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## **Knowledge, attitudes and beliefs of parents regarding fever in children: a Danish interview study**

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### **Short title**

Danish parents knowledge and attitudes to fever

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**Abstract****Aim:**

Fever and febrile illness are some of the most common conditions managed by parents. The aim of this study is to examine the knowledge, attitudes and beliefs of parents around fever in children under five years of age.

**Methods:**

Between July and August 2014, a convenience sample of parents was invited to participate in this study. The study took place in Copenhagen, Denmark. Verbal consent was obtained from participants prior to completing semi-structured interviews. Results were analysed thematically using a constant comparison method.

**Results:**

Twenty one parents participated in the study. Five themes emerged from the data: parental concern, help-seeking behaviour, parental knowledge, parent fever management practices and initiatives. Parental concern was the most prevalent theme across the interviews.

Parents used a range of information sources to obtain their knowledge on management of fever, however, due to issues of trust with these sources, reassurance was often sought from healthcare practitioners. There was a desire amongst most parents for initiatives to be introduced which provide general information on how to manage fever in children.

**Conclusion:**

Parents were very concerned when their child was febrile and instigated practices obtained from accessible information sources. This study has identified a need for specific and reliable information initiatives to be introduced as a means of reducing parental concern and ensuring evidence-based strategies for managing a child with fever.

**Keywords**

Attitudes, children, fever, knowledge, parents

**Key Notes**

Caregivers seek reassurance from a variety of sources including healthcare practitioners.

Further initiatives are required to provide trustworthy, accessible information to parents on the management of fever associated with febrile illnesses in children. Healthcare practitioners should encourage parents to manage the general condition of child rather than focussing on the fever alone, as fever is simply one symptom of a febrile illness.

## **Introduction**

Management of fever and febrile illness in children can be a challenge for parents as it is not well understood in the general population (1, 2) despite fever being one of the most common childhood conditions treated by parents (3, 4). Many parents find the task overwhelming (5), resulting in concern and anxiety (6-8). Similarly, it has been established that healthcare professionals' understanding of the nature, consequences and treatments for fever are often lacking (4, 8-10). Every year there are numerous cases of unintentional over- and under-dosing of children with antipyretics (11). It is clear therefore, that research is required in this area. Parental perspectives on fever and febrile children can influence the management of fever and hence outcomes (4).

Previous research suggested that the instructions and definitions which parents get regarding fever management are often inconsistent and incomplete (12, 13), however guidelines and recommendations regarding the management of fever and febrile illness in children are now available (14). Despite guidance on the management of fever and febrile illness (14), fever remains one of the most common reasons for consultations with healthcare practitioners (12, 15). These consultations are often unnecessary (4), however parents consult as they feel underequipped to manage fever (5) and seek reassurance that they are acting appropriately. Assurance is also sought from a variety of other sources such as hospital doctors (16).

Whilst Danish research in this area is limited, previous work has suggested that clearer information for parents may help regulate antipyretic use in Denmark (17). This study aims to explore the perspectives of parents of young children when their child has a fever or febrile illness.

## **Method**

Ethical approval was deemed unnecessary for this study by the Danish Committee System on Health Research Ethics (region Hovedstaden) as this study was considered an interview-based study. The interview topic guide, (supplementary material appendix A) was developed based on clinical experience, a systematic review of the literature, feedback from paediatricians and researchers, and was piloted with five parents.

The study took place in the Nørrebro area of Copenhagen, Denmark. Nørrebro is one of the ten official districts of Copenhagen and covers an area of 3.82 km<sup>2</sup> with a population of over 70,000. Convenience sampling was used to identify participants for the study. The researcher, LJS, approached parents in a café or in a public park and explained the study to them. An information sheet was provided to the parents. Inclusion criteria for the study were parents of children where at least one child was aged five years or younger at the time of the study (July-August 2014). In accordance with the study focus on uncomplicated fever and febrile illness, we included parents of healthy children. Parents of children with complex medical backgrounds or prematurity were excluded because their perspectives were likely be influenced by these additional factors. Non-English speaking parents were excluded due to lack of resources for translation. If parents met the inclusion criteria and they provided verbal consent, they were enrolled in the study. Semi-structured face-to-face interviews were conducted by LJS a research pharmacist not involved in the care of the children. Either one or both parents were interviewed depending on parents' preference.

Interviews were audio recorded and transcribed verbatim. The accuracy of transcripts was verified by MK and JR by comparing audio interviews to transcribed interviews. JR verified the audio recordings to ensure that any colloquialisms were addressed and correctly interpreted. Participants were not asked to verify their transcripts. Repeat interviews were not conducted. Participant recruitment and data

collection continued until data saturation occurred (18). No new data were found from interview 18 onwards.

Transcripts were entered into NVivo 10 Software (19). Data collection and thematic analysis were conducted concurrently using a constant comparison method (20). LJS and MK identified concepts inductively from the data, and similar concepts were grouped into themes. This method was used to collect information and group information together. The preliminary themes were discussed with JR who read the transcripts to ensure all data had been captured. Conceptual links among themes were identified and mapped into a thematic schema.

## **Results**

Of the 24 parents approached, 21 (87.5%) parents of 21 children participated. Reasons for non-participation were parental time constraints. The interview duration ranged between 5 minutes 4 seconds in length to 14 minutes 38 seconds, with an average length of 8 minutes and 52 seconds. Short interviews facilitated a high response rate and captured salient data.

Twelve female (age range; 27-38 years, median 32.4 years) and nine male parents (age range; 31-43 years, median 35.5 years) were interviewed. Fourteen (66.7%) first-time parents participated. The children, about whom they were interviewed, ranged in ages from two weeks to 4 years of age.

## **Themes**

Five themes emerged from the data: parental concern; help-seeking behaviour; parental knowledge; parent fever management practices and initiatives.

### ***Parental concern***

Parental concern was one of the main themes associated with fever and febrile illness. Parents were generally concerned when their child was unwell “*and you get*

*concerned no matter what...*" (Interview 1); however, this was heightened when the child had a febrile illness *"I was very much worried"* (Interview 5). The concern stemmed from fear around complications including febrile convulsions *"I'm worried about cramps"* (Interview 6) and infections which may arise as a result of the fever *"I would worry if it's something that ...like I don't know ..if it could be an infection or any disease that would evolve really fast"* (Interview 13).

The fear that parents experienced when their child had a fever was inversely proportional to their level of experience. When parents had less experience, concerns were greater *"In the beginning we did, we did give them a call, the doctors because it is our first child"* (interview 6). Concern also lessened with a subsequent child *"I would say I'm less concerned now, because we have had five years with another child and I've been through, you know, different diseases, normal child diseases..."* (Interview 2).

### ***Help-seeking behaviour***

Parents used a variety of information sources to obtain their knowledge of fever and the management of a febrile child. Sources included: doctors, school (parental education), books, family, friends, internet, public health nurse, 1813 (the 1813 number is an initiative since January 2014 for patients to seek assistance and advice over the phone from a qualified healthcare professional). Parents also relied on common sense, experience and intuition.

Parents needed reassurance with regard to the trustworthiness of sources; this was especially true of internet sources *"sometimes we use it...but I know that you have to be very careful about what you read..."* (Interview 4). They wanted something that was fast to access but were aware of the huge amounts of information available *"Well the problem with looking things ? up? is that you never know if you can trust the information, the more solid and easy to go to and authoritative information that you can look up in a second, the better, I guess"* (Interview 2) and the need to be



able to make good choices *“Trust is a big issue, ‘cos there’s so much information”* (Interview 2).

Parents gave a variety of reasons for consulting their doctors but generally they would not consult their doctor if their child seemed well enough and would only refer if the child appeared to be very ill or if they suspected that the fever could be related to something more sinister *“I think, ... (concerning fever) it would only be if, if they, were extraordinarily ill, if they were completely lacking energy”* (Interview 8).

Parental fear of meningitis encouraged attendance at the emergency department (ED). Parents visited the ED when there were *“red dots”* (Interview 1) or when the child’s neck was stiff. Other reasons included: screaming, petechiae, fever greater than three days or fever of sudden onset, height of the fever. Insufficient reassurance coupled with parental intuition caused others to attend the ED with children *“if... talking to a doctor didn’t calm me down, if I kind of had a feeling that this, that this isn’t normal at all, or that one of them was unresponsive ..yeah some sort I think”* (Interview 8).

### **Knowledge**

Some parents felt that they lacked knowledge of what fever was and admitted that they knew *“not anything really”* (Interview 4). However, when parents were asked additional questions it appeared that they had underestimated their knowledge of fever *“I have been told that the fever is actually a good thing for the body and that’s because it’s working on something else, so the fever in itself is not dangerous”* (Interview 12).

Definition of normal temperature and febrile temperature varied among parents. The definition of normal temperature provided ranged from 36°C to 38°C (n= 21 parents) while the definition of febrile temperature ranged from 37°C to 39.5°C (n=21 parents). Parents had a good understanding of the causes of fever *“That it’s*

*most likely caused by some viral infection or bacterial and that mostly it passes in its own accord*" (Interview 8).

The benefits of fever were understood by most parents and listed in thirteen interviews *"it's a sign that the immune system works ... it's a healthy way of reacting"* (Interview 7). However, fears associated with fever were not always fully informed *"I think the only thing that I was concerned about or know is that it supposedly enters your brain when it's over 40 or 41"* (Interview 16).

Parents were however well informed regarding ways to recognise signs of fever *"Well I know that by how hot he is, how warm he is ... but I think the first sign would be him being uncomfortable, not being himself"* (Interview 10). Many signs were used to identify fever including red cheeks, blurry eyes, behaviour change and whining.

### ***Parent fever management practices***

In fifteen of the interviews, parents stated that they used a thermometer to verify fever. The majority of parents (n=13) used a rectal thermometer to confirm fever, particularly in younger children *"Usually rectal thermometer"* (Interview 9). With older children an oral thermometer was used *"I have a son who is 6, and ...we have another thermometer ...that he puts under the tongue"* (Interview 8).

The majority of parents used non-pharmacological methods of treating children in the first instance *"I just see to it that they are comfortable, and that they have enough fluids, mainly ... if they don't seem overly ill then, I'm not very concerned about it and I don't change, how we handle them"* (Interview 8). Pharmacological management was usually reserved and given *"only if it's very necessary"* (Interview 1).

There was a general dislike of using medicine to treat fever: *"...I wouldn't use (medicine), if it's only fever..."* (Interview 15); as well as some beliefs that it could

lead to something worse *“we also have this thing about medicine... I’ve read about autism... could be a major factor”* (Interview 1).

### **Initiatives**

There was a desire amongst most (n = 11) parents for accessible information regarding management of fever in children to be introduced. There was a general wish for more information *“I think it would be nice to have a little bit more information”* (Interview 4). Some parents suggested that a mobile phone app would be appropriate *“yeah, maybe an app ..an app could be fine also”* (Interview 7).

Other parents preferred the idea of hard copy information *“...a little book... which ah described the first year of the child”* (Interview 1). Further suggestions looked at the importance of being clear *“... as a parent it’s always nice with very simple and straightforward guidelines that for instance when your child has a fever”* (Interview 12).

Several parents would like their doctors to use the opportunities of a clinic visit to inform them *“...the doctor could say it at the 5-week or 5-months (check-up)”* (Interview 13).

### **Discussion**

Semi-structured interviews were conducted with parents of children aged less than 5 years of age to explore their knowledge, attitudes and beliefs regarding fever and its management. Five themes emerged from the data: parental concern, help-seeking behaviour, parental knowledge, parent fever management practices and initiatives.

The study found that parents had a good understanding of fever and febrile illness. However, perceived lack of knowledge caused increased concern which was the catalyst to seek help. There was a desire for consistent, trustworthy, accessible information sources to be provided to deliver guidance and reassurance to parents.

### Parental concern

Parents in this cohort discussed the positive benefits of fever together with concern when their child was unwell. Similar to other research, concern appears to decrease as the age of the child increases and parental experience increases (6). Parents in this study were concerned about underlying condition(s) which could be causing the fever along with complications associated with fever. Previous research has shown that parental fear is directly linked to fears of the child suffering irreparable harm and that the child may be seriously ill (17, 21, 22). This concern encouraged help-seeking behaviour.

### Help-seeking behaviour

The theme of help-seeking behaviour was shown to be related to the desire to share responsibility and to seek reassurance. Previous research has shown that more than 90% of parents contact their doctor for advice about fever in children (17).

Parents in this study used a variety of information sources. The need for reassurance demonstrated by parents may be linked to a perceived lack of knowledge in the parent coupled with trust in healthcare practitioners' experience and training.

### Parental knowledge

The third theme related to parental knowledge which was shown to be quite high; a finding which contrasts with other studies (23). Having acknowledged this, the range of temperatures given by parents as "normal" versus "febrile" varied widely, perhaps highlighting the discrepancy between general and specific knowledge. Variation in temperature definition was also identified in other studies (24, 25). Most parents noted that fever was beneficial to the immune system which is in stark contrast to previous studies describing that many parents hold misconceptions regarding fever

and its consequences which can lead to overly aggressive treatment of the condition (8).

### Parent fever management

Parents demonstrated that they knew and were aware of the possible side effects of medications including antipyretics (26). The over-the-counter status of paracetamol did not encourage liberal use of the drug and did not convey a sense of efficacy and safety which warranted generous use as demonstrated by parents' watchful waiting approach and cautious attitude to the use of pharmacological fever management strategies. This contrasts with previous findings where there was a reliance on pharmacological methods (17, 23). The majority of parents in this cohort used a rectal thermometer to measure temperature. This contrasts with previous research which showed that rectal temperature measurements were perceived by parents as the second best place to measure temperature (27).

### Initiatives

The final theme which emerged was a desire for further information delivered through initiatives to help, guide and reassure parents when managing a child with fever. Research has shown that parents require reliable evidence-based information (7). Perhaps parents should be encouraged to manage the general condition of the child rather than focussing on fever itself (28). Parents in this study illustrated that there is a desire for more clear and trustworthy information. There was a wide variation observed in the temperatures at which parents defined normal temperature and fever. Healthcare practitioners should use specific temperatures and definitions when speaking about fever and its management (13). Opportunities at clinic appointments should also be used to impart information about fever to parents.

### Conclusion

This study highlights that parents have a good understanding of fever and febrile illness. Parents prefer to use non-pharmacological fever management strategies before engaging with medication to manage fever. Parents use the resources available to them to optimise the care of their child/children. Further initiatives are required to provide a trustworthy accessible information source. Clinic appointments should also be used to impart useful information to parents.

### **Strengths and limitations**

This research used a convenience sampling method, which may be considered a limitation of the work. All participants in this study were based in the same region in Copenhagen and may hold different views from those in other regions and countries. Furthermore, only parents with fluent English were invited to participate due to resource constraints. The majority of the participants were mothers which may affect the results. The sample size was small, however data saturation was reached as per the Francis method (18). Demographic details collected were limited, thus the influence of other factors (e.g. educational status) could not be explored. Finally, participants were informed that the study was being carried out by the University of Copenhagen and University College Cork, which may have influenced answers obtained.

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### **Abbreviations**

Emergency Department (ED)

### **Conflict of interest**

The author's declare that there is no conflict of interest.

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