

Determinants of Home-Care Practices for Childhood Febrile Illnesses in Rural Communities, Osun State, Nigeria

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Abstract

Background: In Nigeria, between 60% and 80% of children with febrile illness had received home-care prior to reporting at health facilities but only 15% of such home-care is appropriate. A major component of the integrated management of childhood illness is improved home-care. This study assessed caregivers' home-care practices towards childhood febrile illnesses and the determinants in rural communities in Osun State, Nigeria.

Methods: Caregivers (255) accompanying febrile under-fives to rural primary health care facilities were interviewed using pretested interviewer-administered questionnaires. Data on socio-demographic characteristics, knowledge on febrile illness and home-care practices for febrile children was collected and analysed using percentages, chi-square statistics and binary logistic regression. Focus group discussions (FGD) were conducted and analysed using detailed content analysis.

Result: Mean age of caregivers was 28.6 (SD=7.7) years and 239 (93.7%) were mothers. Overall, 155 caregivers (60.7%) had good knowledge of childhood febrile illnesses while 186 (72.9%) caregivers gave appropriate home-care. Having good knowledge of febrile illnesses [AOR=1.2, 95% CI = 1.1-1.4] and possessing at least secondary education (AOR=2.9, 95% CI =1.5-5.5) were significantly associated with appropriate home-care for febrile illnesses. FGD revealed satisfactory knowledge of febrile illnesses among respondents.

Conclusion: Educating caregivers on childhood febrile illnesses is essential to improve home-care for febrile illnesses.

Keywords: caregivers, home-care, under-five, febrile illness, Nigeria

I. Introduction

Febrile illnesses constitute a major public health problem. Globally, approximately 10 million children die annually, as a result of preventable childhood febrile illnesses, which include malaria, respiratory tract infections, measles, diarrheal diseases and whooping cough. In the sub-Saharan Africa, over 4 million deaths occur yearly among under-five children [1]. Many of these deaths are as a result of these febrile illnesses. In rural areas of developing countries, where diagnostic facilities are limited, etiologies of acute febrile illness remain largely unknown.

Malaria has long been considered the most important disease in Nigeria in terms of public health impact and its elimination has become an international priority. In Nigeria, malaria contributes a high burden to childhood deaths accounting for 20-25% under-five mortality [2]. Reports from different parts of Nigeria, including the situation analysis carried out in the six geo-political zones indicate that 60 to 80% of caregivers gives a form of care or treatment for febrile illness at home to their children prior to presenting in health facilities but only 15% of such actions could be classified as appropriate under the national malaria treatment guidelines [3, 4, 5]. Such home-care practices usually involve administering the medicines already at home which were left over from previous prescriptions or bought from patent medicine vendors or home remedies that include local herbs [6]. The integrated management of childhood illness (IMCI) has improved care of sick child at health facilities but the community component of IMCI which is to improve household and community practices related to child health has not been addressed adequately thus home care was adopted as a major strategy to reduce childhood deaths [4].

Usually, caregivers' responses to childhood febrile illness depend on their ability to correctly recognize the illness in form of signs and symptoms. Culture has been shown to influence the recognition of illness and

choice of care [6, 7]. Likewise, various studies have also documented that caregivers' responses to childhood febrile illness are influenced by socio-economic, cultural and demographic factors and ease of access to treatment sources [8, 9]. This is particularly so in rural areas where financial, demographic and cultural accessibility to health care is a major problem. Because rural communities differ in demographics, in socio-economic and cultural composition, it is necessary to determine the factors influencing their response to childhood febrile illnesses.

This study aimed to assess caregivers' knowledge of childhood febrile illnesses, their home-care practices and identify the determinants of home-care practices in rural areas of Osun State, southwest Nigeria. The information obtained from this study would be useful for planning implementation of child health interventions in rural Nigerian settings.

II. Materials And Methods

Study Area

Osun State is one of the 36 States in Nigeria. It is situated in the Southwestern part of the country and lies in the rainforest belt of the country with altitudes of between 121.92m and 298.70 m above the sea level. It is located within longitude 4°30'E and latitude 7°07'W 30'N; with a landmass of 3571.8 m². It has an estimated total population of 3,423,535 and 684,707 children under the age of five years [10]. It has three senatorial districts comprising ten Local Government Areas each. There are more than 1095 health facilities in the State [11]. Four of these are tertiary hospitals; 54 are secondary healthcare facilities; more than 678 primary healthcare facilities managed by the State. The State also has more than 359 private hospitals.

Study Design And Population

This was a descriptive cross-sectional study and data collection was by mixed method using both qualitative and quantitative data. Study population comprised of caregivers of under-fives accompanying febrile children to the health facilities. A caregiver was defined as any person ≥ 18 years who accompanied a febrile child ≤ 5 years to selected health facilities. Such caregiver must have been residing in study location for at least 12 months. Caregivers who had febrile children presenting with signs and symptoms necessitating urgent management or referral were excluded from the study.

Sample Size Determination

A sample size of 255 caregivers was calculated based on 81% prevalence of home treatment of febrile illness in children in a rural southwest area of Nigeria [12], significance level of 5% corresponding to a standard normal deviate (z) of 1.96, and precision of 5%.

Sampling Technique

A multistage sampling technique was used to select 255 caregivers; in the first stage one LGA was randomly selected from each of the three senatorial districts in Osun State, in the second stage, the list of all rural wards in the selected local government areas were obtained from Osun State Ministry of Local Government and Chieftaincy Title. Two rural wards were selected per LGA using simple random sampling by the ballot method. This yielded a total of six rural wards in all. In the third stage, the list of all primary health care facilities (PHC) in each ward was obtained, and one PHC facility was selected from each ward by simple random sampling using ballot method. This gave a total of six PHC facilities in all. In the fourth stage, the sample size was equally allocated to all six PHC facilities and all consenting caregivers who met the inclusion criteria were recruited consecutively until the allocated sample size was reached.

Data Collection

Quantitative Data Collection

Six trained research assistants who were community health extension workers (CHEW) used standardised structured and pretested questionnaire to collect information on socio-demographic characteristics of respondents and the children, knowledge of caregivers on childhood febrile illnesses and the home care practices for febrile illnesses. Home care practices given to children were categorised as "appropriate" or inappropriate home care practices. Appropriate home care was defined as bathing a febrile child with lukewarm water or tepid sponging and /or administration of antipyretics and/or antimalarial drugs while inappropriate home care was defined as administration of local herbs and/or teething mixtures or practicing other unorthodox method such as covering child up when hot.

Knowledge Of Childhood Fever, Its Causes And Complications

To assess the knowledge of caregivers on childhood febrile illnesses, responses were scored using four questions in all. The questions assessed caregivers' ability to define fever correctly as an increase in body temperature, mention correctly at least two other symptoms associated with febrile illnesses, two major causes of childhood febrile illnesses, and two danger signs associated with febrile illnesses in children. Each correct response was scored 1 point while incorrect response was scored zero point. Caregivers who scored at least two points and above were graded as having good knowledge while those who scored < 2 point were graded as having poor knowledge.

Qualitative Data Collection

Three focus group discussions (FGDs) were conducted among purposively selected female caregivers of children under-five in each of the selected rural communities. Female caregivers were selected because caregivers are often women in this environment. The FGD sessions were facilitated by a team of two trained research assistants, a note taker and facilitator, using a FGD guide. Information on knowledge, beliefs, treatment of childhood fever was obtained from the FGDs. The sessions were audio tape recorded and subsequently transcribed verbatim. A total of six FGD sessions were conducted with 8-10 caregivers in each FGD, and each lasting 45-60 minutes.

Data Processing And Analysis

Data was entered and analysed using SPSS version 17. Data were summarized using means and proportions, range and percentages as well as presented in tables and charts. Bivariate analysis was done to determine association between dependent and independent categorical variables. Predictors of appropriate home care practices were identified at multivariate analysis. Analyses were carried out 5% level of significance.

Ethical Considerations

Ethical approval was obtained from LAUTECH Teaching Hospital Ethical Review Committee [LTH/EC/012/04/0112]. Written informed consent was obtained from each participant. The questionnaires were anonymised and confidentiality of all information provided was maintained. Respondents had the right to decline from participating in the study or to withdraw at any stage.

III. Results

The age of respondents ranged from 20-60years with a mean (SD) of 28.6 ± 7.7years. Overall, 224 (87.9%) of the caregivers were aged less than 40years, 249 (97.6%) were females and 239 (93.7%) were mothers. All the male caregivers were fathers of the index children. Forty percent had completed secondary school education and thirty seven percent of the respondents were engaged in unskilled labour (Table 1).

Table 1: Sociodemographic characteristics of caregivers of under-five children

| Characteristics (N=255) | N (%) |
|------------------------------|------------|
| Age | |
| ≤ 40years | 224 (87.9) |
| >40years | 31(12.1) |
| Sex | |
| Male | 6 (2.4) |
| Female | 249 (97.6) |
| Relationship to child | |
| Mother | 239 (93.7) |
| Father | 6 (2.4) |
| *Others | 10 (3.9) |
| Educational Level | |
| Secondary/tertiary | 103(40.4) |
| None/primary | 152(59.6) |
| Marital status | |
| Single | 14 (5.5) |
| Married | 236 (92.5) |
| Widowed | 5(2.0) |
| Occupation | |
| Skilled labor | 71 (27.8) |
| Unskilled labor | 96 (37.6) |
| Unemployed | 88 (34.5) |
| Income | |
| <N10,000 | 171 (60.4) |
| ≥N10,000 | 85 (32.9) |

*Others include grandparent, aunt, and uncle. *Caregivers' knowledge of childhood febrile illnesses and methods of detection of fever*

One hundred and fifty five caregivers 155 (60.7%) had good knowledge of the causes, associated symptoms and complications of childhood febrile illnesses while 100 (39.3%) had poor knowledge of febrile illnesses. Overall, 51.4% detected fever by feeling the skin while 24.7% and 25.1% mentioned they suspect fever when there is reduced activity in child and child wears a dull look. (Table 2).

Table 2: Methods of detecting fever and types of home-care given to febrile under-five children

| Variables | Frequency (%) |
|----------------------------------|---------------|
| Method of detecting fever | |
| Skin feel | 131(51.4) |
| Facial appearance | 64 (25.1) |
| Reduced child activity | 63 (24.7) |
| Use of thermometer | 0 (0.0) |
| Types of home-care | |
| Bathing and tepid sponging | 189 (74.1) |
| Paracetamol | 186 (72.9) |
| Antimalarials | 62 (24.4) |
| Use of local herbs | 63 (24.7) |
| Teething mixture | 30 (11.9) |
| Cloth removal | 6 (2.4) |

Home care practices

Majority (74.1%) practiced bathing and tepid sponging, 186 (72.9%) administered antipyretics, while 24.7% administered local herbs and 11.9% teething preparations as remedies for fever (Table2). A total of 186 (72.9%) of the caregivers gave appropriate home care to their febrile under-five child while 69 (27.1%) gave inappropriate home care prior to presenting at the health facilities

Table 3 shows the factors associated with giving appropriate care to febrile under five children. Caregiver’s educational status (secondary school education and higher) and knowledge of childhood febrile illnesses were significantly associated with giving appropriate home care.

Likewise in multivariate analyses as shown in Table 4, the variables level of education (AOR =2.9, 95% CI =1.5-5.5) and knowledge of childhood febrile illnesses (AOR =1.2, 95% CI =1.1-1.4) remained significant predictors of appropriate home care.

Table 3: Determinants of appropriate home-care practices among rural caregivers in Osun State

| Socio-demographic Variable | Appropriate home care practices N =186n (%) | Inappropriate home care practices N=69n (%) | Total N=255 n (%) | P-value |
|----------------------------|---|---|-------------------|----------|
| Caregivers age | | | | |
| ≤ 40 | 168 (90.3) | 62 (89.9) | 230 (90.2) | 0.911 |
| > 40 | 18 (9.7) | 7 (10.1) | 25 (9.8) | |
| Educational status | | | | |
| Low | 99 (52.6) | 53 (76.8) | 152 (59.6) | <0.001** |
| High | 87 (47.3) | 16 (23.2) | 103 (40.4) | |
| Income | | | | |
| ≤ ₦ 10,000 | 120 (64.5) | 51 (73.9) | 171(67.1) | 0.206 |
| > ₦ 10,000 | 66 (35.5) | 18 (26.1) | 84(32.9) | |
| Religion | | | | |
| Christian | 83 (44.6) | 23 (33.3) | 106(41.6) | 0.101 |
| Muslims | 103 (55.4) | 46 (66.7) | 149(58.4) | |
| Number of children | | | | |
| <3 | 76 (41.1) | 30 (43.5) | 106(41.6) | 0.706 |
| ≥3 | 110 (58.9) | 39 (56.5) | 149(58.4) | |
| Knowledge of fever | | | | |
| Poor | 82 (44.1) | 18 (26.1) | 98(38.4) | 0.01** |
| Good | 104 (55.9) | 51 (73.9) | 171(61.6) | |

**Statistically significant

Table 4: Predictors of appropriate home care practices among caregivers

| Variable | Categories of variable. | Odds' ratio | 95% confidence interval |
|------------------------------|-------------------------|-------------|-------------------------|
| Age | ≤40years | 1 | 0.5 - 2.3 |
| | >40years | 1.2 | |
| Education | Low | 1 | 1.5 - 5.5** |
| | High | 2.9 | |
| Number of children in family | <3 | 1 | 0.9 - 3.7 |
| | ≥3 | 1.8 | |
| Knowledge of febrile illness | Poor | 1 | 1.1 - 1.4** |
| | Good | 1.2 | |

** Statistically significant

Findings from FGD

At FGD, the common home-care practices identified include; bathing/tepid-sponging, administration of paracetamol, local herbs and teething preparations.

I bath my child and administer paracetamol because it is a common drug for malaria (34yr old trader at Atelewo).

I gave some herbal preparation which I got from the traditional healer “alagbo”; it works better and cleanses the blood system of germs (42yr old farmer at Oke osun)

The factors caregivers perceived to influence the home care practices for childhood febrile illnesses includes knowledge about the cause of febrile illnesses and cultural beliefs. A quote goes thus:

‘Fever is a common thing in children it happens in all children when they are teething’ – ‘igbona eyin’ meaning teething fever and I usually give ‘bonababe’ which is a teething preparation (36yr old trader at Ajenisunwa).

Knowledge of common febrile illnesses

The common causes of febrile illnesses mentioned occurring in the communities were malaria, teething, respiratory tract infection, measles and typhoid fever. According to 24yr old female petty trader in Ajenisunwa, “Fever affects all children especially during tooth eruption (‘igbona eyin’; meaning teething fever”.

Malaria febrile illness is usually caused by mosquito bites and insects (31yr female tailor, Irepodun)

IV. Discussion

This study assessed the home care and treatment practices given to febrile under five prior to presentation to the health facilities. We found out that over seventy percent of the caregivers gave appropriate home-care to their febrile under five children. More than two-third of the caregivers had good knowledge of the causes and complications of childhood febrile illnesses. The factors influencing home-care practices included the level of education of the caregivers as well as knowledge on the causes and complications of childhood febrile illnesses.

The caregivers in this study were mainly mothers of index children. Studies have shown that mothers, regardless of their socio-demographic characteristics, usually make the first diagnosis of febrile illness in their children by detecting and interpreting changes in their child’s behaviour and temperature [2, 6, 9, 12]. In this study, fever was often detected through qualitative methods such as observing the child’s facial appearance and feeling or touching the child’s skin. None of the caregivers’ used a thermometer in measuring the child’s temperature. This finding is typical of most rural settings in Nigeria [12, 13].

More than sixty percent of the caregivers in this study had good knowledge about causes, associated symptoms and complications of childhood febrile illnesses, however some of the caregivers attributed fever to “teething” in infants; this finding is similar to findings in some other parts of Nigeria [14]. Findings from the focus group discussion showed that traditional beliefs about the causes and consequences of childhood fever still exist in this rural area as many mothers attributed the cause of fever in child to teething process thereby underestimating the severity of illness in the child. These findings are similar to other studies in Nigeria and have great impact in the type of care given to the child at onset of fever [6, 12, 13].

A high proportion of caregivers gave appropriate home-care to the febrile child this was similar to findings from previous studies in Nigeria [9, 15]. Paracetamol was the most commonly administered drug among the rural caregivers, however bathing and tepid sponging of febrile children was the predominant home-care practice for febrile episodes in children. Presumptive antimalarial treatment for febrile illnesses among children appeared to be the norm however this practice, usually incorrect, is known to be responsible for antimalarial abuse and development of antimalarial resistance. This highlights the importance of promoting the use of RDTs to diagnose cases of malaria as recommended by the current WHO guidelines [16] and thereby avoid overuse of antimalaria as demonstrated by a study in Senegal [17].

Some of the caregivers gave teething preparations and herbal remedies to treat febrile episodes in their children. The common use of herbal remedies was because they were perceived to be efficacious in the management of many childhood illnesses as demonstrated by similar studies [18].

The determinants of home-care practices for childhood febrile illnesses included caregivers' educational level and knowledge of childhood febrile illnesses. Our study highlights the importance of female education in improving health, as caregivers who had secondary school education and above were more likely to give appropriate home-care during febrile episodes in the child. Education is one single factor known to modify beliefs about causation and cures for disease and ultimately the acceptability of health services. Having good knowledge on childhood febrile illnesses also significantly influenced home care practices. This finding corroborates other studies and demonstrates the need for caregivers to be health informed irrespective of educational level. It also highlights the need to educate caregiver on appropriate home-care and treatment practices for febrile children [15].

One of the strategies of the integrated management of childhood illness (IMCI) programme to reduce under-five mortality is the education of the mothers and caregivers on home care of the child during illnesses [4]. The understanding of home-care practices by caregivers provided in this study is good information to guide health workers in the education of caregivers to provide correct treatment at home.

The strength of this study is the focus on rural communities. This population are often neglected and marginalized in health programmes and interventions. The study is nevertheless subject to some limitations. First, the study was health facility based, which might have introduced some selection bias as the caregivers who utilized the health facility for care are more likely to be more knowledgeable than those that seek care from other sources. Hence this limits the external generalizability of the results. The study also has information bias as practices were self-reported hence caregivers may have given socially desirable responses. Lastly the correctness of the dosage of the drugs used by caregivers at home was not ascertained, which might have identified even more inappropriate treatment practices. Health education of caregivers of children in rural health care facilities is therefore recommended to improve care during febrile illness episodes.

V. Conclusion

High education level and good knowledge of febrile illnesses were positive determinants of good home-care of febrile illnesses. Sensitization programmes on home management of childhood febrile illnesses which are targeted at caregivers with lower educational levels are urgently recommended to improve home-care for febrile illnesses in these communities.

Competing interests

The authors declare no conflicts of interest.

Authors' contributions

Elizabeth Adedire designed the study, analyzed the data and drafted the manuscript, Esther Asekun-Olarinmoye guided the design of the study, supported data analysis and reviewed draft manuscript, Olufemi Ajumobi, Olufunmilayo Fawole, IkeOluwapo Ajayi and Patrick Nguku provided necessary reference materials and reviewed draft manuscript extensively, and all authors read and approved the final manuscript.

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