

Assessment of Knowledge, Attitude and Practice Pertaining to Fever in Children Among Parents Attending Under Five Clinic at a Tertiary Care Hospital in Bangalore - A Cross-Sectional Study

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Abstract

Objectives: 1. To assess the knowledge and attitude among parents regarding fever in under five years children. 2. To assess the practice among parents in managing fever in under five years children. 3. To correlate the demographic attributes with the knowledge, attitude and practices among parents regarding fever in under five years children. **Methodology:** This is a cross-sectional study conducted among 300 parents of children aged < 5 years between April 2023 and May 2024 using a pre-validated questionnaire. Data were analysed using descriptive statistics. Chi square test was used to test the association of knowledge, attitude and practices with categorical demographical data. A p - value of <0.05 was considered statistically significant. **Results:** 53% and 47% of children were males and females respectively. Among the 300 parents interviewed, 61% correctly identified the temperature defined as fever and 57% knew the correct site for measuring temperature. Encouragingly, 70% were aware that paracetamol is the drug of choice, while 50.3% were unaware that all types of fever do not require antibiotics and 47% were unaware that fever can be a beneficial symptom indicating an underlying cause. Tepid sponging (33%) and cold water sponging (30%) were the most common home remedies used to reduce fever. **Conclusion:** This study highlighted that majority of parents had better knowledge regarding basic concepts of fever and adhered to appropriate practices related to management of childhood fever. However, their understanding of the appropriate use of antibiotics was inadequate. Therefore, there is a need for targeted educational programs, aimed at improving parent's knowledge and promoting evidence-based practices in the management of childhood fever.

Keywords: Children, Fever management, Knowledge, Parents

Introduction

Fever is one of the most frequent symptoms for most diseases that strike children. It represents approximately 70% of presenting complaints to pediatric outpatient clinics [1]. Out of various reasons for parental anxiety about fever, misunderstanding that fever is an illness instead of a sign or symptom of an underlying condition has been most frequently reported [2]. Febrile convulsions is another frequently observed phenomenon among children and usually mistaken for seizures. However, numerous misconceptions about fever cause rising parental concern all over the world since ages [3,4]. Four decades ago Barton Schmitt had documented such concerns collectively referred to as 'Fever Phobia'. 'Fever Phobia' has lead to aggressive management of fever by the parents, which at times have deleterious effects on their children [5]. It also leads to overcrowding of the hospitals and wasteful allocation of health care resources [6].

Most studies assessing parental knowledge, attitude, and practice regarding fever have been published from different countries around the world including Iran, France and Taiwan [7-9]. These studies have reported that parents lacked sufficient knowledge about fever because of which there are a great number of errors in the treatment of fever that include improper use of antipyretic drugs and antibiotics, improper use of different physical means of lowering fever and incorrect method for measuring fever. The differences in response in these studies may be attributed to variations in geographics, demographics and education among different countries and diverse populations.

India, being the most populated country in the world has a large population of children. Studies regarding parental concerns about fever has been conducted in Hyderabad and Tamil Nadu [10,11]. To the best of our knowledge and literature review, none of such studies were conducted in Karnataka. Therefore, this study was

taken up to assess the knowledge, attitude and practices of parents towards childhood fever and its management.

Objectives

1. To assess the knowledge and attitude among parents regarding fever in under five years children.
2. To assess the practice among parents in managing fever in under five years children.
3. To correlate the demographic attributes with the knowledge, attitude and practices among parents regarding fever in under five years children.

Methods

Study design and setting: After obtaining the Institutional Ethical Committee approval, a cross sectional study was conducted from April 2023 to May 2024 among parents of children aged less than five years. All parents of children aged one month to under five years visiting pediatric out-patient and in-patient department at Bowring and Lady Curzon Hospital attached to Shri Atal Bihari Vajpayee Medical College and Research Institute, Bengaluru and willing to participate in the study were enrolled into the study and parents of children aged one month to under five years with chronic illnesses like immunosuppression, congenital heart disease, neurological disorders and parents not willing to participate in the study were excluded from the study.

Sample size: This was calculated using the formula,

$$N = Z_{\alpha/2}^2 P \times Q / L$$

Where $Z_{\alpha/2}$ = Standard Normal Variant = 1.96

P = estimated prevalence rate (positive character)

Q = 100 – P (if P is in percentage)

L = absolute allowable error = 15% of P

Here, $Z_{\alpha/2}$ = Standard Normal Variant = 1.96

P = 41%

Q = 100 – P = (100 – 41) % = 59%

L = 15% of P = 15 X 41 / 100 = 6.15

Substituting the values in the formula, N = 245.70

Round up to the nearest whole number, the estimated sample size required would be 246 participants. However, the sample size was increased to 300 anticipating 20% non response or dropout rate.

Before the study, the knowledge, attitude and practice questionnaire pertaining to fever in children among parents attending under five clinic was prepared after reviewing previously published similar studies [10,12,13] and was modified accordingly based on the suggestions provided by expert faculties from various clinical departments of the institute. The final questionnaire comprised of 4 sections – Section A: Demographic details of the participants Section B: 6 Questions to check the knowledge, Section C: 6 Questions to check for the attitude and Section D: 4 Questions to study the practices.

Study procedure

All study participants fulfilling the inclusion and exclusion criteria were interviewed using a questionnaire and the questionnaire was translated into participants understanding language by the investigator and the average interview time was about 30 minutes and the data collected was analysed question wise and their percentage value was calculated.

Statistical analysis

Data was entered in Microsoft excel and analysis was done using percentages, proportions and chi-square test was employed wherever appropriate for data analysis. A p value of <0.05 was considered as statistically significant.

Results

A total of 300 parents responded to the questionnaire and their socio-demographic characteristics are shown in **Table 1**, majority of the parents were in the age group of 25- 35 years (66.3 %). More than half of the children were males (53%) compared to females (47%). Mother was the primary care taker for 98% children and grandmother for the remaining 2% children. Most of the parents had a level of education of 10th standard and above (74% for mothers and 73% for fathers). 30% was single child, 64% and 6% children had one and more than one siblings respectively. 91% children were immunized upto date for age. 60.3% parents belong to lower middle socio-economic status.

Knowledge of parents regarding childhood fever

Table 2 - 60.7 % parents knew the correct temperature above which it would be considered as fever and armpit of the child (57.3%) is the most common site used by parents for measuring temperature to detect fever in their child. More than half of the parents (54.7%) perceived that fever if left untreated would lead to consequences like convulsions (fits/seizures) (29.7%), loss of consciousness (6%), brain damage (coma) (4.7%) and all the above (14.3%). 84.7% parents were unaware that all types of fever do not require antibiotics whereas 70% parents had correct knowledge about antipyretic drugs used for children.

Attitude of parents regarding childhood fever

Table 3 - Nearly half of the parents (46.7%) were of the opinion that they would consult a doctor on persistence of fever in their child for more than 24 hours and their children should be dressed lightly when they have fever (73%). 60.3% of parents thought drugs used for the treatment of fever are safe and felt that paracetamol is the preferred fever medication to be used in their children (65%). Majority of parents were worried (59.7%) compared to parents who were calm and confident (2.3%) if their child develops fever.

Practices of parents regarding childhood fever

Table 4 - In this study, most of the parents (64%) had practice of using a thermometer to detect fever in their children whereas 36% parents used to detect fever by placing back of the hand on their child's forehead. 60.7% parents had a good practice of consulting a doctor to decide the right drug and its dose for management of fever in their children. The most common fever management practice adopted at home was tepid sponging (64.3%) followed by administering antipyretics (27.7%), giving plenty of oral fluids (7.3%) and use of alternate system of medicine (0.7%) respectively.

Association of the demographic attributes with the knowledge, attitude and practices among parents.

Among 300 parents, 60.7% (n=182) of parents knew the correct temperature to determine the presence of fever, most of the parents had two (n=147, 80.76%) and more than two children (n=11, 6.04%) and had an education level of intermediate or PUC and above (n=130, 71.42%) and the association was statistically significant. (p - value <0.05). Among 300 parents, 57.3% (n=172) parents had knowledge that the armpit (axilla) of the child is the correct site used for measuring temperature to detect fever in their child, nearly half of the parents (n=78, 45.34%) had an education level of degree and

diploma and the association was statistically significant. (p - value <0.05) (**Table 5**).

Among 300 parents, 64% (n=192) parents had a good practice of using a thermometer to detect fever in their children, majority of the parents had two (n=158, 82.29%) and more than two children (n= 10, 5.20%) and had an education level of intermediate or PUC and above (n=142, 73.95%) and the association was statistically significant. (p - value <0.05). Among 300 parents, 60.7% (n=182) parents had a good practice of consulting a doctor to decide the right drug and its dose for management of fever in their

children, majority of parents had two (n=151, 82.96%) and more than two children (n=9, 4.94%) and had an education level of intermediate or PUC and above (n=132, 72.52%) and the association was statistically significant. (p - value <0.05) (**Table 6**).

This shows that parents with higher educational background and parents with previous experience of managing childhood fever are positively associated to have better knowledge and follow good practices related childhood fever as compared to lower educated, uneducated and single child parents.

Table 1: Socio-demographic characteristics of the participants

Variable	Item	Frequency (n =300)	Percentage
Age	< 25 years	88	29.3
	25-35 years	199	66.3
	> 35 years	13	4.3
Gender	Male	160	53
	Female	140	47
Marital status	Married	298	99.3
	Dead spouse	2	0.7
Primary care taker	Mother	294	98
	Grandmother	6	2
Number of children	One child	91	30
	Two children	192	64
	Three children and above	17	6
Education status of mother	Degree	57	19
	Diploma	45	15
	Intermediate (PUC)	68	22.6
	10 th Standard (SSLC)	58	19.3
	HighSchool	39	13
	Illiterate	33	11
Education status of father	Degree	45	15
	Diploma	51	17
	Intermediate (PUC)	71	23.6
	10 th Standard (SSLC)	56	18.6
	HighSchool	40	13.3
	Illiterate	37	12.3
Socio-economic class	Lower V (<5)	51	17
	Upper lower IV (5-10)	60	20
	Lower middle III (11- 15)	181	60.3
	Upper middle II (16-25)	8	2.7
Immunisation status of child	Two doses	1	0.3
	BCG done	2	0.7
	Complete	3	1
	Immunised	1	0.3
	Incomplete	9	3
	Only birth dose	9	3
	Primary immunization	1	0.3
	Upto date	274	91.3

Table 2: Knowledge based questions among parents

	Frequency (n = 300)	Percentage
Above what temperature would you consider that your child has fever?		
>35°C (>95°F)	3	1
>36°C(>96.8°F)	4	1.3
>37°C (98.6°F)	182	60.7
>38°C (>100.4°F)	30	10
I don't know	81	27

According to you, which is the correct site for measuring temperature in a child of under 5 years?		
Armpit (Axilla)	172	57.3
Mouth (Oral)	34	11.3
I don't know	94	31.3
What is/are the consequence(s) of fever if left untreated?		
All of the above	43	14.3
Brain damage (coma)	14	4.7
Convulsions (fits/seizures)	89	29.7
Loss of consciousness	18	6
I don't know	136	45.3
What is the drug given to a child if he/she has fever?		
Acetaminophen (paracetamol)	210	70
Ibuprofen	8	2.7
Mefenemic acid	13	4.3
I don't know	69	23
Fever is beneficial for a child. Choose the right option based on your knowledge about fever?		
The statement is true	82	27.3
The statement is false	77	25.7
I don't know	141	47
All fever require the usage of antibiotics. Choose the right option based on your knowledge about fever?		
The statement is true	103	34.3
The statement is false	46	15.3
I don't know	151	50.3

Table 3: Attitude based questions among parents

	Frequency (n = 300)	Percentage
What do you think should be the state of clothing in a child of under 5 years who has fever?		
Child should be fully covered	64	21.3
Child should be lightly dressed	219	73
I don't know	17	5.7
In case of fever in your child, would you treat the fever prior to taking the child to the hospital?		
Yes	203	67.7
No	97	32.3
In case of fever in your child, after how many hours of persistence of fever would you consult a doctor?		
0 to 6 hours	20	6.7
12 to 24h	63	21
6 to 12 hours	16	5.3
More than 24 hours	140	46.7
More than 48 hours	44	14.7
More than 72 hours	17	5.7
In your opinion, are drugs for fever safe for children?		
Yes	181	60.3
No	9	3.0
I don't know	110	36.7
What do you think is the preferred fever medication for use if your child develops a fever?		
Acetaminophen (paracetamol)	195	65
Acetaminophen + Ibuprofen	3	1
Ibuprofen	7	2.3
Mefenemic acid	12	4
I don't know	83	28
On a scale of 1 to 5, how worrisome do you feel if your child develops a fever?		
1 - not at all worrisome (calm & confident)	7	2.3
2 - slightly worrisome	24	8
3 - moderately worrisome	72	24
4 - very worrisome	107	35.7
5 - extremely worrisome (restless & anxious)	90	30

Table 4: Practice based questions among parents

	Frequency (n = 300)	Percentage
How do you record temperature if your child has fever?		
By placing back of the hand on child's forehead	108	36
By using a thermometer	192	64
What type of thermometer do you use?		
Digital thermometer	192	64
I don't use a thermometer	108	36
How do you decide the right drug for fever and it's dose required for your child?		
Consulting a doctor	182	60.7
As per family member's advice	47	15.7
As per pharmacist's advice	35	11.7
I decide myself	36	12
What are the home remedies you use to reduce fever in your child?		
Tepid sponging	193	64.3
Giving antipyretics	83	27.7
Giving plenty of oral fluids	22	7.3
Homeopathy or ayurvedic medication	2	0.7

Table 5: Association between socio-demographic variables and knowledge (n=300)

Questions	Age Groups (Parents)	Correct response	Incorrect response	*p - value
Above what temperature would you consider that your child has fever?	< 25 Years	31	57	<0.00001
	25 – 35 Years	142	57	
	>35 Years	9	4	
	Number of Children			<0.00001
	1	24	67	
	2	147	45	
	3 and above	11	6	
	Education of Parents			<0.00001
	Degree	39	6	
	Diploma	43	8	
	Intermediate (PUC)	48	23	
	10 th Standard (SSLC)	25	31	
	High school	18	22	
	Illiterate	9	28	
According to you, which is the correct site for measuring temperature in a child of under 5 years?	Age Groups (Parents)			<0.00001
	< 25 Years	22	66	
	25 – 35 Years	139	60	
	>35 Years	11	2	
	Number of Children			<0.00001
	1	20	71	
	2	143	49	
	3 and above	9	8	
	Education of Parents			<0.00001
	Degree	45	12	
	Diploma	33	10	
	Intermediate (PUC)	47	22	
	10 th Standard (SSLC)	24	37	
	High school	16	23	
	Illiterate	7	24	

*Chi square test, p-value <0.05 significant

Table 6: Association between socio-demographic variables and practices, (n=300)

Questions	Age Groups(Parents)	Correct response	Incorrect response	*p - value
How do you record temperature if your child has fever?	< 25 Years	32	56	<0.00001
	25 – 35 Years	148	51	
	>35 Years	12	1	
	Number of Children			<0.00001
	1	24	67	
	2	158	34	
	3 and above	10	7	

	Education of Parents			<0.00001
	Degree	53	4	
	Diploma	40	5	
	Intermediate (PUC)	49	19	
	10 th Standard (SSLC)	27	31	
	High school	16	23	
	Illiterate	7	26	
How do you decide the right drug for fever and its dose required for your child?	Age Groups (Parents)			<0.00001
	< 25 Years	26	62	
	25 – 35 Years	145	54	
	>35 Years	11	2	<0.00001
	Number of Children			
	1	22	69	
	2	151	41	
	3 and above	9	8	<0.00001
	Education of Parents			
	Degree	48	9	
	Diploma	37	8	
	Intermediate (PUC)	47	22	
	10 th Standard (SSLC)	25	31	
	High school	18	23	
	Illiterate	7	26	

*Chi square test, *p* - value <0.05 significant

Discussion

Fever is a recurring illness in children where parents visit the doctor for advice [14,15]. Younger children tend to experience febrile illness frequently that result in repeated physician visits compared to older age group children. Majority of children presenting with fever are diagnosed to have short-lived, self-limiting viral or milder forms of bacterial illness which can be managed at home by the primary caretaker with supportive care measures [16]. But most often, there is apprehension of the parents in relation to fever in young children resulting in repeated consultations with different physicians. This may occur particularly if the fever lasts for a longer period especially if fever persists for a longer duration which could result in complications like seizures, loss of consciousness, coma, brain injury, hearing loss, etc [13]. The primary reason for frequent consultation can be attributed to the limited knowledge among parents or caregivers, parental worry and fear of fever complications that will harm their children.

Although many studies related to care of a febrile child among different populations in the world have been published [17-20]. In a country like India, with a large population of children, very few studies are conducted in south India [11,21]. However, limited studies have been conducted in Karnataka. Hence, this study was taken up to assess the knowledge, attitude and practice regarding childhood fever.

In the present study, majority of the parents were in the age group of 25 -35 years (66.3%) aligning with the study [22] showing that this age group is the most active primary care giver for their children. Younger mother's of age group of < 25 years demonstrated limited knowledge similar to the studies [11,22] indicating that first-time parents often lack experience in managing childhood fever. The study showed that mother was the primary caretakers (98%) and 64% were having two children and 6% having three or more children. Among mother's, nearly 40% were educated upto university level and 22.6% upto intermediate or PUC level. This correlates with the studies [23,24] showing that maternal education level significantly impacts appropriate childhood fever management.

In this study, 60.7% parents had knowledge that temperature of > 37°C is defined as fever and axilla (armpit) was the most common site used for measuring temperature to detect fever in their child (57.3%). These finding were in alignment with the studies conducted at Telangana and UP [10,25]. Parents having two and more than two children and parents having education level of degree and diploma had adequate knowledge regarding the temperature range above which it is considered as fever and the correct site used for measuring temperature to detect fever in their child. One of the possible reasons for sufficient knowledge in parents with more children could be their past knowledge and experience of proper management of fever. For children with elder siblings, it may be that parents take the experience they gained from the elder child and utilize it in managing the current child efficiently and make more informed decisions. These findings also highlights that higher the level of maternal education, better is the knowledge regarding childhood fever management. More than half of the parents (54.7%) perceived that fever if left untreated would lead to consequences like convulsions (fits/seizures) (29.7%), loss of consciousness (6%), brain damage (coma) (4.7%) and all the above (14.3%). These results are similar to the studies conducted by Zyoud, Mohamed Hussain and Alsofyani [12,23,24]. Use of antipyretics like paracetamol for treatment of childhood fever was common in this study (70%), reflecting the adequate knowledge of use of medications for treatment of childhood fever similar to studies [11,25]. This may be due to the fact observed in the study that majority of parents used to consult a doctor to decide the right drug with its dose for treatment of fever in their child. 50.3% parents were unaware that all types of fever do not require antibiotics. These results suggest that parents consider fever to be the result of infection in their children which can lead to irrational use and the development of antimicrobial resistance. Similar issues were raised in other study [23].

In the present study, most of the parents opined that the child with fever should be lightly dressed and about 46.7% of parents was of the opinion that they would consult a doctor when fever persists for more than 24 hours whereas about 35.7% parents were very worried if their child or children develop fever, the findings of which

are in contrast to the study [24] where 45.8% of parents were very worried when their child had a fever.

The common practices of parents related to childhood fever reported in this study were recording of temperature in the armpit using a digital thermometer (64%) and by placing back of the hand on child's forehead (36%). The parents had a good practice of consulting doctor for fever treatment and continuing to use antipyretics as prescribed by doctors (60.7%). However, few parents (29.3%) parents were following inappropriate practices like managing fever as per the family member's advice (15.7%), pharmacist's advice (11.7%), parents deciding themselves (12%).

Parents having two and more than two children and parents having education level of degree, diploma and intermediate/ PUC followed good practices regarding childhood fever. This may be due to the fact that parents with more children and higher education level would follow appropriate practices based on their previous experience of effective fever management.

Conclusion

This study showed that majority of parents possessed satisfactory knowledge regarding fundamental concepts of fever. However, limited proportion of parents (36%) exhibited misconceptions toward fever management practices. Therefore, this study highlights the need for having an accurate assessment which in turn helps to design and implement a need-based educational program on fever, tailored to socio-demographic differences and local cultural practices. Such a program would empower parents to provide better care for their children and help reduce the burden on an already resource-constrained healthcare system.

Limitation

The study findings cannot be generalised to all parents worldwide as it was conducted only in one centre where parents belong to lower socio-economic status with relatively poor literacy rates.

Declarations

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Conflict of interest

None

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Ethical Clearance

Ethical Approval obtained from Institutional Ethics Committee

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