



## Fever: A Literature Review of Perceptions, Perspectives and Practices

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### Abstract

Previous and extant studies on home management of childhood fever among caregivers in most contexts have shown that the perceptions, perspectives and common practices associated with fever have not changed significantly. Generally, caregivers in all contexts are still managing childhood fever aggressively due to fever phobia. In particular, caregivers in resource poor countries such as sub-Saharan Africa still have cultural beliefs about fever which often underscores the pervasive hybrid of traditional and inadequate orthodox approaches to home management of fever. There is thus need for culturally sensitive and competent health literacy interventions to mitigate deleterious impacts of perceptions, perspectives and common practices related to home management of fever universally.

**Keywords:** Fever; Perceptions; Home management; Common practices

### Introduction

Fever is body temperature exceeding what is considered normal for the site at which the measurement is taken. Fever is thus occurs when temperature in the rectum is above 38.0°C, temperature in the mouth is over 37.8°C, and temperature in the axilla exceeds 37.2°C. Fever may occur due to infection by microbes, being exposed to excessive heat in the environment heat or when engaged in strenuous physically demanding work [1-4]. Furthermore, recent studies have shown that global climate change resulting in global temperature rise can lead to increase in incidence of both communicable and non-communicable diseases and other symptoms including fever [5-10]. Fever is used by many in determining if an individual is in a healthy state or not, underlying the importance attached to it [1,3,4,11]. In children, fever is a most common presenting symptom of childhood diseases. Fever is a cause of great concern and anxiety among caregivers due to the various misconceptions attributed to it [1,12,13]. In caring for these children, a common practice among parents and caregivers is to commence treatment of the fever at home prior to presenting at a healthcare facility. This is seen especially in sub-Saharan Africa, Nigeria inclusive [14-19].

### Perception of Fever

#### Historical perspectives

There are various beliefs and perceptions about fever. These beliefs and perceptions remain debatable. However, the fear and apprehension associated with fever by most mothers and caregivers remains irrefutable; thus the term 'Fever Phobia' was created [20,21]. Fever phobia results in parents and caregivers exhibiting an exaggerated anxiety and panic while regarding fever as the primary element of an illness or as the illness in and of itself in their wards and children [12]. The main cause of fever in Africa south of the Sahara in under-five children is malaria. The leading cause of morbidity and mortality due to fever in sub-Saharan Africa is Malaria. The currently documented case fatality rate of malaria in Nigeria is 31% [22]. In addition, fever due to malaria is one reason parents commonly present with their young children seeking medical care. Elevated body temperature may be an indication of serious illness. However in most of the cases, fever is the result of infectious diseases without any untoward consequences [13].

Historically, perspectives regarding treating fever symptomatically have changed significantly. Before mid-nineteenth century, fever

was intentionally promoted because it was viewed as being a positive consequence of developing infections. However, this perspective morphed significantly to one of fever being considered harmful to health thus requiring treatment [23]. Currently in the twenty-first century, studies have revealed that fever serves as an immune mediator response to infections thus providing some beneficial effects and should be treated only when necessary [24-27].

In Nigeria, malaria and respiratory tract infections are the two common causes of fever in children [28]. The role parents play in the management of fever in their children can better be ascertained from their perceptions of fever and their comprehension of how to manage it. Historically, health seeking behaviors have been revealed to be impacted by several factors including: drug accessibility and availability, healthcare providers' availability, treatment cost such as drugs, perception of disease severity, knowledge of disease etiology, diagnostic possibilities and ability to treat [17].

The work by Carl Wunderlich published in his magnum opus *Das Verhalten der Eigenwdrme in Krankheiten* resulted in fever being viewed as a sign of disease and not a disease, thus dispelling existing wrong notions of fever at that time [29]. In the nineteenth century, Von Liebermeister hypothesized that temperature is regulated in the same way during health and illness but that fever arises in illness due to the body's 'thermostat' being set higher. This notion is still currently relevant based on work done by Cranston [30].

### Caregivers' Perspectives

The perception among parents and caregivers about fever has been negative (Table 1). Most parents and caregivers believe that harmful outcomes result if fever is not treated irrespective of the severity of the fever [31,32]. The main concerns among caregivers due to unmanaged fever remain febrile convulsions, damage to the brain and

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State/Country	Study Year	Study design	Sample size	Perceptions (%)	Home management Practices (%)
U.S.A [20]	1980	Cross-sectional (Survey)	81 parents	Fever harmful (52% of parents)	Administered antipyretics – (85% of parents)
Canada [45]	1984	Cross-sectional (Survey)	202 parents	Fever harmful (43% of caregivers)	Administered antipyretics – (53% of parents)
Togo [36]	1984	Cross-sectional (Survey)	507 mothers	N/A	Administered antimalarial – (97% of mothers)
Saudi Arabia [34]	1986	Cross-sectional (Survey)	36 parents	Fever harmful (37% of parents)	Administered antipyretics – (parents)
Canada [49]	1988	Cross-sectional (Questionnaire)	92 mothers	Fever harmful (49% of mothers)	Administered antipyretics – (55% of parents)
United Kingdom	1997	Cross-sectional (Questionnaire)	392 parents	Fever harmful (81% of parents)	Administered antipyretics – (28.4% of parents)
Italy48	1998	Cross-sectional (Questionnaire)	707 mothers	Fever harmful (65% of mothers)	Administered antipyretics – (48% of mothers)
Switzerland [53]	1998-2001	Cross-sectional (Questionnaire)	300 parents	Fever harmful (97% of parents)	Administered antipyretics – (87% of parents)
Maryland/ U.S.A [12]	1999	Cross-sectional (29-item questionnaire)	340 caregivers	Fever harmful (56% of caregivers)	Administered antipyretics – (58% of caregiver)
Israel [38]	1999	Cross-sectional (Survey)	650 parents	N/A	Administered antipyretics – (96% of parents)
Saudi Arabia [41]	1999	Cross-sectional (Questionnaire)	560 parents	Fever harmful (95% of parents)	Administered antipyretics – (40% of parents)
Israel [4]	2000	Cross-sectional (25-item questionnaire)	2,059 physicians, nurses & parents	Fever harmful (56.9% of parents)	Administered antipyretics – (38.8% of parents)
U.S.A [52]	2000-2001	Cross-sectional (Survey)	474 parents	N/A	Administered antipyretics – (39.5% of parents)
U.S.A [37]	2001	Cross-sectional (Survey)	138 caregivers	N/A	Administered antipyretics – (86% of caregivers)
Alberta/ Canada33	2002	Cross-sectional (Survey)	209 parents	Fever harmful (100% of parents)	Administered antipyretics – (95% of parents)
United Arab Emirates [47]	2005	Cross-sectional (25-item questionnaire)	264 caregivers	Fever harmful (82% of caregivers)	Administered antipyretics – (77% of parents)
Nigeria [15]	2006	Cross-sectional (Survey)	535 guardians	N/A	Administered antipyretics – (87.7% of guardians)
Taiwan [46]	2013	Cross-sectional (Survey)	649 parents	Fever harmful (86.6% of parents)	Administered antipyretics – (Most parents)
Nigeria [51]	2013	Cross-sectional (Questionnaire)	422 mothers	Fever harmful (82.7% of mothers)	Administered antipyretics – (87.5% of mothers)
Ireland [50]	2015-2016	Cross-sectional (38-item questionnaire)	1,104 parents	Fever harmful (60.4% of parents)	Administered antipyretics – (91.8% of parents)

Note: "N/A" implies data not available

**Table 1:** Studies reporting perceptions and home management of childhood fever.

death [12,20,33,34]. The ranking of these adverse effects of fever have however transformed with the passage of time. The 1980s revealed that parents were more preoccupied with brain damage as a consequence of fever (38% to 46%) than with febrile convulsions (15% to 39%) [20,34]. More recently, though fears about brain damage have remained relatively high (21% to 53%), anxiety over febrile convulsions have been significantly elevated (32% to 70%) [12,33]. Conversely, reports of parents' concerns of fever as a sign of serious illness have reduced from between 12% and 43% in the 1980s [20,34] to between 2% and 28% in the 2000s [12]. Furthermore, Canadian parents were recently reported to be more concerned about dehydration (80%) and discomfort (75%) being a consequence of fever [33] compared with the 1980s when only 4% to 8% were concerned [20].

Several cases of febrile illnesses in children are managed at home prior to presentation at healthcare facilities [35]. This practice of home management of fever happens to be common among caregivers in Nigeria and other sub-Saharan African countries where malaria

is endemic [28]. In the west-African country of Republic of Benin specifically in Togo, only 20% of the children with suspected febrile illnesses present and are seen at healthcare centers. The remaining 80% are usually treated with antimalarial medications at home [36].

## Practices

The common practice among caregivers is for fever to be treated at home before presentation at a healthcare facility (Table 1 below). Various studies have shown that fever reducing medications also known as antipyretics consistently remain the preferable method for managing fevers by many parents [37,38]. A comparison of studies conducted at different periods show that this practice of managing fever at home with antipyretics by parents increased from 67% in 1980 [20] to 95% in 2002 [33]. In the 1980s however, antipyretics were routinely given to children with temperatures in the normal range (67%) [20] and to those whose body temperatures were below 38.3°C (71%) [39]. In the 2000s, such practices witnessed a decline with only 23% of parents treating fevers

that were below 37.8°C with antipyretics [12]. Today, parents (46%) use antipyretics in a bid to promote their children's wellbeing during febrile episodes [4]. Other fever management practices common during the 1980s comprised tepid, cold water or iced-cold water sponging or baths, and alcohol rubs [20,40]. Whereas tepid sponging remained a popular approach to managing fever in the early 2000s [12,33], cold water or iced-cold water sponging or baths and alcohol rubs were no longer often used during this period [33]. Parents usually combine tepid sponging with antipyretic administration as home treatment measures for fever [41,42]. It is important at this juncture to note that one common home fever management practice that has changed since an association was established between Reye's Syndrome, aspirin use and influenza is administration of aspirin as an antipyretic medication. This practice is almost nonexistent as are the cases of Reye's Syndrome [43]. In a study carried out by Oshikoya and Senbanjo in Nigeria in 2008, home treatment of fever was primarily performed by partially disrobing and exposing children to ambient air, tepid sponging them, and using antipyretics such as paracetamol. Antimalarial medications and antibiotics were rarely used [14]. This is in contrast to an earlier study in 2001 by Fawole and Onadeko, also in Nigeria, which revealed that antimalarial medication would have been used by about 71 percent of mothers on their children at home for treatment of fever prior to reporting at healthcare facilities [18].

Furthermore, in Nigeria, the most common illnesses managed by alternative medicine practitioners also known as traditional healers is fever. The fever is often diagnosed based on clients providing an oral history of their symptom, the traditional healers performing a 'physical examination' then consulting oracles and when necessary interpreting dreams. Treatment is mainly with boiled herbs ("Agbo"), ground herbs ("Agunmu"), incisions and sacrifices [44].

## Conclusion

From the foregoing, the perceptions, perspectives and common practices associated with home management of fever have not changed significantly among parents, caregivers and other care providers in twenty-first century sub-Saharan Africa. This may be due in part to enduring cultural beliefs and norms and inadequate continuing health literacy among caregivers and care providers. There is thus need for culturally sensitive and competent health literacy interventions to mitigate deleterious impacts of perceptions, perspectives and common practices related to home management of fever in this part of the world [45-53].

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