

# How parents deal with the child's fever: influence of beliefs, knowledge, and information sources in the care and management of fever in children – systematic review of the literature

*Como os pais lidam com a febre infantil: influência das crenças, conhecimento e fontes informação no cuidado e manejo da febre na criança – revisão sistemática da literatura*

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## ABSTRACT

**Introduction:** the “fever phobia” of parents, concerns, and inappropriate treatment of fever in childhood has been documented for nearly two decades. The parents’ understanding of fever determines their concerns, fears, reactions, and conducts in the care of the febrile child. **Objective:** to verify, on the basis of a literature search, the knowledge, beliefs, information sources, practices, and attitudes of parents and caregivers in the management of fever in children. **Methodology:** this was a systematic review of the literature. **Results/Discussion:** the “fever phobia” presents multifactorial causes, among them, the past experience with a febrile child, tragic stories resulting from the febrile child, cultural influences, and sources of information such as family, health professionals, and friends among others, also influence conducts towards fever. Parents become extremely worried when they have a sick child and fever can be considered an indicator of disease and harm. They consider that the fever may cause damage to the child, despite the numerous reports of the beneficial effects of low to moderate fever in the medical and scientific literature. The management of infant fever by parents will be directed by their beliefs, sources of information, and knowledge about the subject. **Conclusions:** exacerbated fear generates anxiety and concerns in parents and/or caregivers, is associated with their conceptions, and directs their conducts and fever management practices. The fever phobia persists and parents/caregivers demonstrate feelings of insecurity to take care of a febrile child.

**Key words:** Fever; Child; Parents; Paternal Behavior; Knowledge.

## RESUMO

**Introdução:** a “febre fobia” dos pais, preocupações e tratamento inapropriado da febre na infância têm sido documentados há aproximadamente duas décadas. A compreensão dos pais em relação à febre determina as suas preocupações, medos, reações e condutas frente ao cuidado da criança febril. **Objetivo:** verificar, com base na busca na literatura, o conhecimento, crenças, fontes de informação, práticas e atitudes dos pais e cuidadores no manejo da febre na criança. **Metodologia:** trata-se de revisão sistemática de literatura. **Resultados/Discussão:** a “febre fobia” apresenta causas multifatoriais, entre elas, a experiência passada com uma criança febril, histórias trágicas resultantes da febre na criança, influências culturais e fontes de informação como família, profissionais de saúde, amigos, entre outras, também influenciam nas condutas frente à febre. Os pais ficam extremamente preocupados quando se deparam com a criança doente e a febre pode ser considerada indicador de enfermidade e prejudicial. Consideram que a febre pode acarretar danos na criança, apesar de numerosos relatos dos efeitos benéficos da baixa para moderada febre na literatura médica e científica. O manejo da febre infantil pelos pais será direcionado por suas crenças, fontes de informação e conhecimentos acerca do assunto. **Conclusões:** o medo exacerbado

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*gera ansiedade e preocupações nos pais e/ou cuidadores que, associadas às suas concepções, direcionam as suas condutas e práticas de manejo da febre. A febre fobia persiste e os pais/cuidadores demonstram sentimentos de insegurança para cuidar de uma criança febril.*

*Palavras-chave: Febre; Criança; Pais; Comportamento Paterno; Conhecimento.*

## INTRODUCTION

Fever is a symptom of common childhood illness and one of the causes of assistance demands for pediatrics consultation in emergency services, clinics, or private consultations.<sup>1,3</sup>

Some authors describe that 19% to 30% of visits to a pediatrician in urgent and emergency services are due to this symptomatology.<sup>1</sup> This situation often occurs due to disease association with fever and fever serving as a warning sign for those who seek assistance based on this condition. The symptom of fever is accompanied by feelings of anxiety, uncertainty, and concern in parents or caregivers.<sup>4</sup>

Fever is defined as an elevation of body temperature in response to a pathological stimulus. It may indicate an inflammatory process, infectious or not, neoplastic disorder, or reaction to certain drugs.<sup>2,5</sup> In the case of fever in the childhood, there is not an agreement among the various authors concerning the exact definition of fever in children.<sup>2,4</sup>

This definition implies in establishing what is temperature within physiological patterns, which is not a simple task because it depends on some known factors such as: age group; infants present normal temperature higher than that in adults, and from one year old the temperature tends to decrease to levels similar to those in adults. Another factor is the circadian variation, that is, the temperature is lower during the night and early morning and it is maximal in the late afternoon and early evening. Intense physical activity and high ambient temperature, in low ventilated locations, can cause the temperature increase. The site for temperature measurements also introduces variations; rectal temperature is higher than taken in the mouth, which is higher than taken in the armpit.<sup>4</sup>

A differentiation between fever and hyperthermia is required. Barbosa et al.<sup>6</sup> report that during uterine life, the fetus temperature is approximately 0.5 °C higher than the maternal temperature, with heat dissipation from fetal metabolism mainly via umbilical circulation. After birth, the heat exchange will

happen with the extra-uterine environment through radiation, convection, conduction, and evaporation. In situations of balance, the heat produced by the metabolism is lost by these routes in the same proportion in which it is produced.

According to Barbosa et al.<sup>6</sup>, there is an increased endogenous heat production during fever, which exceeds its loss generated by high metabolic activity related to the release of endogenous pyrogens such as cytokines, inter-leucine-1, tumor necrosis factor, and leukocytes from the host, which trigger a hypothalamic response. In hyperthermia, there is a normal endogenous production of heat, however, with reduced heat loss that may be mainly generated by increased ambient temperature, excessive clothing, and weight loss due to low water intake.

Fever is the abnormal elevation of body temperature controlled by the Central Nervous System (CNS) in response to an endogenous or exogenous stimulation. Hyperthermia is the elevation of body temperature by mechanisms different from fever without alteration in the hypothalamic thermostat.<sup>7</sup>

Trotta and Gilio<sup>2</sup> consider that the most reliable measurement of body temperature is taken orally or rectally. Some studies classify a rectal temperature at or above 37.7 °C or 38.0 °C as fever. The armpit, tympanic, or by palpation temperature measurements are considered less reliable. Nevertheless, the armpit measurement with mercury thermometers is widely used in our settings. The armpit temperature is 0.3 to 0.4 °C lower than the rectal temperature.

A number of studies published in the international literature report that parents have varied conceptions, often erroneous, in relation to the exact temperature value considered as fever in the childhood. Thus, concerns about fever are composed of incorrect associations between the peak of the fever and severity of diseases.<sup>3</sup>

In accordance with the current literature, it becomes necessary to conduct studies aimed at investigating the knowledge of parents regarding children's fever and fever management methods. The high incidence of demand for pediatrics consultations in emergency clinics or private services by parents when their child is feverish indicates that, in the future, it is possible to intervene positively and educationally in the knowledge of these individuals. They could then identify the fever, what are its benefits and damages, how to safely care for a fevered child at home, and when to seek health care service because of this clinical condition.

Thus, the present study aims to review the national and international literature on knowledge of parents and caregivers about the management of fever in children.

## METHOD

This was a systematic literature review study with the theoretical framework established from the digital research of clinical case reports and bibliographic reviews of book chapters and scientific articles about the knowledge, beliefs, experiences, information sources, and practice of parents about the management of fever in childhood. The data were collected in the Virtual Health Library (VHL), in the Scientific Electronic Library Online (SCIELO), International Health Sciences Literature (MEDLINE), Latin-American and Caribbean Health Sciences Literature (LILACS), and the National Library of Medicine (PubMed) databases between 1980 and 2011.

The selection criteria used for of scientific articles were: articles published in national and international journals with abstracts available in the selected databases, between 1980 and 2011, and articles that cover the topic of how parents deal with the child's fever. The survey was carried out in journals indexed in the databases cited in the previous paragraph; articles published until 2011 regardless of the method of research used. The keywords used were: fever, knowledge, child, perception, attitude.

A total of 77 articles were found. However, after acquiring their copies and reading them, it was decided to exclude the studies published previously to the decade of 1980 and studies not consistent with the proposed theme. Articles published in the last 31 years were selected to evaluate importance and advances on how parents deal with child's fever, influences of beliefs, knowledge, and sources of information in the care of the child with fever since the invention of the term fever phobia by Schmitt<sup>12</sup> when a wide range of studies, mainly in the international environment, have been published to this end.

## RESULTS AND DISCUSSION

Fever is one of the common symptoms in childhood leading parents to seek medical assistance and advice from health professionals.<sup>8</sup> It is not uncommon

to observe the presence of parents in emergency services due to ailments common to childhood. The parents' conceptions about fever will often make them seek for these health services without necessity.<sup>9</sup>

Parents are extremely worried when they have a sick child and often have difficulty assessing the severity of the disease. Fever can be considered an indicator of illness and harmful by many parents.<sup>10</sup>

Many people, including health professionals, use body temperature to determine health status, i.e., fever is interpreted as illness.<sup>10</sup>

There are reports from about 20 years ago, on concerns of parents related to the harmful effects of fever.<sup>10</sup> According to Broome et al.<sup>11</sup>, studies have documented that parents present erroneous beliefs about fever.

Parents often perceive fever as illness and their insufficient knowledge raises concerns about its causes, conceptions about its effects on the health of their children, and excessive fear and anxiety. These attitudes are designated as "fever phobia."<sup>8</sup>

An article written in 1980 by Schmitt<sup>12</sup> investigated the participation of parents in the management of fever in the medical literature. This author created the phrase "fever phobia" to describe the unrealistic fears of parents about fever. This term has been adopted to describe imaginary fears about fever in parents and health professionals.<sup>10,12</sup>

According to Tessler et al.,<sup>13</sup> ethnicity, culture, and socioeconomic factors can influence attitudes and practices with respect to health and disease. Few data evaluated about fever in childhood, from diverse demographic populations, indicate differences in parents' beliefs and practices. The mistaken belief that the fever can cause damages, such as brain injuries and death, is recent. In the 16<sup>th</sup> and 17<sup>th</sup> centuries, the conception that fever was a reaction of the body to assist in separating and eliminating harmful substances prevailed as well as a sign of the presence of host invasions in the body.

Several opinions are influenced through history, and various practices are applied to the treatment of the feverish patient (induction of vomiting, bath, and use of medicines among others). Unreal fear of fever or "fever phobia" is related to misconceptions that have arisen in the 19<sup>th</sup> century.<sup>13</sup>

The search to understand and guide parents in the management of fever lasts until today and researchers try to understand the parents' concerns on fever and test new methods for improving fever management by parents.<sup>10</sup>

Over 24 years of reviewed literature, it has been reported that many parents believe that fever can have harmful effects and they are very concerned about this perception of the damaging effects of fever, despite the numerous reports about the benefits of low to moderate fever in the medical and scientific literature.<sup>10</sup>

The "fever phobia" of parents, concerns, and inappropriate treatment of fever in childhood are documented, and their causes are possibly multifactorial. This can be caused by past experiences with a feverish child, tragic stories resulting from fever in a child, cultural influences, and sources of information such as family, health professionals, and friends among others.<sup>10</sup>

Beliefs about damages caused by fever, identified in the 80s such as brain aggravations and febrile seizure and death, persist today regardless of the educational level and socio-economic status of parents. The concern about febrile seizures, dehydration, and discomfort associated with fever has increased, and these attitudes seem to be similar in different countries.<sup>10</sup>

In order to prevent damages, the parents state that the high fever must be prevented, controlled, and reduced, and children must be rigorously monitored.<sup>14</sup>

According to Walsh and Edwards,<sup>10</sup> parents check the temperature by palpation of body parts or using a thermometer, however, their knowledge about the temperature that is considered normal and that of fever is lacking. Some parents describe that the physiological body temperature is between 35.0 and 37.2 °C. A study by Blumenthal<sup>15</sup> showed that many parents do not believe that the body temperature increases in hot days.<sup>10,15</sup>

Parents define a fever as temperatures between 37.0, 38.0, and 39.0 °C. High fever is usually defined by temperatures around 39.0 °C. Recently, some parents report high fever as temperatures between 39.0 and 40.0 °C.<sup>10</sup>

Some studies carried out about infant fever did not find differences in temperatures indicated in diverse cultures in populations in the United States, and Latin and African-American countries. The level of fever is a common parental decision factor to take the child to the emergency service.<sup>10</sup>

Blumenthal<sup>15</sup> found that 75% of parents believe that the use of a thermometer is the best method to evaluate fever, and 63.9% of parents believe that the most effective way for treating fever is a combination of antipyretics and medical measures.<sup>10,15</sup>

In another study conducted by Matziou et al.,<sup>8</sup> the armpit temperature is mostly measured in children by their mothers, who prefer it to the rectal measurement despite the latter being considered the most

reliable. Parents seem to avoid measuring rectal temperature in their children based on fear of causing some adverse effect.

Correlations between parents' inability to precisely measure temperature are analyzed as difficulty in reading the thermometer. A relationship between maternal age, presence of other children at home, and ability to read the thermometer was not observed. The findings reveal that younger parents with high socioeconomic status and education have thermometers and can read the mercury thermometer with accuracy.<sup>10</sup>

According to Linder et al.,<sup>16</sup> the parents' knowledge about fever and its treatment is unknown. Their little knowledge can lead them to "over-treat" child's fever or use high doses of antipyretics. Consequently, some children become at risk to suffer from toxic effects caused by these medications while others are taken to emergency services or medical offices because the fever does not seem to respond to the conventional medication.

Antipyretics have been and remain the preferred method of many parents to reduce fever, who prefer to treat fever with antipyretics than removing clothes or bathing a child. According to studies, the use of this type of medication (antipyretics) by parents to control fever increased from 67% in 1980 to 95% in 2002. Currently, 46% of parents use antipyretics to promote child well-being during febrile episodes.<sup>10</sup>

Broome et al.<sup>11</sup> mention that parents consider temperatures below 38.0 °C as fever and often already initiate the use of antipyretics. In addition, many begin the use of inappropriate methods to manage the febrile child such as the administration of incorrect doses of antipyretics, other medications (decongestants), and alcohol rubbing.

In a study performed by Matziou et al.,<sup>8</sup> mothers over 30 years old follow an aggressive and inappropriate treatment of fever resulting from the use of antipyretics and repeated administration of doses prior to the completion of therapeutic efficacy. Another study carried out by Schmitt<sup>12</sup> showed that all children had consumed antipyretics before they received the first health assistance. Almost half of mothers administer antipyretics on their own initiative, and a substantial number of mothers determine the dosage of medications themselves.<sup>8,12</sup>

For Matziou et al.,<sup>8</sup> when children are under one-year-old, the experience of excessive fear and anxiety leads parents to seek medical care.

Incorrect dosages of antipyretics have been described with frequency. Many parents, when administering antipyretics make mistakes such as using an

excessive number of doses or exceedingly high or low doses. Overdose occurs more often in younger and underweight children.<sup>10</sup>

In the 80s, in the United States, parents learned the dosage for antipyretics with doctors, previous experiences, friends, and medical reference books. In the 21<sup>st</sup> century, they collect information from doctors and in medicines inserts. However, the source of information for the administration of antipyretics does not determine a significant difference between the correct and incorrect doses used in the United States.<sup>10</sup>

Other fever management practices in the 80s, in addition to the administration of antipyretics, include a tepid bath, application of cold/very cold compress, and alcohol rubbing. Although the use of tepid bath continued in the 2000s, the use of cold compresses and alcohol rubbing reduced considerably. Similar findings have been found in different countries and cultures.<sup>10</sup>

Walsh and Edwards<sup>10</sup> report that parents learn to cope with fever from various sources of information. In India, they seek learning from parents and relatives, however, parents with higher socio-economic level seek learning from the literature and doctors. In Saudi Arabia, parents also use relatives, friends, doctors, and books as a source of information. Mothers in Italy learn fever management from doctors during a febrile episode. Parents in the United States learn more from doctors and nurses than from friends, relatives, experiences, books, or television. Canadian parents seek information from doctors, although they also seek other sources such as family, nurses, books, magazines, internet, and television.

According to Broome et al.,<sup>11</sup> studies have pointed out that health professionals are not the only source of information for parents to learn how to deal with fever and that many of the information about this are obtained through relatives, friends, and books. Some studies also report that parents learn about fever management from their own past experiences.

The study by Crocetti et al.<sup>17</sup> with a sample of 340 parents showed that 46% seek doctors and nurses as the first source of information about fever; 28% seek friends; and 11% use reading materials as a source of information.

Matziou et al.<sup>8</sup> stressed that the international literature confirms that mothers' knowledge about fever and its treatment is very limited; they often do not know how to define what is considered a fever temperature value and classify low fever as high. As a result, they choose inappropriate measures of treatment and often reduce temperatures considered

normal. Many studies have shown that mothers seek medical and other professional's advice when the temperature of their children cannot be reduced despite the administration of drugs to a level that they consider satisfactory and often take their children to hospitals when they present low temperatures.<sup>10</sup>

Therefore, studies on how parents deal with infant fever can be important precursors of interventional education in this population, targeting the specific needs of parents. There is a need to identify the knowledge, attitudes, and practices in parents in order to develop a way to intervene educationally based on a behavioral change.<sup>10</sup>

Walsh and Edwards<sup>10</sup> lecture that health education is the responsibility of all health professionals. Education about fever should be based on scientific evidences, and the professionals' attitudes towards the benefits of low and moderate fever must be positive. It is possible to prepare parents for the management of febrile episodes during clinical visits when the child is well and preferably before the febrile episode. Parents should be advised about accuracy when measuring temperatures, how to safely care for the feverish child, when to seek for professional assistance, the role of fever in the immune process, when to reduce fever with antipyretics, and how to safely administer these medications. The findings in the literature focus on the necessity of educating parents about fever and fever management to ensure that the child is safely cared at home without medical advice, and parents are prepared to deal with every febrile episode.

## CONCLUSION

Caring for a febrile child is challenging for parents. It is observed that in the course of two decades feelings of anxiety, fear, concerns, and insecurity are present in parents with a feverish child. These feelings associated with beliefs, past experiences, cultural habits, and knowledge and sources of information to address doubts about fever directly influence their practices, behavior, and management of child's fever. Thus, this topic should be explored in further studies; health professionals can plan educational activities in the future that will allow intervention in the knowledge of parents, who could safely take care of a febrile child and know when to seek health care services.

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