

CHILDHOOD FEVER MANAGEMENT: SOCIO-DEMOGRAPHIC FACTORS ASSOCIATED WITH CAREGIVERS' KNOWLEDGE AND HEALTH-SEEKING PRACTICES IN SOUTHERN NIGERIA

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Abstract

Background: Childhood fever is often an early symptom of malaria in Sub-Saharan Africa (SSA). Early detection and appropriate management of childhood fever is critical, given its association with malaria which has a high mortality risk in children aged under 5 years old.

Objectives: This survey assessed the socio-demographic factors that influence caregivers' knowledge and health seeking practices for childhood fever in Southern Nigeria.

Method: This cross-sectional study involved a two-staged sampling of caregivers in four communities in Akwa Ibom State, Nigeria. Data were analyzed descriptively with Chi square test and logistic regression used to assess the relationship between respondents' knowledge and key socio-demographic variables.

Results: This study involved 275 caregivers (mean age: 33years, min-max: 21–52years) with the majority (N=155, 56%) educated up to tertiary level. Only 23% of the respondents correctly identified childhood fever temperature and those with tertiary education were more likely to have this knowledge (OR=1.66, 95%CI: 1.01–2.71, P=0.04). About 26% (N=70) measured their child's temperature using a thermometer while the majority employed tactile methods that have been shown to be non-specific in fever diagnosis. About 76% of the respondents correctly identified the causes of childhood fever, however this knowledge was not predicted by respondents' age, marital status or level of education ($p > 0.05$). Home management with previous dose of antipyretic and/or antimalarial drugs was common (N=103, 53%) with a potential for under-dosing. Only about a third (N=78, 28%) of the respondents would either visit a hospital or a pharmacy prior to initiating pharmacological or non-pharmacological interventions and this was only associated with caregivers' age (OR= 0.37, 95% CI: 0.21–0.66, $P < 0.01$).

Conclusion: These findings show poor overall knowledge of childhood fever and its management. The findings demonstrate the need for health promotion activities tailored for caregivers across the

various demographics represented in the community.

Keywords: Fever, Childhood, Children under 5s, Caregivers, Nigeria, Health Promotion

INTRODUCTION

Fever, defined as elevated body temperature of 38°C and above, is common in childhood. Fever is often self-limiting in young children; however, it remains a source of concern and anxiety for parents and caregivers. Studies in high income countries show that fever accounts for up to 40% of emergency room and out-of-hours physician visits for children aged under 5years old^[1-3]. In these settings, treatment is initiated when other symptoms indicative of serious illness are present with existing guidelines recommending the use of antipyretics if there are signs of pain and discomfort in the affected child.^[4]

In low-income countries, particularly in Sub-Saharan Africa (SSA) where malaria is endemic; fever is often an early symptom of malaria illness in children aged under 5years. In this region, home management of fever is common, and studies show that parents are more likely to treat their children with a combination of antipyretic and antimalarial drugs prior to visiting a health facility.^[5] Early detection and appropriate management of childhood fever is important in SSA countries including Nigeria, given its association with malaria which has a high mortality risk of 61% in children under 5 years old and the World Health Organization (WHO) recommends prompt medical intervention in this age group^[6]. However, feverish conditions that require clinical assessment and management in children can be difficult to recognise by parents, caregivers and health professionals alike with the potential for a delay in initiation of appropriate interventions.^[7-9]

Previous studies show that there is fever phobia as well as gaps in knowledge about febrile illness among caregivers.^[10-14] Caregivers' knowledge gaps on the threshold temperature that define fever, childhood temperature measurement techniques, the causes and appropriate strategies for home management of fever as well as safety netting practices have been reported in the literature.^[15-17] For example, overwrapping, exposing febrile child to air and irrational use of antibiotics are some of the common caregivers' fever management practices reported

despite evidence that demonstrate that these are not helpful. [4,8]

Oral and rectal temperature measurement in children under 5years old, tactile fever assessment via palpation and forehead strips are also common, even though evidence suggest moderate to non-specificity of these techniques in fever diagnosis. [18, 19] Other studies show misuse, over and under-dosing with antipyretic agents [20-22] as well as caregivers' fears on the consequences of febrile illness [5,12,13]. These findings demonstrate the need for appropriate childhood fever-related health promotion activities that would enhance knowledge among caregivers. While research on childhood fever management has been conducted in Nigeria; these have involved caregivers recruited in clinical settings. Information on knowledge, general beliefs, home management practices as well as the health seeking behaviour for childhood fever in the community and the general public in Nigeria is limited. This study aims to address this gap and assess knowledge and management of childhood fever in southern Nigeria.

Methods

This was a cross-sectional survey of caregivers from four communities in Uyo, the capital of Akwa Ibom State in Nigeria. The study was conducted between October and December 2017 and involved a two-staged sampling process. Four communities were randomly selected from the Local Service Commission list obtained from the Ministry of Health in Akwa Ibom State. Thereafter, caregivers were purposively sampled from the four communities with an invitation to participate letter forwarded to the respective leaders for onward distribution to their members. Information about the study was also disseminated via leaflets and posters in the respective communities. In total, 100 questionnaires

were distributed in each of the four communities and only caregivers with at least one child under 5years old were eligible to participate.

Eligible participants were given the opportunity to ask questions with written and signed informed consent obtained prior to enrollment. The questionnaire used for this study was pre-tested and validated in a previous research conducted by Alex-Hart and colleague in Nigeria [11]. It consisted of open and close ended questions divided into two sections. The first section focused on the respondents' demographics including age, marital status, number of children, educational qualifications. The second section collected information on caregivers' knowledge and childhood fever management practices. Completed questionnaire were stored in locked filling cabinet at the Faculty of Pharmacy, University of Uyo, Nigeria.

Study participation was voluntary, and respondents were informed that they could opt-out of the study at any time. There were no incentives given for participation. Data obtained in this research were sorted, coded and entered in Statistical Package for Social Sciences (SPSS) version 22. Descriptive statistics involving counts and proportions were used to summarize the data. Association between categorical variables was assessed using X^2 -test while logistic regression was used to estimate the association between respondents' knowledge of childhood fever temperature, causes of fever and key sociodemographic variables (these included age, marital status and educational level). Statistical significance was set at $P < 0.05$.

Results

A total of 275 caregivers fully completed the survey questionnaire indicating a response rate of approximately 69%. The respondents were all females and the demographic characteristics are presented in Table 1.

Table 1: Sample demographics

Demographics	N (%)	
Age (years)	21 – 30	118 (43)
	31 – 40	105 (38)
	41 – 50	46 (17)
	> 50	6 (2)
Marital status	Single parent	43 (16)
	Married	201 (73)
	Divorced	14 (5)
Level of education	Widowed	17 (6)
	Primary	25 (9)
	Secondary	95 (35)
No of children	Tertiary	155 (56)
	1 – 3	180 (66)
	4 – 6	78 (28)
	7 -10	17 (6)

Respondents' knowledge of childhood fever

Only 23% (N=63) of the respondents correctly identified temperature indicative of fever as 38°C and above. Others would only consider temperature of 39°C (N=58, 21%) or 40°C (N=124, 45%) and above as indicative of fever. Statistically, only respondents' level of education was predictive of correct knowledge of childhood fever temperature (Table 2). Respondents with tertiary education were more likely to be knowledgeable of childhood fever temperature (Table 2). About 26% of the respondents (N=70) measured their child's temperature at home using a thermometer. The remaining mainly assessed body temperature via feeling their child's head (26%), neck (16%), stomach (4%) or by touching the forehead, neck stomach and back (28%). Although

respondents with tertiary education were more likely to use a thermometer to measure their child's temperature (N=64% vs 36%, tertiary vs non tertiary education, respectively), this association was not statistically significant ($X^2=3.634$, $P=0.06$). The respondents correctly identified the causes of childhood fever as malaria (55%) and infection (21%). Others responded that it could be caused by teething (10%), poor hygiene, sleeplessness, food poisoning, hyperactivity and humid weather (about 2.5% each). None of the socio-demographic variables including age, marital status and level of education were statistically predictive of accurate knowledge of the causes of fever (Table 2).

Table 2: Socio-demographic factors associated with correct knowledge of temperature and causes of childhood fever

Variables	Knowledge of childhood fever temperature			Knowledge of the causes of childhood fever		
	OR	95% CI	P	OR	95% CI	P
Age (= 35years vs above)	1.31	0.81 – 2.14	0.27	1.07	0.57 – 2.01	0.83
Level of education (tertiary education vs none)	1.66	1.01 – 2.71	0.04*	1.26	0.68 – 2.35	0.47
Marital status (has a partner vs none)	0.74	0.42 – 1.29	0.29	0.88	0.44 – 1.75	0.72
Constant	3.10	-	0.11	0.50	-	0.42
Nagelkerke R2	= 0.033			= 0.005		
Chi square (X2)	= 6.872, df=3, P=0.076			= 0.774, df = 3, P=0.856		

OR = odds ratio, 95% CI = 95% confidence interval *P= p-value <0.05

Home management practices and help seeking behaviour

Up to 71% (N=195) of the respondents managed their child's fever at home. This involved pharmacological interventions using antipyretic and/or antimalarial drugs (N=103, 53%) or non-pharmacological interventions that included tepid sponging, child enema, under-dressing and cold bath (11%, 3%, 2%, 3%, respectively). Only about a third (N=78, 28%) of the respondents would either visit a hospital or a pharmacy to seek help for their child's fever prior to initiating any treatment or non-pharmacological intervention and this was associated with caregivers' age (N respondents age 35years or above = 27% vs 73% respectively, OR= 0.37, 95%CI: 0.21 - 0.66, $P<0.01$) and not with other socio-demographic factors including marital status (OR: 1.38, 95%CI: 0.76 - 2.52, $P=0.29$) and level of education (OR: 1.32, 95%CI: 0.76 - 2.26, $P=0.32$).

Respondents mainly used paracetamol as the antipyretic of choice for fever management with only a small percentage reporting administering ibuprofen and aspirin (<5%). When deciding the dose of antipyretic to administer, most used previous dose given (54%), others (33%) consulted a health professional while a few (\approx 13%) read the medicine information leaflet, checked the internet or other media sources. Most (N=263, 96%) of the

respondents expressed concerns and were worried about childhood fever. Respondents believed childhood fever leads to death (N=62, 23%), convulsion (N=58, 21%) and brain damage (N=35, 13%). Other fears expressed included risk of coma, loss of appetite, weakness and weight loss. Although, concerns about childhood fever was not associated with respondents age, level of education and marital status; older parents (age 40years and above) were less likely to express concerns about childhood fever (N=79.3% vs 20.7%, age below vs above 40 years, respectively; $X^2= 0.152$, $P=0.67$).

Discussion

Even though about more than half of our study sample comprised caregivers with tertiary education; our findings demonstrate poor knowledge about childhood fever among the survey respondents. Although this corroborates previous studies conducted in Nigeria and other countries.^[10-12, 23] our results indicate the need for health promotion activities designed to educate parents on the early signs and appropriate management of childhood fever. Childhood fever is often an early symptom of malaria in endemic regions such as Nigeria. Malaria is associated with a high mortality rate of 61% in children aged under 5 years and the WHO recommends a low threshold for medical assessment

and intervention in this age group^[24] The correct knowledge of the threshold temperature indicative of childhood fever is therefore essential for caregivers to ensure that they are equipped with appropriate information that will aid them in deciding to seek help when needed. The association between respondents' level of education and the correct knowledge of childhood fever temperature in our study suggests that health promotion and education programmes will need to be tailored to meet the needs of the various demographics represented in our study population.

The finding that majority of the caregivers in our survey mainly used tactile methods to assess their child's body temperature also demonstrate the need for interventions that would enhance knowledge of appropriate measurement techniques in the study population. This is crucial given that temperature measurement is a critical nursing action in fever management and tactile assessment have been shown to be non-specific with a high risk of overestimating fever^[18, 25]. Our finding that home management of childhood fever with antipyretic is common among caregivers corroborates previous evidence from existing literature in Nigeria and other parts of the world^[5,11, 26-27] While most of the caregivers in our survey used paracetamol alone; a few reported using a combination of Ibuprofen and aspirin to treat their child's fever. The reasons behind the combination of antipyretic drugs for childhood fever management were not explored in our study. However, this may be related to other findings that show that caregivers believe combining or alternating two or three antipyretic medications provides faster relief from fever^[17]

The WHO recommends that caregivers should seek prompt medical attention for children under 5 years old who present with fever associated with other symptoms such as diarrhea and vomiting^[24] However, over-medication with antipyretics can mask fever and limit caregivers' ability to decipher when medical attention is needed. This is critical given that existing literature^[14,20] suggest that caregivers with third level education are more likely to over medicate their children with antipyretics as was observed in our study. The finding that a significant proportion of the respondent in our survey administered the previous dose of antipyretic without taking cognisance of the child's current weight and age carries a high risk of over- and/or under-dosing as suggested by other studies.^[20] These findings highlight the need for the education of caregivers about the appropriate use of pharmacological interventions in childhood fever management in our study population.

Our finding that up to a third of the study population employed non-pharmacological methods such as child enema, under-dressing and cold bath for childhood fever management is in keeping with existing literature.^[5, 17] These methods have been

shown to be of little or no benefit in childhood fever management^[4] and suggest the need for the dissemination of evidence-based information on appropriate home management and safety netting practices in the study population. Fears of the consequences of childhood fever reported by caregivers that included risk of death, brain damage and coma in the affected child suggest widespread fever phobia among our study population. This corroborates existing research from other parts of the world^[2,16, 28-30] and suggests the need for health promotion activities that will help alleviate fears and anxiety among our study population.

Our study has some limitations. This study was a cross sectional survey and provides a snapshot of the respondents' knowledge and practices with respect to childhood fever. Although the caregivers in our study were all females; this represents the culture and social structure in the four communities in our survey as well as in Nigeria where children are cared for by the females in the society. More than half of the study sample comprised caregivers with tertiary education and as such our findings may not be representative of the population demography in other parts of Nigeria. The potential for recall bias is also a limitation in this study given that the data collection method relied on respondents' self-report. Despite these limitations, the study methodology is an established and pragmatic approach used in similar studies in other countries.^[13-14, 16, 20] Our study findings also provide key insights and evidence that can inform policy development and aid the design of health promotions campaigns and education programmes for childhood fever management in Akwa Ibom State.

CONCLUSION

Children under 5 years old are a vulnerable group with high risk of morbidity and mortality from complications of malaria. Since childhood fever is often an early symptom of malaria illness; optimal knowledge of the causes and management of childhood fever is therefore imperative. This study provides important insights on childhood fever management and have implication for health promotion in our population sample. The study findings demonstrate the need for childhood fever-related health promotion and educational interventions in our study population. These programmes are needed to promote knowledge of fever temperature threshold, appropriate temperature measurement techniques, optimal home management practices and safety netting with respect to health seeking for caregivers of children under 5 years old. These interventions will help mitigate the high-risk practices associated with over medication with antipyretics and fever phobia while also facilitating improvement in clinical outcomes with respect to fever management.

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