

Assessment of Knowledge and Performance of the Parents at the Management of Fever in Children

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Abstract

Background

When a child's body temperature rises, most parents become very worried that high fever may harm the child; in this study, knowledge and performance of the parents at the time of fever in children and how they act when encountering children's fever were studied.

Materials and Methods

In this cross-sectional descriptive study, samples (300 parents of children under 10 years) were selected using the convenience sampling method among the children admitted to Children's Hospital of Tabriz, Iran, and these parents completed the research made questionnaire of parental knowledge and performance at the time of fever in children. Data were analyzed using SPSS version 20.0.

Results

The most common complication of high fever from the parents' views was febrile seizure in 141 cases (47%). The use of corticosteroids for the treatment of fever in this study was observed in 23 cases (7.7%), and 40.7% of mothers had received their information about fever and how to manage it in children from doctors and nurses. In this study 87 (29%) of mothers had used thermometer to check for the child's fever. In total, 53% of mothers knew the correct definition of standard fever temperature. Results showed that 161 (53.7%) of mothers believed in feeding the child more fluids than usual, 21 (7%) believed in feeding the child less fluids than usual, and 118 (39.3%) believed in feeding the child the same amount of fluids as before. In total, 25.7% of mothers had used antibiotics to treat their child's fever.

Conclusion

"Fever phobia" continues to be common among parents. Parents have low level of awareness about children's fever. Such low awareness and parents' wrong perception of fever and their excessive fear and anxiety cause them fail to act properly.

Key Words: Children, Fever, Knowledge, Performance.

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1- INTRODUCTION

Fever is a response from the body to some situations, the most common of which is infection. Hypothalamus is a part of the brain responsible for controlling body temperature. Hypothalamus uses raising the body temperature as a way to deal with infectious agents (1). However, reasons other than infection may also cause a rise in body temperature (2). Fever can also be a response to the release of internal fever factors during infections, inflammatory, rheumatism, and malignancy processes, as well as external factors such as microbes and toxins (2, 3). Parents usually become extremely worried when their child's body temperature rises. However, in many cases, children recover without needing any treatment and merely by 2 to 3 days of rest and parental care. Studies show that many parents use antipyretics even when the child has a low-grade fever or does not have a fever at all (3, 4). Thus, fever is still one of the most common reasons that parents make a doctor's visit or use emergency services (4, 5). In some sources, frequency of visits to the doctor due to fever in children has been reported as 19 to 30%, or about 50% in other sources (2, 3).

Most parents think that fever is causing serious harm to their child, while according to studies; these injuries are very rare, which is referred to as fever phobia in these cases (6). Fever phobia is described as unrealistic and exaggerated misconceptions of parents whose children have a fever (7). Studies have shown that parents usually consider fever as a disease rather than a symptom of a disease, and, even sometimes experience unnatural fears when their child has fever (8). This wrong perception of fever by parents and their excessive worries lead to repetitive visits to health care centers and impose unnecessary costs. Parents' confusion may result in the use of inappropriate treatments and sometimes poisoning

caused by consumption of substandard drugs, leading to multiple visits to pediatric emergency facilities (9, 10). Studies show that children's health care providers, especially physicians, provide a valuable opportunity to influence parents' understanding and perception of fever (11). Studies in the field of parent awareness regarding fever and how they act in such situations show that parents often have an incorrect understanding of fever and therefore do not act properly (12, 13). In this study, knowledge and performance of the parents at the time of fever in children and how they act when encountering children's fever were studied.

2- MATERIALS AND METHODS

2-1. Methodology and Study Population

In this cross-sectional descriptive study, the studied population included parents of children less than 10 years admitted to Children's Hospital of Tabriz.

2-2. Data Collection Method

Samples were selected using the convenience sampling method and were enrolled after informed consents were obtained. Sample size was determined as 300 parents of children under 10 years.

2-3. Data Collection Tool

Data was collected using questionnaires containing 14 items on the demographic characteristics of the mother and child, as well as 21 items on the parents' actions when their children have fever. To determine the validity of the questionnaire after the design, 12 of the faculty members will be consulted. The validity of the tool in this study is content validity and its Cronbach's alpha value was 0.94.

2-4. Data Analysis Method

Data were analyzed using SPSS version 20.0. Descriptive statistics (frequency,

percentage, mean and standard deviation) was used to assess parents' knowledge and practice and their socio-demographic characteristics, and inferential statistics (Chi-square test) was used to examine the relationship between variables (in this study, if the level of significance (P-value) was less than 0.05, null hypothesis was rejected, meaning that the variables were related).

2-5. Implementation

In this cross-sectional descriptive study, samples (300 parents of children under 10 years) were selected using the convenience sampling method among the children admitted to Children's Hospital of Tabriz. Inclusion criteria included parents having a child of less than 10 years (confidentiality of information was observed). Data were collected using questionnaires on parents' practices when encountering children's fever through face-to-face interviews by a general practitioner.

A part of the questionnaire (14 items) included parents' demographic characteristics (age, gender, and education, family size and number of children, family economic status and place of residence) and child's demographic characteristics (age, gender, history of hospitalization and seizures, weight, diet, and body temperature). Twenty-one items were on parents' practices when encountering children's fever.

2-6. Ethical Considerations

- 1) Explaining the objectives of the study to parents,
- 2) Obtaining written consent from parents,
- 3) Information obtained from parents were kept confidential,
- 4) Ethical principles were observed and reported regarding the use of resources in the research,
- 5) Approved by University's Ethics Committee (ID code: 11/14-92/1),

3- RESULTS

The mean age of the mothers was 29.82 ± 14.1 years. In terms of education, 2.3% were illiterate, 8.3% had middle school education, 17% had high school education, 27% had a diploma, and 45.3% had university education. In terms of residence location, 83.7% resided in urban areas, 15.3% resided in rural areas, and 1% was nomads. Of 300 children who were enrolled, 163 (54.33%) were girls and 137 (45.66%) were boys. Their mean age was 4.13 ± 0.371 years, and their mean weight was 16.58 ± 0.831 kg.

Children were the first born in 52.7% of the cases; second born in 27% of cases; third born in 8.7% of the cases; and fourth and fifth born in 1.7% of the cases. The number of children was one in 48% of cases; two in 31.7% of cases; three in 15.3% of the cases; and four and higher in 5% of the cases. The number of family members enrolled was two in 1% of cases; three in 49.3% of cases; four in 35% of cases; five in 10.7% of the cases; and six and seven in 4% of the cases. In total, 263 children (87.7%) had a history of fever, 44 (14.7%) had a history of hospitalization due to fever, and 13 (4.33%) had a history of febrile seizure. Among the enrolled mothers, 36°C by 0.7% of mothers, 37°C by 6%, 37.5°C by 13.3%, 37.8°C by 12.7%, 37°C by 35%, 38.5°C by 10.7%, 39°C by 17.3%, and 40°C by 4.3% of mothers were considered as the fever temperature (**Figure.1**).

Of the 300 mothers who were studied, 191 mothers (63.7%) checked for fever through touching the child's body, 87 (29%) checked for fever using a thermometer, and 22 (7.3%) checked for fever through the child's restlessness. Mothers monitored the child's fever every hour in 27.7% of cases; every half hour in 29% of cases; every two hours in 10.3% of cases; every less than half an hour in 11.3% of cases (1% every 5 minutes, 4% every 10 minutes, 5.3% every 15 minutes, and 1%

every 20 minutes); every 45 minutes in 5.4% of cases; and at intervals of over two hours in 16.3% of cases (4% every three hours, 4.7% every 4-5 hours, 2.3% every 6 hours, and 5.3% every 8 hours). Of 300 mothers, 177 (59%) believed in continuing breastfeeding at the time of the child's fever, 57 (19%) believed in the cessation of breastfeeding at the time the child had fever, and 66 (22%) did not comment on this case (no choice was selected). Regarding the mothers' practices in terms of feeding the children with fluids, 161 mothers (53.7%) believed in feeding more fluids than usual, 21 (7%) believed in feeding less fluid than usual, and 118 (39.3%) believed in feeding fluids similar to ordinary days. In total, 119 mothers (39.7%) had used antipyretics, 77 mothers (25.6%) had visited doctor or medical center, 39 mothers (13%) had reduced the child's clothes, 56 mothers (18.7%) had used foot bath, and 9 (3%) had practiced cooling of the environment as the first action when encountering children's fever. Among the practices taken by parents when the child has fever, use of antipyretics was selected 199 times (66.3%), visiting a doctor or medical center was selected 187 times (62.3%), reducing child's clothes was selected 138 times (46%), use of foot bath was selected 188 times (62.6%), feeding fluids was selected 52 times (17.3%), and cooling the environment was selected 17 times (5.6%) by the mothers in the questionnaire (mothers were able to choose more than one choice in the questionnaire).

Mothers had gained their information about fever and children's fever management through reading books in 3.3% of cases, through experience in 21.7% of cases, from people around in 14.6% of the case, from doctors and nurses in 40.7% of the cases; through radio and TV in 7.7% of the cases, and through the Internet in 12% of cases. Regarding the use of antipyretics, acetaminophen was

used in 151 cases (75.9%), ibuprofen in 28 cases (14.1%), diclofenac in 13 cases (6.5%), and aspirin in 7 cases (3.5%). The interval of administering antipyretics was every hour in 8 cases (4%), every 2 hours in 33 cases (16.6%), every 4 hours in 44 cases (22.1%), every 6 hours in 64 cases (32.2%), every 8 hours in 31 cases (15.6%), every 12 hours in 11 cases (5.5%), and once a day in 8 cases (4%). In total, 77 mothers (25.7%) had used antibiotic drugs for the treatment of fever, among which 28 (36.4%) had used amoxicillin, 16 (20.8%) had used Cefixime, 21 (27.3%) had used Co-amoxiclav, 3 (3.9%) had used Penicillin; 2 (2.6%) had used syrup Erythromycin, and 7 (9%) had used syrup azithromycin. Among the 188 mother who used feet bath when their child had fever, 64 (34%) had used cold water, 124 (66%) had used lukewarm water, 135 (71.8%) had used pure water, 11 (5.8%) had used a mixture of water and alcohol, 5 (2.7%) had used a mixture of water and ice, and 37 (19.7%) had used a mixture of water and salt. Among the mothers, 92 (49%) had continued the foot bath until the complete cessation of fever, 26 (13.8%) had continued it until administering medication, 70 (37.2%) had continued it until taking the child to the doctor.

In total, 20.2% of parents believed in giving the child's entire body a bath to decrease the fever, 4.8% believed in giving child's face and head a bath, 8.5% believed in giving child's feet a bath, 26.1% believed in giving child's feet and hands a bath, 9.6% believed in giving child's chest and abdomen a bath, and 30.8% believed in giving child's face and legs a bath. Among mothers who had taken their child to a doctor, 25 (13.4%) had visited the emergency services, 49 (26.2%) had visited a general practitioner, and 113 (60.4%) had visited a pediatrician. Among them, 81 (43.3%) had visited a doctor immediately after the onset of fever, 69

(36.9%) visited the doctor a few hours after the onset of fever, and 37 (19.8%) had waited for emergence of other symptoms. The most common complication of high fever for children from their parents' views was convulsions following fever in 141 cases (47%), infectious diseases in 83 cases (27.7%), child's restlessness and discomfort in 14 cases (4.6%), and harms to other organs in 9 cases (3%), while 53 mothers (17.7%) stated they were not aware of the symptoms of high fever. The use of corticosteroids for treatment of fever was reported by 23 mothers (7.7%). Regarding the relationship between parents' education and their knowledge of fever in children, level of significance was $p=0.01$, showing a significant relationship between the two variables. With respect to the relationship between parents' education and the use of antipyretics and antibiotics, levels of significance were $p=0.041$ and $p=0.013$, respectively, indicating a significant relationship between these two variables. In terms of the relationship between children's history of hospitalization and parents' knowledge of fever in children, level of significance was $p=0.01$, indicating a significant

relationship between the variables. In terms of the relationship between history of hospitalization of children and its impact on the parents' practices in the use of antipyretics and antibiotics, the level of significance was $p=0.01$ and $p=0.04$. Therefore, a significant relationship was observed between these two variables. Regarding the relationship between economic status of the family and parents' knowledge about fever in children, level of significance was $p=0.379$, showing no significant relationship between these two variables. Regarding the relationship between parents' education and the frequency of them visiting a doctor, level of significance was $p=0.026$. Therefore, no significant relationship was observed between these two variables. On the relationship between economic status of parents and the frequency of them visiting a doctor, level of significance was $p=0.077$, indicating a significant relationship between the variables. Regarding the relationship between the age of the child and the frequency of parents visiting a doctor, level of significance was $p=0.046$, indicating a significant relationship between the variables.

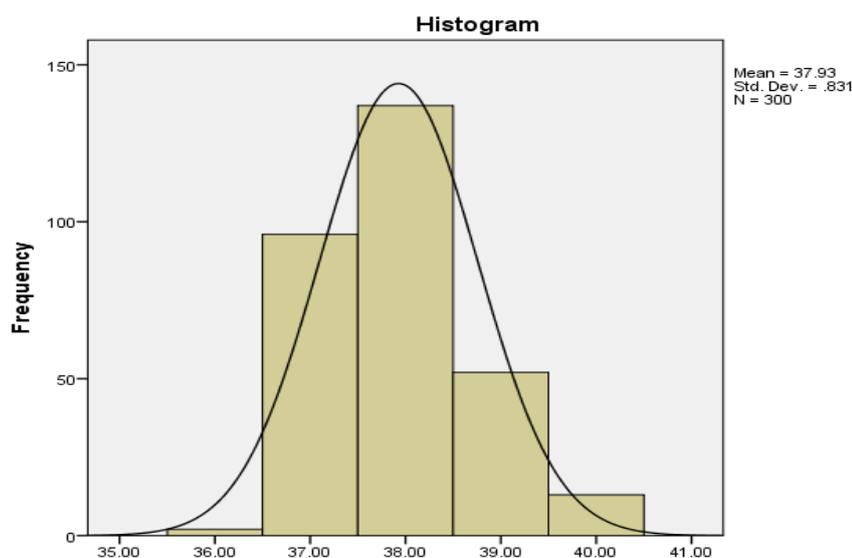


Fig 1: Distribution of fever measurements in the perspective of parents.

4- DISCUSSION

In this cross-sectional study, samples included 300 children under 10 and their parents who visited Tabriz Children Hospital and selected parents completed the questionnaires of knowledge and performance of the parents at the time of fever in children. About 47% of mothers did not have a correct definition of standard fever temperature. In the study by De bont et al., 88% of mothers knew the correct definition of fever (14). In the study by Sa'ed et al., about 78% of parents had a correct definition of standard fever temperature (15). In current study, only 29% of mothers used thermometer to check for fever, and 71% of mothers touched the child to check for fever, which, according to the studies, is inaccurate. Jalil et al. and Sa'ed et al. reported that only a third of parents measure the actual body temperature of their child (15, 16). Regarding administering liquids, 46.3% of mothers did not believe in feeding fluids more than usual, which was unsuitable considering the high risk of dehydration in children with fever, increasing the risk of dehydration and its complications.

As noted before, fever can increase the risk of dehydration in children. In order to mitigate this risk, adequate amounts of fluids must be administered by parents (17, 18). In this study, 25.6% of mothers reported that their first action when encountering children's fever was immediate visit to the doctor. In addition, 62.3% of mothers reported that they had visited the doctor in the course of fever. Most of the visits (60.2%) were to pediatricians, and the majority of visits (81.9%) were after the onset of fever until a few hours after the onset of fever. The high frequency of visits reflects extreme anxiety and fear of parents who seek an immediate solution for the treatment of fever in their child, while in most cases, treatment of fever in children is not

necessary (19). Other study has also reported unnecessary visits to the doctor due to a misunderstanding of fever. Fever is a symptom of a disease and is not considered a disease itself. Therefore, physicians and health care providers should address the possible causes of fever not the symptomatic treatment of fever when faced with febrile children (20). A significant number of health care providers have an unrealistic fear of fever in children and its consequences, such as brain damage, and considering that parents often consider health care providers as the source of their information, this unrealistic fear of parents and health care providers leads to poor practices in managing fever in children (14, 21). O'Neill-Murphy et al. concluded that proper training of health care providers can reduce the fear of fever and lead to proper management of children's fever (22). In current study 39.7% of mothers had used antipyretics as the first measure, and 66.3% mentioned the use of antipyretics as one of their measures. In a study by Saed et al., the use of antipyretics was also the most commonly used treatment in children's fever (15). The most commonly-used medicine was acetaminophen (75.9% of cases). In the study by Jensen et al. in Denmark, paracetamol (acetaminophen) was also reported to be used by the parents for treatment of children's fever (23).

Another important issue in this study was self-medication, where 23.7% of parents used antibiotics and most importantly amoxicillin, while 7.7% of parents used corticosteroids, which, again, shows the parents' excessive fear and misunderstanding. The use of aspirin in 3.5% of the cases was notable, which is worrisome considering the risk of Reye's syndrome (24-26). The child's fever level is not always the best criterion for deciding the child's needs for further examinations and treatments, and the clinical status of the child is a very important criterion.

In most cases, a febrile child does not need to be examined by a doctor, and parents can care for the child at home; however, it is important that parents know when a febrile child needs to be examined by a physician, when the child needs to be treated for fever, and when the child recovers only by being observed and treated at home (27, 28). In terms of the use of foot bath, 34% of mothers had used cold water to lower the child's body temperature, which is a wrong action and increases the risk of chills and a rapid drop in the child's body temperature and even brain damage (2.7% of mothers had used water and ice). In addition, 5.8% of mothers had used a mixture of water and alcohol that is dangerous due to the toxicity of alcohol. This is a proof of parents' insufficient awareness and them making every attempts to reduce the child's body temperature (29, 30).

In current study, 47% of parents considered seizure as the main complication of fever in their children, while the incidence of febrile seizures is reported as 2-4% in the literature (in our study, only 4.33% of the children had a history of febrile seizures). This also suggests a lack of awareness of parents on children's fever. In our study, doctors and nurses were the parents' main source of information about fever and how to manage it (43%). In a study by Chiappini et al., pediatricians were the main source of parents' information (31).

5- CONCLUSION

According to our findings, "fever phobia" continues to be widespread among parents, and parents' knowledge about fever in children was at a low level. It was observed that parents did not act properly or even acted wrongly when their child had fever. Their information about fever in children and how to deal with it and its possible complications is insufficient or wrong in some cases. This improper

management and practices of parents about children's fever is also an underlying cause for their increased fear of fever. Findings showed that, education increases parents' knowledge of fever standard temperature. However, education also increased their misplaced concerns and fears, leading to them spending unnecessary time and money managing their child's fever. Considering the parents' excessive concerns about their child's health, suitable trainings on fever and its management in children can effectively reduce such unnecessary fear, correct the wrong popular beliefs, and even mitigate some misguided actions in children fever management. It should be noted that these trainings should be provided accurately and rely on scientific principles and be delivered by those with sufficient expertise. Findings showed that, doctors and nurses were the main source of information for parents; therefore, proper training of the health care providers and transfer of information to parents can be an effective step to promote parents' awareness and improve their fever management practices.

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6- ABBREVIATIONS: °C=Centigrade,

7- CONFLICT OF INTEREST: None.

8- REFERENCES

1. Schmitt BD. Fever in childhood. *Pediatrics* 1984; 74: 929-36.
2. Goldman RD, Scolnik D. Under dosing of acetaminophen by parents and emergency deferment utilization. *J Pediatr Emerg Car* 2004; 20(2): 89-93.
3. Finkelstein JA, Christiansen CL, Platt R. Fever in pediatric primary care: occurrence, management, and outcomes. *Pediatrics* 2000; 105(1pt3): 260-66.

4. Sullivan JE, Farrar HC. Fever and antipyretic use in children. *Pediatrics* 2011; 127(3): 580-87.
5. Langer T, Pfeifer M, Soenmez A, Kalitzkus V, Wilm S, Schnepf W. Activation of the maternal caregiving system by childhood fever—a qualitative study of the experiences made by mothers with a German or a Turkish background in the care of their children. *BMC family practice* 2013; 14(1): 35.
6. Schmitt BD. Fever phobia: misconceptions of parents about fevers. *American Journal of Diseases of Children* 1980; 134(2): 176-81.
7. Betz MG, Grunfeld AF. 'Fever phobia' in the emergency department: a survey of children's caregivers. *Eur J Emerg Med.* 2006; 13(3): 129–33.
8. Principi N, Esposito S, Gasparini R, Marchisio P, Crovari P. Burden of influenza in healthy children and their households. *Archives of disease in childhood.* 2004; 89(11): 1002-7.
9. Walsh A, Edwards H, Fraser J. Parents' childhood fever management: community survey and instrument development. *Journal of advanced nursing* 2008; 63(4): 376-88.
10. Taveras EM, Drousseau S, Flores G. Parents' beliefs and practices regarding childhood fever: a study of a multiethnic and socioeconomically diverse sample of parents. *Pediatric emergency care* 2004; 20(9): 579-87.
11. Kwak YH, Kim DK, Jang HY, Kim JJ, Ryu JM, Oh SB, et al. Fever phobia in Korean caregivers and its clinical implications. *Journal of Korean medical science* 2013; 28(11): 1639-44.
12. Dawood OT, Ibrahim MI, Palaian S. Parent's knowledge and management of their children's ailments in Malaysia. *Pharm Pract (Internet)* 2010; 8(2): 96-102.
13. Kanabar DA. Practical approach to the treatment of low-risk childhood fever. *Drugs in R D.* 2014; 14(2): 45-55.
14. de Bont EG, Francis NA, Dinant GJ, Cals JW. Parents' knowledge, attitudes, and practice in childhood fever: an internet-based survey. *British Journal of General Practice* 2014; 64(618): e10-e16.
15. Saed HZ, Al-Jabi SW, Sweileh WM, Nabulsi MM, Tubaila MF, Awang R, et al. Beliefs and practices regarding childhood fever among parents: a cross-sectional study from Palestine. *BMC pediatrics* 2013; 13(1): 66.
16. Al-Abdel Jalil H.K., Jumah NA, Al-Baghli AA. Mothers' Knowledge, fears and self-management of fever: a cross sectional study from the capital governorate in Kuwait. *Kuwait Medical Journal* 2007; 39(4): 349.
17. Baraff LJ. Management of fever without source in infants and children. *Annals of emergency medicine* 2000; 36(6): 602-14.
18. Mackowiak PA. Fever: blessing or curse? A unifying hypothesis. *Annals of Internal Medicine* 1994; 120(12): 1037-40.
19. Crocetti M, Moghbeli N, Serwint J. Fever phobia revisited: have parental misconceptions about fever changed in 20 years? *Pediatrics* 2001; 107(6): 1241-46.
20. Sarrell EM, Wielunsky E, Cohen H. A. Antipyretic treatment in young children with fever: acetaminophen, ibuprofen, or both alternate in a randomized, double-blind study. *Archives of pediatrics & adolescent medicine* 2006; 160(2): 197-202.
21. Pursell E. Parental fever phobia and its evolutionary correlates. *J Clin Nurs.* 2009; 18(2): 210-18.
22. O'Neill-Murphy K, Liebman M, Barnsteiner JH. Fever education: does it reduce parent fever anxiety? *Pediatric emergency care* 2001; 17(1): 47-51.
23. Jensen JF, Tønnesen LL, Söderström M, Thorsen H, Siersma V. Paracetamol for feverish children: parental motives and experiences. *Scandinavian journal of primary health care.* 2010; 28(2): 115-20.
24. Ishimine P. The evolving approach to the young child who has fever and no obvious source. *Emerg Med Clin N Am* 2007; 25: 1087-15.
25. Bilenko N, Tessler H, Okbe R, Press J, Goro discher R. Determinants of antipyretic misuse in children up to 5 years of age: a cross-sectional study. *Clin Thr* 2006; 28(5): 783-93.

26. Walsh A, Edwards H. Management of child-hood fever by parents: Literature review. *J Adv Nurs* 2006; 54(2):17-27.
27. Krantz C. Childhood fevers: developing evidence- based anticipatory guidance tool for parents. *Pediatr Nurs* 2001; 27(6): 567-71.
28. Al- Eissa YA, Al-zamil FA, Al- sanie AM, al- salloum AA, al-Tuwaijri H, al-Abdali NM, et al. Home management of fever in children; rational or ritual?. *J Clin Pract* 2000; 54 (3):138-42.
29. Pearce CH, Curtis N. Fever in children; *Australian FAM Phys* 2005; 34(9):796-71.
30. Adam HM. Fever and host responses. *Pediatr Rev* 1996; 17: 330-31.
31. Chiappini E, Parretti A, Becherucci P, Pierattelli M, Bonsignori F, Galli L, de Martino M. Parental and medical knowledge and management of fever in Italian pre-school children. *BMC Pediatrics*. 2012; 12(1): 97.