



Knowledge, Attitude, and Practice of Fevers in Children among the Parents in Jazan Region, Saudi Arabia

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Authors' contributions

This work was carried out in collaboration among all authors. Authors SR and YN designed the study, prepared the protocol, performed statistical analysis, interpreted and written the first draft of the paper.

Authors RH, OD, AH and NA performed the whole study, collected the information, prepared raw data. Authors S. Alqahtani and S. Alshahrani had corrected and revised the manuscript. All authors read and approved the final manuscript.

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ABSTRACT

Aims: The present study was aimed to assess the knowledge, attitude and preventive practices for fevers in children.

Study Design: A cross-sectional study was conducted among the parents in a poly health clinic of Jazan.

Place and Duration of Study: This study was conducted for a period of 4 months in Jazan region, Kingdom of Saudi Arabia.

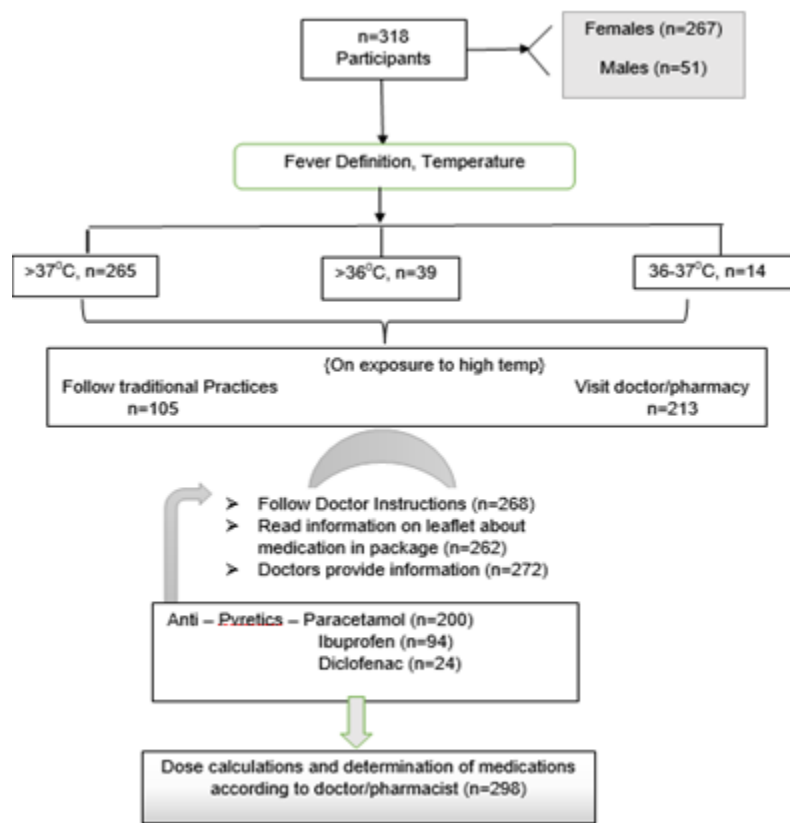
Methodology: The information was collected from the respondents about their knowledge, attitude and practice towards fevers using a pre-structured questionnaire. Data collection took place via online survey for about 4 months. A total number of 318 respondents were participated and statistical data analysis was analyzed for the same.

Results: Majority of the participants were mothers (84%, ^bp<0.001) with their education at university level. A temperature of > 37.0 °C was defined as fever by 83.3% of participants. Most of the parents use a pharmacy or approach a doctor for immediate and quick action in the treatment of fevers in children. The parents were giving importance to visit a doctor/pharmacist for better understanding about the medications to be followed and maximum number of participants (n = 200, ^bp<0.001) found to be significant) opted Paracetamol in the form of syrup as a best medication for their children. Chi-squared test was used to determine the significance of the knowledge, attitude and practice in the management of fevers.

Conclusion: Hence, from the findings, it can be concluded that there was a significant improvement in controlling the fevers in children.

GRAPHICAL ABSTRACT

Flow chart elaborates the knowledge, attitude and practice of fevers in children among parents in Jazan region, Saudi Arabia



Keywords: Participants; questionnaire; knowledge; attitude; practice.

1. INTRODUCTION

Human normal temperature is 37° C, elevating the temperature is commonly called pyrexia or fever, hyperthermia [1], definition of fever is just above the upper limit of human normal temperature regardless the cause. As such there is no definite way to define hyperthermia but we can say it is as core temperature above 38.2° C, common cause includes heatstroke, sepsis,

inflammation, drug related illness, fever after brain injury, bacterial /viral infections and endocrine fever [2]. Several pathological mechanisms for the effect of fever such as direct cellular damage, inflammation of cytokines and inflammatory response and systemic effects. Genotype and phenotype differences explain the individual differences in tolerance to heat exposure, accordingly individuals showing heat intolerance show decrease in HSP levels [3].

Almost 70% of the cases showed genetic abnormalities in addition to mutation in ryanodine receptor. These receptors are responsible for controlling calcium in sarcoplasmic reticulum of skeletal muscle from calcium channels, also mutations lead to the high release of calcium in animal cells then heat is generated during this process. Other mutations are in dopamine 2 receptor, serotonin receptor and cytochrome P450 2D6 have been studied as one of predisposing causes of fever [4]. If patients get exposed to a short period of hyperthermia will recover quickly without any complications, but others who are exposed to a higher temperature for longer periods of time will suffer from complications causing multi organ failure and death in severe cases.

It is observed that emergency situations such as heat stroke, needed to reduce higher temperatures within 60 min of time [5]. Heatstroke is considered as a pro-inflammatory and pro-coagulant condition and therefore hyperthermia is associated with inflammatory cascades [6]. It was demonstrated that fever affect the cells like neutrophils, monocytes, T-cells and natural killer cells [7]. Fever symptoms is the rise of thermal level higher than normal by humoral and neural fever signals, which leads to sequences of clinical and behavioral manifestations [8]. Fever can also increase muscle contractions, chills, sweating, headache, malaise, anorexia then fall in body temperature [9]. Fever is classified into acute, sub-acute and chronic fevers according to the duration. Acute fever lasts for two weeks' duration, such as bacterial infection [10], however it can be chronic if untreated. Fever can be classified as low, moderate and high grade, some studies have shown that children with high fever are at equally serious to bacterial and viral infection [11]. So fever should be monitored carefully and treated properly with counselling physicians.

The outcomes of few of the reports of such studies have many aspects to consider like, insufficient parental knowledge regarding the management of fever, using of different type of medications, lack of awareness in the treatment strategy, following of improper use of physical methods and perceiving this type of illness in a wrong way. It all rely on the distinct variations found among such studies. Adding on, it may also be possible due to differences in culture, economy, geography, demography and also education in the people among countries all over the world. From the previous studies, it was

noticed that there was poor knowledge and recognition of fevers in children by parents. Limited reports were identified in Saudi Arabia. The current study was taken up to explore the awareness and consciousness in handling their children during fevers. The study made an attempt to understand the care and caution shown by the parents, analyzing the behavioral patterns inclined in the fever management.

We strongly believed that such assessments will help us to design and implement according to the regions chosen. Finally, it can decide whether to have educational programs for rational use of medications and management of fevers. It is in the hands of healthcare professionals from whom we can attain knowledge and awareness in the management of fevers.

2. MATERIALS AND METHODS

2.1 Study Subjects and Sample

The present study was conducted using a cross-sectional approach for a period of 4 months, starting from March 2020 to June 2020. The sample size was 318 with the main objective to assess the knowledge, attitude and practices regarding the management of fevers in children.

2.2 Objectives of the Study

In this investigation, the main objective was to assess the level of knowledge and concerns regarding childhood fever among parents with young in a public health clinic in Jazan region of Saudi Arabia. Also it was aimed to evaluate the necessary practices that were followed to manage fevers and to analyze the dispositions in fever management.

2.3 Data Collection through Questionnaire

The information was collected using a questionnaire which was designed with different types of questions. An approach was made to explore the lived experiences of parents in caring their children suffering with fever. All the data was collected through online survey as to avoid the direct contact with the respondents during the pandemic situation.

2.4 Demographic Data and Ethical Standards

The participants with children of less than 12 years of age were included in the study. A total

number of respondents (n=318) were participated in the study.

The ethical standards of confidentiality and freedom to participate were followed by the team. The participants were told that the study was voluntary and they have a liberty to withdraw in case of hesitancy. They were given with an assurance that their privacy and confidentiality would be protected.

The questionnaire consists of socio-demographic information and also contains –

2.4.1 Knowledge of participants

Multiple choice questions with 2 to 5 options were framed in analyzing the knowledge about the fevers. The questions were like definition of fevers, causes of fevers, traditional practices and sources of information about the management of fevers.

2.4.2 Attitude of participants

In this, parents' attitude was analyzed by questioning them about different ways to manage fevers. Variables like a quick approach to a doctor/pharmacist in reducing the higher temperatures, immediate action by following few practices at home, tend to read the information present on leaflet in the medication package and understanding the instructions given by a doctor.

2.4.3 Practice of participants

This emphasizes the use of different medications, parameters like administering the medications (Anti-pyretics) as prescribed by a doctor followed by calculating and determination of dose.

2.8 Statistical Analysis

The data collected from the questionnaire was reviewed and entered into a computerized data base and analyzed using Graph Pad Prism 5. Frequencies and percentages (descriptive statistics) were used for analyzing the selected socio-demographic data. Chi-squared test was used to determine the significance of the knowledge, attitude and practice in the management of fevers. Also to assess the

responses of the participants for the sources of their information on fevers. A $P \leq 0.05$ was considered as statistically significant.

3. RESULTS

The socio-demographic characteristics of the participants/respondents during the KAP study were demonstrated in the results. A total number of 318 parents were interviewed to collect the demographic data and other parameters about the fevers occurring in the children.

Table 1 depicts the demographic profile of parents participated in the study (n=318). Majority of the parents were mothers (Females) with a frequency of 267 (84%) while the male participants were n=51, 16% respectively. The respondents who were interviewed belonged to the University stage with a highest percentage of 74.3% and the least was with the primary education (8%). It was really appreciated that the participants were more with good educational back ground. Children were divided according to the different age groups and data was collected from parents. Amongst all age groups, the maximum frequency was n=110, 34.6% with 1-3 years of age group, followed by 3-6 years, n=91 (28.6%) and 6-12 years, n=79 (24.8%).

3.1 Knowledge of Parents on Fevers in Children

Participants were asked to define the temperature associated with high fevers. For 83.3 % of respondents, a temperature of above 37°C was considered as fever, and about 23% responded as >36°C, with 4.4 % defined it as 36-37°C. With regard to the awareness about high fever is concerned, almost 3/4th of the participants responded correctly. Then, the possible causes were examined. It was found that the majority of the causes were with bacterial/viral infections (44%) followed by climate fluctuations (29.6%) and vaccination (17.3%). Respondents were asked with the procedure/method followed when their children suffered from fever because of vaccination. Maximum number of participants with 71.1% gave a fever reducing medication. Also few of the participants were aware of few traditional practices to overcome the heat (23.6%).

Table 1. Demographic characteristics of parents participating in the study (n=318)

	Frequency	Percentage (%)
Gender		
Female	267	84
Male	51	16
Uneducated		
Primary Stage	8	3.4
Middle School	19	5.9
High School	45	13.9
University Stage	240	74.3
Others	6	2.5
^b p = 0.001; Chi square – 626.7; df = 4; $\alpha < 0.05$	Mean – 63.6 SD – 89.28	
Age of Children (Months/Years)		
1-12 months	38	11.9
1-3 years	110	34.6
3-6 years	91	28.6
6-12 years	79	24.9

Table 2. Frequency distribution of parental Knowledge on childhood fevers (n=318)

Variables	Frequency	Percentage (%)
Temperature considered as fever (^oC)		
> 36	39	12.3
36-37	14	4.4
>37	265	83.3
^b p = 0.001; Chi square – 360.69; df = 2; $\alpha < 0.05$	Mean - 79.5 SD - 68.48	
Possible causes for fevers		
Bacterial/viral	140	44
Climate fluctuations	94	29.6
Vaccination	55	17.3
Others	29	9.1
^b p < 0.001; Chi square – 88.314; df = 3; $\alpha < 0.05$	Mean - 79.5 SD – 41.89	
Child with Temperature from Vaccination		
Give child, a fever reducer	266	71.1
Use compresses	48	27.7
Others	4	1.3
^b p = 0.001; Chi square – 371.40; df = 2; $\alpha < 0.05$	Mean – 114.5 SD – 106	
Are traditional practices useful in reducing heat		
Yes	75	23.6
No	41	12.9
May be	202	63.5
^b p = 0.001; Chi square – 135.86; df = 2; $\alpha < 0.05$	Mean – 106 SD – 69.2	

Note: *Statistical significant at level of $p < 0.001$.

Table 3. Frequency distribution of parental Attitude on childhood fevers (n=318)

Statement	Frequency	Percentage (%)
What do you do when child is exposed to high temperature?		
Reduce clothes he/she wears	32	10.1
Put a cold water compress on his/her body	65	20.4
Put an onion slice on his/her feet	7	2.2
Use a pharmacy	122	38.4
Go to a doctor	91	28.6
Others	1	0.3
^b p < 0.001; Chi square – 219.05; df = 5; $\alpha < 0.05$	Mean – 69.6 SD – 67.75	
Do you visit a doctor when child's temperature rises?		
Yes	268	84.3
No	50	15.7
^b p < 0.001; Chi square – 149.44; df = 1; $\alpha < 0.05$	Mean – 159 SD – 109	
Do you follow the doctors' instructions?		
Yes	315	99.1
No	3	0.9
^b p < 0.001; Chi square – 306.11; df = 1; $\alpha < 0.05$	Mean – 159 SD – 156	
Do you read the leaflet present in the medicine package?		
Yes	262	
No	56	82.4
^b p < 0.001; Chi square – 133.44; df = 1; $\alpha < 0.05$	Mean – 159 SD – 103	17.6
Does the doctor give enough information about the medicine given to your child?		
Yes	272	85.5
No	46	14.5
^b p < 0.001; Chi square – 160.6; df = 1; $\alpha < 0.05$	Mean – 159 SD – 113	
Is high temp dangerous and needs quick treatment?		
Yes	293	92.1
No	25	7.9
^b p < 0.001; Chi square – 225.86; df = 1; $\alpha < 0.05$	Mean – 159 SD – 134	

Note: *Statistical significant at level of $p < 0.001$.

3.2 Parents' Attitude and Beliefs towards Treatment/Management of Fevers in Children

The Attitude by the respondents towards fevers were shown in Table 3. Vast number of respondents go to pharmacy (n=122, 38.4%, $p < 0.001$) when there was exposed to high temperature. They also visit a doctor with a frequency of 91 and 28.6%. Few of the traditional practices like putting a cold water compress on

child's body was also observed with n=65, 20.4%. However, when the participants were asked with a question of visiting a doctor in particular when their child's temperature rises, a majority of them expressed their consent to approach a doctor (n=268, 84.3%). This obviously indicated that parents would not take any risk to face complications of fevers if treated late or left untreated and would rather prefer for immediate treatment. Also, parents follow (n=315, 99.1%) instructions given by doctor without any

hesitation. The majority of the participants (n=273, 85.5%) got adequate information and were satisfied. Additionally, parents would read the leaflet present in the medicine package (n=262, 82.4%), which is favorable indication that they were very keen about the existing and upgraded information about each medication used to overcome the fevers. A high temperature

if left untreated or uncontrolled, it causes febrile seizures, heat stroke which lead to serious complications such as heat exhaustion and heat stroke. Hence, the participants were questioned about high temperature, majority of them (n=293, 92.1 %) opt for quick treatment in order to avoid the deleterious effects of high fevers.

Table 4. Frequency distribution of parental Practice on childhood fevers (n=318)

Statement	Frequency	Percentage (%)
Traditional Practices followed by parents		
Putting Compresses	136	42.8
Excessive fluids	11	3.5
Showers	159	50
Others	12	3.8
^b p < 0.001 Chi square – 235.98; df = 3; α < 0.05	Mean - 79.5 SD - 68.48	
Are you doing popular remedies to lower your child's temp?		
Yes	104	32.7
No	214	67.3
^b p < 0.001; Chi square – 38.05; df = 1; α < 0.05	Mean - 159 SD - 55	
Most commonly prescribed fever reducing medication by doctor?		
Paracetamol	200	62.9
Ibuprofen	94	29.6
Diclofenac	24	7.5
^b p < 0.001; Chi square – 148.15; df = 2; α < 0.05	Mean – 106 SD – 72.3	
Most appropriate method of administering fever reducing medication to your child?		
Syrup	182	57.2
Injection	7	2.2
Suppositories	129	40.6
^b p < 0.001; Chi square – 151.94; df = 2; α < 0.05	Mean – 106 SD – 73.2	
Do you approach a doctor/pharmacist to determine the dose of medication?		
Yes	298	93.7
No	20	6.3
^b p < 0.001; Chi square – 243.03; df = 1; α < 0.05	Mean - 159 SD – 139	
How do you calculate and determine appropriate dose of antipyretic for your child?		
It depends on weight of child	37	
According to age	94	11.6
Both weight and age	155	29.6
According to usual dose	32	48.7
^b p < 0.001; Chi square – 124.44; df = 3; α < 0.05	Mean - 79.5 SD – 49.9	10.1

Note: *Statistical significant at level of p < 0.001

Table 5. Frequency distribution of parental Knowledge in sources of information on childhood fevers (n=318)

Sources of Information	Frequency	Percentage (%)
Where did you get the information about the treatment/management of fevers?		
Social Media	34	10.7
Doctor	198	62.3
Friends and Relatives	23	7.2
Books/Magazines	---	---
Leaflet that was included in the Medicine	37	11.6
Others	26	8.2
^b p = 0.001; Chi square – 357.06; df = 4; ^a α < 0.05	Mean – 69.6 SD – 67.75	

Note: *Statistical significant at level of p < 0.001

3.4 Management Practices Followed by Parents for Fevers in Children

The treatment strategy/management of fevers was encouraging among the parents. Few of them followed traditional practices like giving showers which accounted for (n=159, 50%, ^bp<0.001). Giving shower might be an instant relief of high temperature with favorable outcome, followed by other practices such as use of putting compresses (n=136, 42.8%). When it comes with the use of medications, maximum number of parents preferred intake of Paracetamol in the form of syrup (n=200 & 182, ^bp<0.001) followed by Ibuprofen in the form of suppositories (n=94 & 129) respectively. With regard to the dosage of the medications, respondents favored (n=298, 93.7 %) to visit a doctor/pharmacist in determining the dosage of medication. They also consider their child’s weight and age (n=155, 48.7%, ^bp<0.001) in calculating and deciding the appropriate dose of Anti-Pyretic drug for their child. It elaborates that parents exhibited a healthy ambience in terms of practice towards fever management.

Lastly, the parental knowledge in attaining the information on fevers in children was scrutinized. Maximum number of participants got the information from the doctor (n=198, 62.3%) followed by social media.

4. DISCUSSION

The motive of this study was to survey level of knowledge, beliefs and practice of parents about fever in children in the Jazan region of Saudi Arabia. Bulk participants were mothers (84%) with 74.3% of them were educated up to university stage. It elaborates and highlights one of the possible reasons for better knowledge

among mothers. This also reflects the education of mothers for brought up of their children. This part of observation reverberates and reinforces that mothers are the best care takers for children.

4.1 Knowledge of Childhood Fever among Parents

The current study emphasized that the knowledge of parents about childhood fevers with questions ranging from definition of fever to the treatment. In the few studies which were reported earlier [12], the present study derived an improvement in the outcome of knowledge in the management of fevers. The parents had a satisfactory awareness about the causes of fever and the commonly used Anti-Pyretics in children. The level of knowledge and management of children with fever were related to the educational levels of parents. However, further awareness programs may be carried to intensify accurate knowledge and also to magnify better living.

4.2 Attitudes and Practices Regarding Childhood Fever Management

Eighty-four percent of the parents believed that untreated fever may lead to fatal consequences in children and preferred to go to doctor for immediate treatment. They also followed doctor’s instructions without any sort of objections. They are aware of high temperatures and understood that harmful effects which may turn dangerous. As they are well educated, they opted reading the leaflet about the medications and upgrading their knowledge. Parents followed doctor/pharmacists advice strictly for better and best treatment of fevers in children. They used Anti pyretics (62.9%) as prescribed by doctors and follow doctor/pharmacist in

calculating and determining the dose about medications. Few studies which were conducted on similar background revealed that participants preferred OTC – Medications [13,14]. But in the current study, OTC medications were not entertained and the participants depended on doctors/pharmacists to avoid the misconceptions and misuse of medications. To sum up, it may be clearly expressed that parents showed superior attitude and practice regarding various aspects of fever and its management.

5. LIMITATIONS

The current study was done in a small population with a small sample size when compared to other similar studies. Moreover, the data collected was confined to only a particular region of Saudi Arabia. Another possible limitation was the non-inclusion of pediatricians to express their views and opinions about the parents in managing their children. The time constraint also falls in one of the limitations.

6. CONCLUSION

In the present study it was observed that there was an improvement in analyzing things in regard with the management of fevers among the parents. Indeed, it is true and evident that the knowledge, attitude and practice may be considered adequate. Maximum number of participants managed fevers meticulously. However, educational interventions are necessary to improve fever management outcomes in parents and it can be concluded that formal education including mixed methods in either structured or repeated sessions was most effective in improving parental knowledge. The caregivers and health care providers should be trained to provide appropriate counselling in an effort and also take an opportunity of distinct education tools in educating parents in terms of management of fevers.

CONSENT AND ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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