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Caregivers' perceptions of childhood fever in Ilorin, North-Central Nigeria

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Abstract Background: Fever remains a common clinical indicator of disease, accounting alone for over 25% of paediatric emergency rooms consultations. Perception of this important sign is a crucial prelude and determinant of outcome in febrile children. The aim was to determine knowledge and attitudes of parents regarding fever in their children.

Methods: The study is a cross-sectional descriptive study carried out at the Emergency Paediatric Unit of the University of Ilorin Teaching Hospital (UITH). Four-hundred under-five children presenting with fever were recruited along with their caregivers. A semi-structured questionnaire was administered to collect information on sociodemographics, and caregiver's knowledge and attitudes regarding fever in their wards.

Results: The mean age of the caregivers was 29.5 ± 4.46 years (Range 21 – 41 years). Only

30.3% of caregivers could correctly describe what fever was. The most frequently utilised fever detection method was tactile assessment. Only 3.2% of the caregivers used a thermometer to detect fever. Social class, maternal age and religion significantly influenced the decision to use thermometers. The most common remedies caregivers would use for fever in their children were to give paracetamol (96.3%), sponging (73.2%) and a warm bath (63.8%). About 61% of caregivers had a wrong perception of the possible complications of fever.

Conclusions: Caregivers in this study had a poor knowledge of fever, and parental educational and socioeconomic status impacted on their responses to fever. There is a need for education of caregivers at all contacts with the healthcare system on fever, and its management.

Keywords: Antipyretic, Attitude, Fever, Thermometry

Introduction

Fever represents a perception of an elevated temperature.¹ In clinical practice, the relevance of fever is that it is a sign of a current illness. It remains one of the most frequently encountered paediatric problems, accounting for 25% of visits to paediatric emergency rooms.²⁻⁴ Indeed, it is often the first symptom noted by parents, and frequently, the initial "signal" of illness in the child. Parents have been known to have fears of the harmful effects of fever in their children, and often see fever as the main problem rather than a symptom of a variety of diseases.^{5,6} It was Schmitt⁵ that first referred to this parental fear about fever as "fever phobia", in order to emphasize the high prevalence, as well as the unrealistic nature of these fears. These fears, as described by Schmitt,⁵ often lead to parents taking actions that are

unnecessary, and potentially dangerous. This so called "fever phobia"⁵ may result in parents taking potentially harmful actions, such as use of herbal concoctions, scarification, and excessive use of antipyretics, amongst others. Several studies⁷⁻¹¹ have attempted to determine the knowledge and perception of parents regarding fever. Some of these studies^{7,8} have implicated factors, such as the level of education, ethnic group, and socioeconomic status, as possible determinants of parental knowledge and perception of fever. There have been few published studies from Nigeria on the subject matter.¹¹ This relative gap in knowledge on this issue, in Nigeria and indeed the West African Sub-region forms the justification for this study. The aim of the study is to determine parental knowledge about fever and their perception of it in their children.

Materials and Methods

This is a cross-sectional study in which the subjects are children aged between 2 months and 59 months, and their parents/caregivers. The study was carried out at the Emergency Paediatric Unit (EPU) of the University of Ilorin Teaching Hospital (UITH). The hospital is located in Ilorin, which is the capital city of Kwara State, situated in the North Central geopolitical zone of Nigeria. Four hundred children/ caregiver pairs were recruited over a four month period. Ethical clearance was obtained from the University of Ilorin Teaching Hospital's Ethical Review Committee. Individual informed consent was also obtained from the mother, father, or the caregiver of the child as applicable. Caregivers of children aged less than five years, admitted into the EPU with fever were recruited consecutively. Subject recruitment was done as early as possible after presentation, after institution of the required immediate care as determined by the clinical condition of the child. It was considered pertinent to exclude caregivers of children with critical illness from the study. Siblings of children who had already been recruited into the study were also excluded.

A semi-structured study proforma was administered on all subjects recruited. Socio-demographic data comprising age and gender of the child, parental religion and ethnic group(s), as well as age, educational status and occupation of parents was obtained. Information on parent(s)/caregivers' knowledge, and perceptions regarding fever were obtained. The items used to determine knowledge and perception explored the spheres of: definition of fever; causes of fever; best means to detect fever; complications of fever; and management of fever, inclusive of their sources of knowledge. Others include steps that should be taken if a child has fever; current concerns regarding fever in your child; and use of antipyretics. For the purpose of the study, convulsions were considered to be an appropriate concern in relation to fever. Others such as brain damage, dehydration, death, were considered inappropriate concerns. Data entry and analysis were carried out with a micro-computer using the Epi-Info version-6 software package. Frequency distribution tables and cross-tabulation of variables were generated. Measures of central tendency and dispersion of quantitative variables, as well as proportion for qualitative variables were also determined. A thematic approach was used to analyse some qualitative variables. The *chi-square* and *student-t* tests were used to identify significant differences for categorical and continuous variables respectively. Mean, standard deviations, and range were provided as appropriate. Yates correction and Fisher's exact tests were utilised as appropriate. A *p-value* of <0.05 was considered significant.

Results

Caregivers of four-hundred under-five children aged 2-56 months were recruited. The mean age of the children was 25.6 ± 16.8 months, with a Male: Female (M:F)

ratio of 1.5:1. All caregivers recruited were the mothers. The mean maternal age was 29.5 ± 4.46 years (Range 21 – 41 years). Majority of the mothers [298(74.5%)] were of the Yoruba ethnic group. Other ethnic groups included Hausa (13.5%), Ibo (3.3%) and others (8.8%). Caregiver religion was Islam amongst 293(73.3%) mothers and Christianity in 107 caregivers (26.8%). Regarding educational status of the mothers, only 107 (26.8%) had attained tertiary education. One hundred and twenty four (31.0%) mothers had secondary education; 92(23.0%) had acquired primary education; and 77 (19.3%) had no formal education. Using the method of Social Classification recommended by Oyediji,¹² 38 (9.5%) of mothers were categorised as social classes I, 69(17.3%) as social class II, 112(28.0) as social class III, and 156(39.0%) and 25(6.3%) as social classes IV and V respectively. The mode of the social class of the children was IV, and the median III.

In response to the open question, "what is fever", only 121 parents/ caregivers (30.3%) were able to correctly identify fever as an increase in body temperature above what is considered normal. The most commonly utilised method for detecting fever by respondents was by touching the child; this was used by 390(97.5%) mothers (Table 1). Seventy-four percent of these used the back of their hands to "feel for fever" in their children, while the remaining 104(26%) used their palm. The parts of the body palpated (to assess for fever) by the respondents who used palpation were the head in 306(76.5%), and the abdomen in 182(45.6%). Other parts felt were the chest in 43.3% and the neck in 31.8% of respondents. Various combinations of parts were felt to assess for fever amongst those mentioned above, of which the most common was the head and chest (35.4%).

Table 1: Distribution of respondents by method of fever detection

Method of fever detection*	Frequency(%)
Touch	390(97.5)
Thermometer	19(4.8)
Appearance**	47 (11.8)
Others	10(2.5)

*Some mothers gave multiple responses

**Appears weak, appears sick, rigors

All caregivers that would use a thermometer to measure temperature belonged to social classes I-II, as compared to the group that would not use a thermometer to measure temperature where 31.0% belonged to social class I-II ($p < 0.000001$) (Table 2). The mean maternal age of caregivers that would use thermometers to measure their child's temperature was significantly lower at 25.8 ± 2.11 years ($p = 0.00018$) as compared to the group that would not use thermometers which was 29.7 ± 4.47 years (Table 2). About 48% of caregivers who would measure temperature with a thermometer were Muslims, while among those who would not use a thermometer to detect fever, 74.5% were Muslims ($p = 0.0045$) (Table 2).

Table 2: Sociodemographic indices of mothers versus detection of fever by thermometer

Variable	Use a thermometer (n=19)	Not use a thermometer (n=381)	χ^2	P
Social class				
I - II	19(100%)	88(23.1%)	54.62	<0.0001
III	0(0%)	112(29.4%)		
IV-V	0(0%)	181(47.5%)		
Educational status-				
None/ Islamic	0(0.0%)	77(20.2%)	54.62	0.0001
Primary/ Secondary	0(0.0%)	216(56.7%)		
Tertiary	19(100.0%)	88(23.1%)		
Maternal age(years)				
Mean \pm SD	25.8 \pm 2.11	29.7 \pm 4.47	t=3.78	0.00018
Caregiver religion				
Islam	9(47.4%)	284(74.5%)	6.819	0.0045
Christianity	10(52.6%)	97(25.5%)		

Fig 1 shows that 360(90.0%) caregivers had obtained information about fever recognition from their parents, 132(33.3%) obtained information from other relatives, and 125(31.3%) obtained information from their friends. Others are as shown in Fig 1. Amongst mothers who would use a thermometer to measure temperature, 19 (100%) of them had their source of information from doctors, as against 40(10.5%) of those who would not use a thermometer ($\chi^2 = 115.3$ $p < 0.0001$).

Fig 1: Distribution of respondents by source of information on detecting fever.

With regard to steps that caregivers would take if their children have fever, the most common steps that would be taken are to give paracetamol (385 mothers), and sponging with tepid water(289 mothers). Others are as shown in Table 3.

Table 3: Distribution of caregivers regarding steps that should be taken for a febrile child

Action taken	Frequency(%)
Paracetamol	385(96.3)
Sponging with tepid water	289(73.2)
Warm bath	144(36.0)
Undressing	251(62.8)
Others**	112(28.0)

*Some mothers used more than one method

** Fanning, praying and the use of herbal concoctions

Regarding the attitude of caregivers to the use of paracetamol for fever, there was no significant difference in mean maternal age ($p = 0.647$) and maternal educational status ($p = 0.156$) between caregivers that would use paracetamol and those that would not (Table 4). All caregivers (100%) that would not use paracetamol were Muslims, as against 72.2% of those who would use paracetamol (Table 4). This difference was statistically significant ($p = 0.0085$).

Table 4: Sociodemographic indices of caregivers versus attitude to use of paracetamol in febrile children

Variable	Use paracetamol (n=385)	Would not use paracetamol (n=15)	χ^2	p
Social class				
I - II	102	5	6.20	0.0451
III	112	0		
IV-V	171	10		
Educational status				
None/Islamic	77(20.0%)	0(0.0%)	3.716	0.156
Primary/Secondary	206(53.5%)	10(66.7%)		
Tertiary	102(26.5%)	5(33.3%)		
Maternal age				
Mean \pm SD	29.46 \pm 4.55	30.0 \pm 0.85	t=0.459	0.6466
Caregiver religion				
Islam	278(72.2%)	15(100%)	5.69	0.0085
Christianity	107(27.8%)	0(0%)		

Table 5 shows the spectrum of major concerns of caregivers regarding the possible consequences of fever in their children. The most frequently identified concern was convulsion which was indicated by 331 (82.8%) caregivers, followed by death (43.0%); and brain damage (27.5%). There was a significant difference between the social classes and educational status of mothers who had appropriate concerns as compared to those whose caregivers had inappropriate concerns regarding consequences of fever ($p = 0.0000001$ and $p = 0.000151$ respectively)(Table 5).

Table 5: Distribution of caregivers' concerns regarding fever

Consequence(s) of fever*	Frequency (%)
Convulsions	331(82.8)
Dehydration	80(20.0)
Brain damage	110(27.5)
Death	172(43.0)
No concerns	15(3.8)

* Some mothers had more than one concern

Table 6: Social class of mother versus concerns regarding childhood fever

Variable	Appropriate concerns* (n=156)	Inappropriate concerns † (n=244)	χ^2	p
Social class				
I-II	63(40.4%)	44(18.0%)	47.25	0.0001
III	55(35.3%)	57(23.4%)		
IV-V	38(24.3%)	143(58.6%)		
Educational status				
None/ Islamic	15	62	17.6	0.0001
Primary/ Secondary	88	128		
Tertiary	53	54		

* Convulsions alone

† Other concerns, such as brain damage, dehydration, death, singly or in combination, including respondents who identified convulsions in addition to any of the above

Discussion

Overall, the findings of the present study suggest that caregivers in the study population had a poor knowledge

of fever. This observation is consistent with the findings of Tagbo et al¹¹ in Enugu. In that study none of the mothers could identify what temperature actually indicates fever. Though the current study did not examine if mothers could identify the correct temperature that constitutes fever, it is instructive to note that only 30.3% of caregivers could identify fever as an increase in body temperature above what is considered normal. Rather most of the responses obtained suggested that parents view fever as a disease, as against a symptom of many possible diseases. This probably relates to the traditional perception of fever, and the fact that words in some local dialects used to describe fever (Eg Zazzabi in Hausa) are used synonymously with "malaria". It is evident from the current study that only a few parents recognised that the use of a thermometer was the best method for detecting fever. This observation is similar to the findings of Al-Eissa et al⁹ in Saudi Arabia and Tagbo et al¹¹ in Enugu. This was however, in stark contrast to those of Blumenthal¹³ in the presumably much more enlightened British population, where about 73% of caregivers reportedly used thermometers for identifying fever and rated them better than use of palpation.¹³ This difference may be explained by the obvious dissimilarity in the literacy level and the socioeconomic classes of caregivers in the two study populations. In the current study, 42.3% of mothers had no formal education or only primary education. Their educational status was comparatively poorer than the study populations in Enugu (22% had no formal education or primary education) and Saudi Arabia (25.4% of mothers had no formal education). In Blumenthal's study,¹³ however, the authors deliberately left out the presumably "uneducated" mothers who could not read English. This is further supported by the finding in this study that families with higher socioeconomic status were more likely to use thermometers. The effect of a higher socioeconomic class on knowledge of fever was further demonstrated, in this study, by the relationship between social class and concerns regarding fever. This is similar to the findings of Tessler,⁷ Taveras,⁸ and Kramer.¹⁴

It is pertinent to observe that the use of touch to assess fever has been an age old tradition passed down by parents, and indeed grandparents to the younger generation. Indeed it is a practice that is common in most communities, and to a large extent, considered fairly useful. The above statement is supported by the finding in this study that 81.8% of caregivers would use touch alone to detect fever in their children, and 58.0% of caregivers had obtained this knowledge from friends and family. However, in view of its suboptimal specificity, the usefulness of this tactile method of assessing fever has remained limited to that of a screening tool.¹⁵

Also, it is equally noteworthy that with the prevalence of 74% in the present study the most commonly used site for tactile assessment of fever by respondents was the dorsum of the hand. This is similar to the findings of Akinbami et al¹⁶ in Ibadan, where 77.1% preferred to use the dorsal surface of the hand to assess for fever. This may be accounted for by the similarity in the

Ibadan and Ilorin study populations, which are predominantly of the Yoruba ethnic group. Furthermore, an additional observation from the present study was the common parental perception that the head and abdomen constituted the important parts of the body from which fever could be most reliably detected. This is similar to the findings of Singh et al¹⁷ in India, where majority of the adult patients felt the forehead to identify fever. Akinbami et al¹⁶ reported slightly different findings as the head and neck were the most preferred parts felt in their study. It is interesting to observe that about 12% of respondents would use the "appearance of the child" (appears weak, appears sick, rigors) to detect the presence of fever in their children. This is similar to the finding of Al-Eissa⁹ in Egypt. With very few respondents answering in the affirmative, the present study shows that most of the caregivers who would use thermometers to measure temperature had received this information from doctors. The operational import of this finding is the apparent need to involve the lower level healthcare manpower (who are expected to have more frequent contact with parents) in the education of parents regarding the timely value of use of thermometers for detecting fever in their children. In the current study, socioeconomic status of caregivers appears to influence the decision to use thermometers to measure temperature. This is not in keeping with the reports of Al-Eissa⁹ where there was no difference in the use of thermometers amongst parent of high and low socioeconomic classes. The statistically significant younger age of caregivers who would use a thermometer as against those who would not, may suggest a positive change in perceptions with the younger generation. This may also be a reflection of increasing education in the younger age group.

Concerns about fever and its potential harmful effects may lead to parental behaviour that may be harmful to the child's health, such as use of herbal concoctions, scarification, and covering the child, or indeed undermine a successful treatment outcome of the underlying disease. In this regard, it is noteworthy that 44% of caregivers in the current study had correctly identified convulsions as a possible complication of fever. This is similar to 48% reported by Kramer.¹⁴ This was higher, however, than 32% reported by Crocetti,¹⁰ and 15% reported by Schmitt.⁵ With regard to other potential harm emanating from fever in children, a large proportion of caregivers also identified brain damage, dehydration and death as possible complications. In the present study, 27.5% of caregivers identified brain damage as a possible complication of fever, an observation that is similar to those of Kramer¹⁴ in America, in which 27% of parents felt brain damage could result from a fever. Whereas the fear of brain damage remains a common concern of parents and practitioners, this complication had rarely been shown to be caused by fever (even a temperature as high as 42°C).¹⁸ Instead, it is the underlying cause of the febrile illness, rather than the fever itself that is largely responsible for this morbidity (i.e. brain damage).^{5,19} Furthermore, in the present study, 20% and 43% of caregivers respectively, identi-

fied dehydration and death as the principal dangers of fever. These values were significantly higher than the percentages recorded earlier by Kramer (4% and 11% respectively).¹⁴

Conclusion

Caregivers in the study population had a poor knowledge of fever, especially regarding its method of detection and possible complications in children. This knowledge gap is likely to impact negatively on decisions regarding the home management of fever, presentation at a health facility, and the eventual outcome of febrile illnesses. This strengthens the need for increasing knowledge of parents regarding the import of fever and its appropriate management.

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Authors' Contributions

MBA conceptualized the work, coordinated the study, collected and analysed the data, and prepared the manuscript. WBRJ participated in the conceptualization, analysis and supervision of the study, and the preparation of the final manuscript. All authors read and approved the final manuscript.

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