Content Analysis of Fever Handouts Online:
Could Parent Education Materials Perpetuate Fever Phobia?

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Abstract

Background. Fever is one of the most common reasons children present to their physicians. Fever phobia has been identified as a major contributor to parental concern over the presence of fever and many parents identify the internet as a preferred source of information on fever.

Objective. The purpose of this study was to identify the extent to which information on the internet contributes to the parental misconceptions which perpetuate the fever phobia phenomenon.

Methods. Articles addressing fever in children in the top 20 hits on all three of the top search engines were included. A content analysis of ten sites was performed using emergent coding methods and ten categories were determined. Reliability was acceptable (Cohen's Kappa = 0.791). Discrepancies were corrected by consensus. Frequencies of individual categories were computed.

Results. The categories and their respective frequencies were assessment of fever (22.2%), when to call the doctor (17.2%), how to treat fever (16.9%), definition of fever (15.9%), other (6.4%), how not to treat fever (6.2%), parents' perception of fever (4.7%), workup of fever (4.4%), symptoms of fever (3.7%), and febrile seizures (2.4%).

Conclusions. Internet articles relating to fever in children do not appear to contain information that could perpetuate the phenomenon of fever phobia. While alarming material regarding fever is present in the literature available on the internet, there appears to be a larger proportion of content dedicated to educating parents of the positive value of fever and to eliminate fear of fever.

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Introduction

Fever is one of the most common complaints in any pediatric patient encounter.[1] This may be due to the level of understanding of "what constitutes a fever" and the "causes of fevers" which vary across parents and the medical community. As a result, parental fear of fever and its potential outcomes are prevalent. Schmitt[2] first described "fever phobia" in 1980 and, since that time, many studies across many countries have examined this phenomenon.

As recently as 2008, a study found 91% of parents believe fever can cause harm.[3] Another study found parents have poor knowledge of fever and measure it inaccurately leading to needless consultations and hospital admissions.[4] However, the underlying causes of fever phobia are unclear.

As technology advances, more individuals are turning to resources such as the internet to learn about their medical

conditions.[5,6] In a study of internet use for health information, as many as 87% of respondents had routine internet access available and as many as 60% were using the internet for health related information.[6] In addition, information available online often is formatted as a handout or a portable document file (PDF) for easy printing and dissemination. Such handouts are often the mainstay of parent education programs[7], and have been shown to improve parent's knowledge and compliance with care.[8]

While the internet can serve as a great resource for parents, it can give inaccurate and dangerous information. Only 34% of parents who search for medically-related information on the internet discuss the information they find with their physician.[6] Moreover, as the generations who have grown up using computers begin to have children, it is likely the internet will become a more common source of information. Currently, internet use in younger parents is more than double that of older generation parents.[9]

Previous studies primarily focused on defining fever phobia and delineating misconceptions of fever. However, it is important to determine why these misconceptions arise and where inaccurate information is obtained. With expanding technology, one must explore the quality and content of information presented outside the physician's office. The purpose of this study was to determine what information is available to parents searching for fever health information via the internet and whether any of the material may enhance misconceptions of fever.

Methods

To identify fever websites, the term "fever" was searched utilizing the top three search engines identified by Nielsen NetRatings: Google, Yahoo, and MSN.[10] Search terms included all combinations of "fever" or "temperature" and "child" or "children". Websites were included if the information (a) was formatted as a handout, PDF, or had a printable version available, (b) was specific to fever, (c) had an English version available, and (d) was directed at a parent/guardian/adult. Websites were excluded if (a) it took more than three additional links to reach the handout, (b) the handout was more than four pages long, or (c) the handout applied to a limited population (those with epilepsy or seizure disorders). Handouts were included in the analysis only if all three search engines resulted in a hit. Ten handouts were identified and a Flesch-Kincaid[11] readability level was assessed for each. Then, individual ideas were unitized. A total of 1311 separate units were identified. Each website contained between 35 and 289 units with an average of 126.5 (SD=73.33).

A code book of different theme categories found within the fever sections of the websites was created. Emergent coding methods[12] were utilized following preliminary examination of data. Three researchers independently reviewed the materials to design a set of features identifying the initial checklists. Emergent coding methods resulted in ten categories (see Table 1 for complete list of categories). This method allowed the content itself to determine the categories. Two investigators independently reviewed the content and compiled a list of emerging themes. Next, they compared lists and reconciled any differences to develop a final checklist.

This consolidated checklist was used independently to apply coding and a periodic quality control check was established. The reliability code, utilizing the Cohen's Kappa, was acceptable at 0.791. Any discrepancies in coding were discussed by the two original coders and continuing disputes were settled by a third researcher.

Results

The Flesch-Kincaid[11] reading grade level ranged from 7th to 11th grade (M=9.37, SD=1.43). Frequency analysis of each theme category revealed that "assessment of fever" was mentioned most often and accounted for 22% of the coded units (see Table 1). Other frequently-mentioned categories included "when to call the doctor", "how to treat fever", and "definition of fever" which accounted for 17%, 17%, and 16% of coded units, respectively. Categories mentioned the least included "febrile seizures", "symptoms of fever", "workup of fever", "parents' perception of fever", "how not to treat a fever", and "other".

Varying representation of the categories was noted among the ten articles chosen for analysis (see Table 1). Two of the categories, "definition of fever" and "assessment of fever", were mentioned in all ten articles. However, two categories, "workup of fever" and "febrile seizures", were mentioned only in three of ten articles.

Discussion

Only four websites had readability levels below the 9th grade level. The average reading ability for the general population is 8th grade,[13] and information presented at higher levels may be misinterpreted, misunderstood, or ignored due to a lack of comprehension. Therefore, below the 9th grade level and preferably closer to the 5th grade level is recommended for written patient information.[14]

The themes in the articles chosen for analysis represent appropriate topics relating to fever in children. The content of some themes, such as "definition of fever" and "parents' perception of fever", largely focus on educating parents about the nature of fever and its role in fighting infection. Information of this sort should allay parental fears regarding fever in their children. The categories "how to treat fever", "how not to

treat fever", and "when to call the doctor" help parents sort through the methods of caring for their child during illness and allow them to choose appropriate therapeutic techniques. Together, these five categories account for 60.9% of the total units analyzed. Therefore, a majority of the content within the ten articles chosen for analysis was intent upon educating parents and diminishing inappropriate or unnecessary treatment of fever.

While still supplying parents with accurate information, other categories such as "febrile seizures" and "workup of fever", tended to highlight the rare, but serious, effects of fever. Such information may serve as a source of parental concern.[1-5] However, as these themes accounted for only 2% and 4% of content respectively, this source of potentially fever phobia-inducing content is unlikely to be a major contributor to the phenomenon of fever phobia.

Content analysis of ten popular web articles relating to fever in children suggested such articles likely do not perpetuate or contribute to the phenomenon of fever phobia. While alarming material regarding fever was present in the literature available on the internet, there appeared to be a larger proportion of content dedicated to educating parents of the positive value of fever and the elimination of fear over fever.

This study had several limitations. Unitizing statements is a subjective process, even with independent reviewers. Codes may have been assigned inappropriately to certain units or important codes may not have been included. Assumptions were made regarding how parents access fever information and the use of the three internet search engines and online handouts. Other limitations regarding internet content also apply, such as rapidly changing information and content links.

Table 1. Frequency of theme categories on ten fever handouts.

Theme Category	Frequency (%)	# of Articles (%)	Definition	Examples	
Assessment of Fever	291 (22.2%)	10 (100%)	Concrete ways to take a temperature, types of thermometers used and the benefits/dangers and accuracy of each type, and how readings compare to one another.	If your child is younger than three months, you'll get the most reliable reading by using a digital thermometer to take a rectal temperature.	To test your thermometer's accuracy, bring it to your next visit to your pediatrician and compare the reading it gives against the one that your pediatrician uses.
When to Call the Doctor	226 (17.2%)	9 (90%)	Sign/symptoms of when to call the doctor or go to the ER, and when not to call a doctor.	If your child is less than three months old and has a temperature over 100.4 degrees F, call your doctor right away even if he or she doesn't seem sick.	You should also call the doctor if your child doesn't wake up easily.
How to Treat Fever	221 (16.9%)	9 (90%)	Directions/guidelines to parents on assessment of fever, and directions on when to treat and how to treat fever, what to do if you suspect a fever, and how these methods work.	Because your body loses more water with a fever, be sure to drink plenty of fluids to avoid dehydration.	Treat fevers only if they seem to be causing discomfort.
Definition of Fever	209 (15.9%)	10 (100%)	What defines a fever, how fever is produced, and body changes and etiology of fever.	Because fevers may rise and fall, a child with a fever might experience chills as the body tries to generate additional heat as its temperature begins to rise.	Fever is a part of the body's defense mechanism against viruses or bacteria.

Other	84 (6.4%)	9 (90%)	Any statement that does not fit in the other categories.	The following inform-ation is for education only and should not replace the advice of your child's doctor.	Reye's syndrome is a serious illness that can lead to death.
How Not to Treat Fever	81 (6.2%)	9 (90%)	Directions/guidelines on how to not treat fever and explanation of why.	Infants under two months old should not be given any medications for fever without being evaluated by a doctor.	Do not use aspirin to treat fever in children.
Parents' Perception of Fever	61 (4.7%)	8 (80%)	How parents feel about fevers, irrational/rational fears about fevers excluding seizures, statements addressing parent fears, general information to allay fears.	Many parents also fear that untreated fevers will keep going higher and higher.	It is unlikely that your child's temperature will get high enough to be dangerous.
Workup of Fever	58 (4.4%)	3 (30%)	How to assess the etiology or cause of fever and what these tests mean, and how the tests are administered, what parents can expect from the testing procedure.	Treatment depends on the duration and cause of the fever and on other accompanying symptoms.	Your doctor will then perform a physical examination and may order tests.
Symptoms of Fever	48 (3.7%)	6 (60%)	Symptoms of fever.	Sick children are often tired and bad-tempered.	Sometimes kids with a fever breathe faster than usual.
Febrile Seizures	32 (2.4%)	3 (30%)	Definition and physiology of febrile seizures and consequences.	Although they're alarming for parents the vast majority of febrile seizures cause no lasting effects.	Call for emergency medical assistance if a seizure lasts longer than 10 minutes.
Total	1311 (100%)				

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