Qatar



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Abstract

Background: Fever phobia remains extremely widespread which significantly affect home management and antipyretics use. We aimed to explore the knowledge, attitudes and beliefs of parents in Qatar about fever in children. **Methods:** Survey-based, cross-sectional study including parents accompanying their children to Pediatric Emergency Center Al-Sadd; the most populated pediatric emergency centre in Qatar. The survey developed from previously validated similar studies in addition to the recent guidelines. The Surveys were collected over six months (October 2019 till March 2020). **Results:** Most of the participants are mothers (71.8%), and more than half of them have one or two children (57.8%). Two-third of the parents (65.8%) defined fever correctly as core temperature $\geq 38^{\circ}\text{C}$. Eighty parents (20%) reported not having a thermometer, and they depend on touching the child by hand to determine the presence of fever. Almost all parents (95.7%) believed that under treatment of fever could cause harm, where seizure was the most commonly predicted fever's complication (66.5%). Majority of parents (71%) believed that every child with fever needs antipyretic even if doing-well. Parents used to give antipyretics as syrups in 62.5% while 30% preferred giving both syrups and suppositories together. In addition to antipyretics administration, 48.5% use home remedies (i.e. cold sponges) while 42.5% they seek physician assistance. **Conclusion:** Parental knowledge of fever and its management were found to be deficient, which concur with existing literature in other regions. Clinicians should play a significant role to instruct parents with accurate information about childhood fever and its home management whenever possible.

Keywords: Fever, Antipyretics, Knowledge, Qatar, Pediatrics, Parents

Abbreviations: PEC: Pediatric Emergency Center, WHO: World Health Organization, AAP: American Academy of Pediatrics

Introduction

Fever is one of the most common reason where parents take their children for medical care [1]. It has been estimated to be the chief complaint of one-third of all pediatric consultations [2]. In the United States of America, consultations due to fever in children cost around \$10 billion annually, covering 60 million clinic visits and 8 million emergency department visits [3,4]. Despite its prevalence; fever still leads to a lot of anxiety and fear of parents [5]. In 1980, the term "fever phobia" was introduced

to describe parents' unrealistic fears about fever [3,6]. Almost all parents have false beliefs and limited knowledge regarding fever in their children [3,7].

The normal human body temperature defined as 36.6°C to 37.9°C and fever as any temperature $\geq 38.0^{\circ}\text{C}$ [8,9]. In one study, approximately one-half of parents considered a temperature of less than 38°C to be a fever [10]. In Kuwait, a previous study showed that a child was considered febrile at body temperatures

of 37°C or less by 40.7% of interviewed mothers [11]. Furthermore, multiple studies worldwide from the United States of America, France, Palestine, and Saudi Arabia had shown that parents rarely define fever correctly, and unaware of the correct fever management and frequency to administer antipyretics [3,4,12,13]. Recent reports indicated that 45–53% of parents of febrile children had administered incorrect doses of antipyretics before seeking medical assistance, which results in increased overdosing in febrile children by 21% from 1987 to 1999 [14].

To date, many studies have been published worldwide regarding the attitude childhood fever management; however, no study has been conducted to examine parent's knowledge and attitude regarding fever management among the children in Qatar. This study was designed to identify parents' beliefs and attitudes regarding childhood fever management and identify factors that might affect their attitudes, knowledge, and beliefs. Additionally, we aimed to provide a documented background with the intention to provide the basis for a large, comprehensive project aimed at educating parents about the best methods of fever management and accurate dosing and using of antipyretics.

Methods

This study was a survey-based, cross-sectional study in Qatar. The primary objective of this study was to investigate and describe the knowledge, attitudes and beliefs of parents in Qatar about fever in children. Secondary objectives were to 1) identify factors that might affect parent's belief of fever definition, 2) determine the percentage of parents who believe in antibiotics use for feverish child and demographic characteristics that is associated with such belief.

The parents brought their children to Al-Sadd Pediatric Emergency Center (PEC) (the most populated pediatric emergency center in Qatar) were initially eligible for inclusion in the study. The parents aged 18 years or older, able to understand English or Arabic, and having at least one child aged ≤ 5 years were included. Exclusion criteria were parents with an acutely ill child or parents refused to consent/ complete the survey. The parents were approached by a well-trained pediatrician while they were sitting in the waiting area and were offered to choose the preferred language of the survey (English or Arabic). The survey was conducted over six months period; between October 2019 and March 2020. The required sample size was calculated by assuming a response distribution for temperature ≥ 38 °C at which parents define fever was 50% and allowing 5% margin of error at 95% confidence interval. The minimum effective sample size estimated for the survey was 384. In order to minimize specious results and increase the study reliability, the study included 400 participants.

The questionnaire developed by selecting a mix of questions from previously validated similar studies in addition to the recent UK and Italian guidelines for the management of the febrile child [15-17]. It was framed in a way to enable the average layperson to understand it. The questionnaire consisted of three major

categories with a variance of 26 items (yes/no) and multiple-choice questions. One section of the questionnaire was captured the socio-demographic information of respondent's (i.e. age, gender, number of children ... etc.). The remaining sections were designed to collect information about the parents' knowledge, beliefs, and attitudes of fever management (i.e. definition of fever, methods used for measuring body temperature, beliefs of the safety of antipyretics, beliefs about alternating drugs, and attitudes in obtaining and using antibiotics or other remedies). The appropriateness of response to questions was determined based on current medical literature. The questionnaire translated into Arabic language. Content and face validity of both languages were determined by an expert panel of pediatric nurses and physicians.

Data were analyzed using the Statistical Package for Social Sciences (SPSS; SPSS Inc., Chicago, IL, USA) program. Descriptive statistics were used to describe the categorical data as numbers with percentages. Pearson Chi-square test was used to compare different socio-demographics to regards of parent's beliefs of fever definition and need for prescribing antibiotics for all children. A p-value ≤ 0.05 was considered statistically significant.

Results

A total of 400 surveys were collected, and Arabic version was chosen as a preferred language by 64.8%. Most participants were mothers (71.8%) and were educated to university level or higher (80%). More than half of the participants had one or two children (57.8%), and the mean age of the youngest child was 6 months. Table 1 shows the distribution of socio-demographics of participated parents.

Two-third of parents (65.8%) defined fever correctly as a temperature ≥ 38 °C, where 16.5% considered 37°C as a cut point for fever. Almost all parents (95.7%) believed that untreated fever could cause harm, were the most common side effect reported to be seizure (66.5%) (Figure 1). The parents were almost equally divided on how they see the cause of fever; simple and natural body response (49.5%) vs. serious condition that needs immediate intervention (44%).

The most common sites for measuring temperature were ear (26.8%), armpit (26.3%), and mouth (21.8%), while they mainly use an electronic thermometer (69%) to measure child's temperature. Eighty parents (20%) reported not having a thermometer, and they depend on touching the child by the hand to determine the existence of fever. In case of fever, one-third of parents stated that they measure the temperature every 15-30 minutes.

The majority of parents (71%) believed that every child with fever needs antipyretic even if doing-well. They indicated that factors influence administering antipyretics to their children are high temperature (77.8%), reduce pain or discomfort (51%), not eating or drinking (21.5%), history of febrile convulsions (12.5%), and ineffective non-pharmacological methods (7.8%). Half of the

parents administer antipyretics at a temperature of 38–38.5°C. In combination with antipyretics use, 48.5% use home remedies (i.e. cold sponges) while 42.5% they seek physician assistance. On the

other hand, less than 20% of parents believe that every child with a fever has an infection and insist on prescribing antibiotics.

Table 1: Socio-demographics of participated parents (n=400)

Socio-demographics	n (%)
Relationship	
Father	105 (26.2)
Mother	287 (71.8)
Missing data	8 (2)
Parent's age	
15-24 years	25 (6.3)
25-34 years	214 (53.5)
35-44 years	136 (34)
≥45 years	22 (5.5)
Missing data	3 (0.7)
Marital status	
Married	386 (96.5)
Divorced	8 (2)
Widow/widower	1 (0.3)
Missing data	5 (1.2)
Monthly income	
Less than 1,500 \$	46 (11.5)
Between 1,500 - 3,000 \$	138 (34.5)
More than 3,000 \$	190 (47.5)
Missing data	26 (6.5)
Nationality	
Qatari	64 (16)
Non-Qatari	332 (83)
Egypt	66 (16.5)
India	63 (15.8)
Palestine	34 (8.5)
Sudan	34 (8.5)
Others	135 (33.7)
Missing data	4 (1)
Number of children	
1-2	231 (57.8)
3-4	118 (29.5)
≥5	50 (12.5)
Missing data	1 (0.2)
Your highest education level	
Did not complete high school	21 (5.3)
High school degree	60 (15)
College or university degree	252 (63)
Graduate degree (masters or PhD)	66 (16.5)
Missing data	1 (0.2)

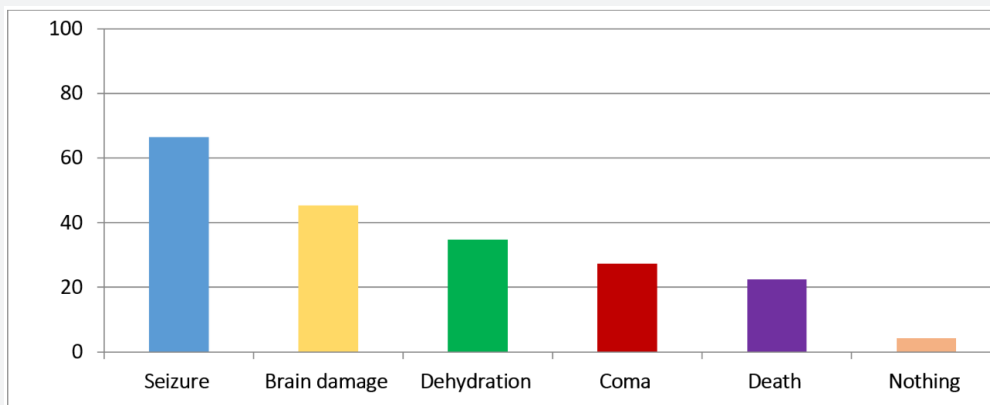


Figure 1: Reported possible side effects of fever if not treated.

The most commonly administered antipyretic was paracetamol (81%). When the temperature is not going down, parents believe it is useful to alternate between two or more drugs. Ibuprofen was the second common antipyretic used to manage a child’s fever

(51.7%). The parents used to give antipyretics only as syrups in 62.5% while 30% preferred giving both syrups and suppositories together. They prefer rectal administration of antipyretics as they believed it is more useful and effective (Figure 2).

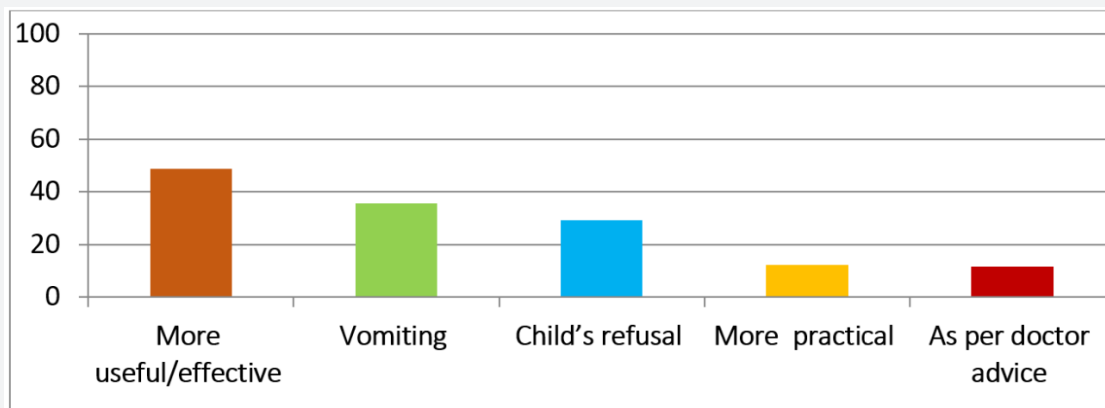


Figure 2: Reported reason for preferring rectal administration of antipyretic.

Most of the parents claimed that they only use the recent prescribed antipyretic (62.5%) while the remaining parents used to use previous prescribed antipyretic for the same ill child or siblings. They believed that possible harmful effects of antipyretic were effect on stomach (34.3%), kidney damage (31.8%), liver damage (27.8%), immunity suppression (27.3%), and allergic reaction (24.3%). The parents are aware while dosing the medication where they use the specific dosimeter provided with antipyretic in (83%) and precisely following the physician’s/ pharmacist’s instructions for the required dose (60.5%).

None of the socio-demographic characteristics found to be statistically significant in association with appropriate fever definition, except for the relationship (Table 2). Mothers found to define the fever more appropriately than fathers (69.7% vs. 54.3%; $p=0.004$, respectively). Similarly, none of the socio-demographic characteristics found to be statistically significant

in association with parent’s belief on prescribing antibiotics for all children except for parent’s age. Younger parents are more commonly believe in prescribing antibiotics ($p=0.019$); however, they did not insist on prescribing it to their child.

Table 2: Correlation between the socio-demographics and defining fever correctly.

Socio-demographics	P-value
Child’s relationship (mother vs. Father)	0.004*
Parent’s age	0.542
Marital status	0.645
Monthly income	0.071
Your highest education level	0.48

* Indicate statistically significant ($p\text{-value}\leq 0.05$)

Discussion

In this study, we explored the parent's knowledge, beliefs, and attitude towards fever management in their children, which was the first study done of its kind in Qatar. Such a study was of importance to identify the knowledge gap of fever management and antipyretics use. It provides a documented background and basis for a large, comprehensive national project aiming to educate parents about the best methods of fever management and accurate dosing and using antipyretics.

We found that two-thirds of surveyed parents accurately define fever as a body temperature of ≥ 38 °C, which supported by existing literature [9]. Our result is much comparable to the finding of a similar study conducted in Saudi Arabia, where 64% of parents defined fever correctly [18]. On the other hand, our study showed higher knowledge than what was reported previously worldwide. A study conducted in Ireland found that two-thirds of the parents defined fever either below or above the recognized definition of fever's temperature [19]. In India, 92% of parents reported to have no idea about normal body temperature [2], and in Morocco, only 3.5% of parents knew the correct definition of fever [20]. Most recent studies conducted in Saudi and Australia should that only 42% of parents defined the fever as ≥ 38 [21-24,13]. These differences may be contributed to the difference in the socio-demographics characteristics between different studies.

Remarkably, almost all parents believed that untreated fever could cause harm, where seizure and brain damage are the most reported consequences. Their beliefs are much similar to other regional and international counterparts, where the most consistently identified concern of fevers was febrile convulsions [11,18,13,21-25]. Walsh *et al.* [26] concluded that education about the prevalence and prognosis of febrile convulsions and safe caring of a child during a febrile convulsion is needed and may contribute to reducing fever phobia and unnecessary fever reduction.

Only 16% of our participants used to touch the child's forehead to determine the existence of fever, where 95% use thermometer to determine the existence of fever. With the exception of a recent Saudi study (which reported that 68% of parents use a thermometer) [18], the thermometer was rarely reported to be used at home to measure the child temperature in different studies. In India, only 15% use the thermometer [7,27], and 25% in both Saudi Arabia and Iran [13,28]. Unavailability of thermometers may result in over-estimating of fever and expose children to unnecessary administration of antipyretics [21].

The current World Health Organization (WHO) guidelines on the management of fever recommend the use of paracetamol for treating children with a temperature over 38.5°C which indicates that mild to moderate rise and should not be routinely suppressed [15]. Besides, the American Academy of Pediatrics (AAP) published a policy statement and concluded that there is

no evidence to recommend the use of antipyretics to reduce the temperature in all febrile children [29]. Nevertheless, in our study, the majority of parents (71%) believed that every child with fever needs antipyretic even if doing-well. The belief that 'every feverish child should be treated to lower temperature was found to be the strongest predictor of parental burden in recent Australian study [24].

Our study is limited by the self-reported nature, which is potential for recall bias. However, parents were surveyed while they were waiting with their ill child in the emergency department. Although during this sitting, parents might have exaggerated anxiety towards fever in their child compared to typical days; however, we believed this is the best time to examine their practice and attitude in how they manage fever. During this sitting, parents will be more accurate in expressing their beliefs and fears compared to the other days when their child is well where they tend to be ideal.

Conclusion

Parental knowledge of fever and its management was found to be deficient, which concurs with existing literature in other regions. This inadequate level of knowledge clearly indicates the need for more education and awareness activities for the community. Physicians have to provide parents with accurate information about childhood fever and its home management during the routine visit to the well-baby clinic or other general clinics.

Competing Interests

The authors declare that they have no competing interests.

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