Beliefs and Expectations of Canadian Parents Who Bring Febrile Children for Medical Care

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ABBRévIATION
ED—emergency department

Dr Enarson led the conceptualization and design of the study, developed, pilot-tested, and finalized the study tool; secured funding for the project; and led the data collection, coding of data themes, analyses and manuscript preparation. Dr Ali contributed to the study methodology and study tool development, participated in coding of data themes, reviewed data entry for verification, aided in securing funding for the project, and contributed to writing of the manuscript. Mr Vandermeer contributed to the data analysis plan, performed data analyses, aided in their interpretation, and contributed to manuscript revision. Dr Wright aided with study design and contributed to manuscript revision. Dr Klassen aided with study design and implementation, and contributed to manuscript revision. Dr Spiers contributed to the study methodology and study tool development, aided in securing funding for the project, and performed critical revision of the manuscript. All authors have given their final approval for this manuscript.

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WHAT’S KNOWN ON THIS SUBJECT: Fever phobia is a ubiquitous problem throughout the world. As a result, fever is pharmacologically overtreated, and medical attention is frequently sought by worried parents.

WHAT THIS STUDY ADDS: Most Canadian parents fear their child’s fever, resulting in aggressive surveillance and treatment. Parents expect information about fever etiology and how to care for their ill child. Few parents expect antibiotics and satisfaction with care is high.

abstract

OBJECTIVES: The purpose of this survey was to study the beliefs, expectations, and satisfaction of Canadian parents regarding fever and the treatment of their febrile children.

METHODS: A survey was developed exploring caregiver beliefs and treatment strategies, as well as expectations and satisfaction with medical care. Some items were modeled after previous studies to allow comparison. Caregivers with febrile children were recruited from 2005 to 2007 at 3 urgent care centers and emergency departments in Edmonton, Canada: a pediatric emergency department (n = 376), an urban urgent care center (n = 227), and a suburban urgent care clinic (n = 173).

RESULTS: High and rapidly rising temperature, as well as physical symptoms associated with fever, caused concern in most parents surveyed. Seventy-four percent of parents felt that the elevated temperature from fever was dangerous and 90.3% always try to treat it. Forty degrees Celsius was the most commonly sited threshold for danger. Identifying the cause (80.6%) and seriousness (87.4%) of fever were the most common stressors identified. Caregivers expected to receive information about the child’s illness and appropriate treatment. The parents most often wanted information about febrile seizures and the potential dangers of febrile illness. Only 16.7% of caregivers expected antibiotics. Nearly 92% of subjects were usually satisfied with medical care.

CONCLUSIONS: Fever phobia continues to be a significant issue for Canadian parents. As a result, they treat fever aggressively and often seek medical attention. Good communication is important for medical staff caring for febrile children and typically leads to satisfied parents.

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Childhood febrile illness is a stressful event for caregivers, at least in part because of pervasive and often unrealistic fears regarding the consequences of fever. Beginning with a survey in 1980, researchers have documented significant degrees of “fever phobia” in parents from numerous countries. These fears have contributed to making fever the most common reason for parents to bring their children to the emergency department (ED). Previous studies have demonstrated that parents use a combination of lay beliefs and their interpretation of medical knowledge to assess the welfare of their child during illness. Further, they fear that they might fail to recognize a serious problem and their child may die or suffer permanent harm. However, few investigators have examined the specific nature of the stresses that contribute to parental expectations and the determinants of satisfaction when they bring their febrile children for medical care.

Understanding parental fears, expectations, and frustrations is important to provide appropriate teaching and care, thereby reducing parental anxiety and improving parents’ ability to care for their febrile children. This study examines the fever-related beliefs, expectations, and satisfaction of Canadian parents bringing their young febrile children for medical care.

METHODS

Our survey was distributed to a convenience sample of parents who presented to selected medical facilities in the Edmonton (Alberta, Canada) area with children <6 years old, whose presenting complaint included fever. Accompanying adults who were not the primary caregiver of the child were excluded from participation in the study.

Three study sites were included: the ED of a pediatric hospital, an urban urgent care facility serving lower socioeconomic populations in the city, and a suburban after hours urgent care clinic serving a higher socioeconomic population. Sites were selected to optimize the diversity of the study population.

The study was conducted from September 2005 to October 2007. Research nurses or treating nurses/physicians distributed the surveys to caregivers after the patients had been triaged. Level of illness varied in the children of recruited parents, but all were considered medically stable by treating staff. Participants were asked to complete the survey at the end of their ED visit and return it in a sealed envelope to a secured box designated to the study. Alternately, they were permitted to return it by mail, and were provided with a preaddressed envelope.

The study tool consisted of 38 questions addressing 5 main themes: demographic characteristics, fever beliefs, fever-related behaviors, expectations, and opinions regarding fever-related medical care. Several items regarding feared outcomes and treatment practices were modeled after questions from Schmitt’s 1980 survey to facilitate comparison with this and other studies that have used these questions. Further questions were developed to explore other areas of interest related to parental beliefs, behaviors, expectations, and satisfaction. Included questions utilized multiple-choice, Likert scale, or open-ended response formats. The survey was then pilot tested to confirm face and content validity. The study was approved by the Health Research Ethics Board (University of Alberta) and appropriate operational approvals were obtained.

Data from surveys were entered into a study-specific Microsoft Access (version 11, 2003) database by one of the authors (M.C.E., S.A.) and consensus was obtained on all coding before analysis.

Demographic variables were correlated with responses to questions about beliefs and practices in the survey to generate hypotheses about the factors influencing fever-related behaviors. The following statistical tools were used for comparison of these variables: for continuous versus ordinal data, Spearman correlation; for continuous versus binary data, unpaired t test; for continuous versus categorical data, Pearson’s contingency coefficient; for ordinal versus ordinal data, Jonkheere-Terpstra test for doubly ordered contingency tables; for ordinal versus binary data, Cochran-Armitage trend test; for ordinal versus categorical data, Kruskal-Wallis test for ordered categories; and for categorical or binary data versus categorical or binary data, Fisher’s exact test. StatXact (version 7.0, 2005, Cytel Software Corp, Cambridge, MA) was used for correlation analyses. Performing such a large number of tests risks that some comparisons will be significant by chance alone. To account for this, a Bonferroni correction was conducted which yielded a $P$ value of $6.8 \times 10^{-5}$ to be accepted as the level for significance.

RESULTS

Demographics

The response rate was 376 (72.3%) of 520 at the pediatric ED; 227 (63%) of 360 at the urban, lower socioeconomic, urgent care facility; and 173 (46.6%) of 388 at the suburban urgent care clinic. This resulted in an overall response rate of 61.0%. Most respondents were mothers (81.5%) and most presented with their first (48.8%) or second child (33.8%). Other demographic features of...
the caregivers are shown in Table 1. Demographic features of the participants closely match the most recent census data for Edmonton.17

Fever Treatment

Most parents checked their child’s temperature at least every 4 hours: 31% of the parents checked temperature every 2 to 4 hours, 26.3% checked every 1 to 2 hours, and 21.6% checked every 30 to 60 minutes. A minority of parents stated that they checked temperature more than every 30 minutes (6.6%) and a similar proportion (6.4%) did not check temperature at all.

The caregivers’ approach to fever treatment is shown in Fig 1. Giving antipyretic medications was the most common action taken by parents; however, a substantial proportion of caregivers also used the other approaches listed.

Most (90.3%) of the parents always attempt to lower a fever (53.5% strongly agreed). Parents with higher levels of completed education were less likely to state that they always treat fever (Jonkheere-Terpstra test, T = 4.229, P < 0.001). Further, 55.7% of parents would wake their child from sleep to administer an antipyretic (23.4% strongly agreed). Approximately half (47.9%) of the parents worried about the side effects of the medications that they used.

Fifty-four percent of parents stated that they usually call a doctor or nurse when their child has a fever. Further analysis showed that younger parents (Jonkheere-Terpstra test, T = 4.229, P = 2.35 × 10−5), and parents with younger children (Spearman correlation, r = 0.235, P = 7.23 × 10−8) were more likely to call a doctor or nurse, whereas parents with more children were less likely to do so (Jonkheere-Terpstra test, T = 4.07, P = 4.71 × 10−5). Ethnic groups also had significant differences in their stated tendency to call a medical practitioner (Fisher’s Exact Test, D = 39.32, P = 2.05 × 10−7), with both white parents and African parents significantly less likely to call a medical professional than other ethnicities. The proportions of each ethnic group who usually call a doctor or nurse are shown in Fig 2. Most parents (89.8%) responded that they are confident in determining when to bring their child to medical care (34.6% strongly agreed). Further, 84% were confident in determining if their child’s condition was serious (25% strongly agreed).

Fears and Stressors

The proportions of parents who were worried by commonly occurring fever symptoms are shown in Fig 3. All of these symptoms worried a large majority of the parents. Parents were also asked about outcomes of febrile illness. Most parents feared dehydration, discomfort, seizures, and serious illness, whereas a minority feared meningitis, brain damage, blindness, coma, and death (Fig 4).
In our study, 40°C was the most common temperature considered to be the lower threshold for danger by parents (31.1%). A small number of parents felt that normal body temperatures, 38°C (0.7%) and low-grade fever of 38°C (5.7%) could damage a child. Sixty-nine percent of parents did not know how high fever could rise if left untreated. Seventy-four percent of respondents believed that fever alone could damage a child, with 22.4% agreeing strongly with the statement. Parents with higher levels of completed education were less likely to answer that fever alone could cause harm (Jonckheere-Terpstra test, T = 5.003, P = 5.63 × 10^{-7}).

Stressors that affect parents during their child's illness are shown in Fig 5. Identifying the cause and seriousness of the fever were the most common stressors. Feeling helpless was also of concern to most parents. Sixty-eight percent revealed that they worry about whether their trip to the clinic or ED was unnecessary. Seventy-eight percent of parents in the study agreed that they are reassured when a diagnosis of viral illness is given.

**Expectations of Medical Care**

Figure 6 illustrates parental expectations for their febrile child's medical visit. A follow-up question asked the parents to identify their most important expectation. Nearly 45% of respondents identified that receiving a specific explanation of the fever's cause was their most important expectation, whereas receiving advice on managing the fever was the second most common expectation at 23%. A further 13.2% felt reassurance was most important.

Failure to receive an antibiotic prescription was neither a parental expectation nor a common reason to be frustrated with medical care. When asked directly, only 10.8% of parents stated that they were disappointed by not receiving a prescription for antibiotics (1.9% strongly agreed); however, there was a significant difference among ethnic groups in their expectations for their child to receive antibiotics. Different ethnicities had significantly different tendencies to expect antibiotics (Fisher’s Exact Test, D = 44.08, P = 2.29 × 10^{-28}), and to be disappointed (Fisher’s Exact Test, D = 59.34, P = 3.36 × 10^{-21}) or experience frustration (Fisher’s Exact Test, D = 33.13, P = 3.55 × 10^{-16}) when antibiotics were not prescribed. The proportions of each ethnic group with these opinions are shown in Fig 7. Both White and Africans were less likely than other ethnicities to expect or be dissatisfied with not receiving antibiotics. Parents were also asked about the role of antibiotics in febrile illness. Although many (74.1%) correctly identified killing bacteria as a role, 27.1% felt that antibiotics were used to kill viruses. Only a small proportion of parents felt that antibiotics could be used to treat any severe illness (15.6%), elevated body...
temperature (8.2%), discomfort (8.2%), or to bolster immunity (7.9%). Just over 84% stated that they would like to receive more information about fever. The most common topics identified by parents are shown in Table 2.

Satisfaction With Care

Ninety-two percent of parents stated that they usually feel satisfied with the medical care they receive for their febrile child. The proportion of parents identifying with the suggested frustrations regarding medical care are shown in Fig 8. Only a minority of parents felt they had experienced any of the suggested frustrations.

The ability of parents to express disappointment to a medical professional was also studied. Ninety-three percent of parents stated that they felt they could communicate their true concerns to the doctor or nurse, and 89.2% usually felt heard and understood. Sixty-nine percent felt that they could express dissatisfaction to a medical professional. The most common reasons offered for being unable to express dissatisfaction are shown in Table 3.

DISCUSSION

For more than 30 years, research has demonstrated universally high degrees of fever phobia. Some of this fear is productive. Concerns regarding dehydration and signs that might indicate serious underlying illness are reasonable and important; however, a substantial proportion of parents in our study held unrealistic fears about the consequences of fever and most monitored and treated fever aggressively. This is common in other studies as well.

In spite of the numerous studies demonstrating fever phobia, little progress has been made in reducing unrealistic fears and focusing parents’ concerns to where they are most appropriate. This may be, at least in part, because healthcare providers also commonly have unrealistic fears concerning fever. Parents’ core beliefs and motivations also undermine any attempt to decrease fever phobia. Previous research has shown that fever makes parents fear that their child might be seriously ill and suffer irreparable harm.

Frequent checking of temperature and attempts to manage symptoms help parents maintain a sense of control and reduce feelings of helplessness. Further, seeking medical advice helps them to share the burden of responsibility.

Our study did suggest that the degree of fever phobia decreases as the child ages and the parent gains experience. Older parents, parents with older children, and parents with more children were less likely to seek medical attention for their febrile child. Also, parents who had completed higher levels of education were less likely to believe that elevated body temperature from fever was dangerous and were less likely to always treat fever. Each of these scenarios suggests a situation in which the parent would be expected to have more life experience.
Several beliefs and practices were significantly different among ethnic groups in our study. Previous studies have shown ethnic differences in parents’ perceptions and treatment of fever in Israel,7 Holland,10 Germany,12 and the United States.21,22 Although these trends are interesting and consistent with previous studies, they must be interpreted with caution because of the small numbers of participants from the minority Canadian ethnic groups.

Although the beliefs and fears of parents with febrile children have been well studied, their expectations and satisfaction with medical care have not been as well described. In one study of parents who brought their febrile children for medical care, 49% were motivated by a perceived lack of control of the condition, 17% by a fear of serious illness, and 34% by a desire for symptom relief.16 Thematic analysis in previous studies most often expect explanations of the cause of illness, prognosis, and advice regarding how to treat the symptoms at home.23 Our findings were very similar, with more than 90% of caregivers noting their expectations for a specific explanation, reassurance, and advice regarding the symptoms of fever.

Although it is clear that the caregivers have expectations regarding their child’s care, it has been reported that patient satisfaction does not appear to be dependent on expectation fulfillment.24 Patient and caregiver satisfaction seems to be predominantly influenced by the behavior of the medical staff.24–29 Provision of good information and explanations about the illness are particularly important.16,24–29 Most caregivers in our study expressed satisfaction with the care they usually receive for their febrile children and most denied any frustration. It appears that the caregivers were happy with the communication they received, as a large majority felt they could communicate their concerns and felt understood. Nevertheless, about 84% of the participants still felt that they wanted to receive more information about the care of a febrile child. So, while communication was good, more work is needed to determine the best content and delivery style for information regarding fever in young children.
REFERENCES


Most caregivers in our study denied wanting a prescription for antibiotics. Our analysis suggested, however, that there might be differences among ethnic groups regarding this desire. A previous study has also noted similar ethnic variations, with more Asian and Hispanic parents expecting antibiotics than White parents. In spite of this, recent studies have shown that patients are satisfied with medical care, even if their expectation for antibiotics is not met, provided that they receive an explanation for the medical decision. In fact, one study showed that patients trusted a doctor more if they did not prescribe an antibiotic than if they did. Clearly, patients desire good communication from medical staff and are more satisfied by receiving quality information, regardless of their initial expectations. Most caregivers in our study reported that they were confident in determining when their child’s illness is serious and when to seek medical attention. Yet, most also stated that they worried about whether their trip to the clinic or ED was unnecessary and that they are reassured when a diagnosis of viral illness is given. This apparent conflict likely illustrates the caregivers’ need to share the burden of responsibility with a health care worker, as has been described previously. Thus, even if unnecessary fears can ultimately be dispelled, health care workers will still provide a valuable service to parents of sick children by offering care and reassurance in a time of need.

Our study was limited by use of a convenience sample. Although our sample was large and represented the local population well, it was dominated by White parents with insufficient representation of ethnic minorities to allow conclusive analysis of ethnic influences. Further studies are required to explore these influences. Because the study was distributed to parents with currently febrile children, education provided during the visit likely differed from case to case and may have influenced the opinions of some of the participants. Further, limiting the study to parents of febrile children may overestimate the degree of fever phobia; however, published evidence also suggests that asking parents hypothetical questions about fever is a poor predictor of how they treat fever when it occurs. Thus, the opinions provided by parents of actively febrile children may be more accurate.

CONCLUSIONS

This study demonstrates that there is still considerable fear and aggressive treatment of fever among Canadian parents. Although vigilance about febrile illness is appropriate, parents require further education to focus on dangerous symptoms and signs rather than absolute temperature rise and the generally harmless, although sometimes distressing, manifestations of fever. Most parents want more information on fever and better teaching from medical professionals. Although this may ultimately help them to better care for their children, many parents will likely continue to benefit from reassurance from health professionals when caring for sick children.


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