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Original Research Article

Knowledge, attitudes and practices of mothers toward febrile seizures in children

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ABSTRACT

Background: Febrile seizures are among the most common neurological emergencies in children and are a major source of parental anxiety. This study aimed to assess mothers' knowledge, attitudes, and practices (KAP) regarding febrile seizures in Tuléar, Madagascar.
Methods: A cross-sectional KAP study was conducted in April 2023 among 400 mothers of children aged 1 to 5 years attending a primary health center and a university hospital. Data were collected using a structured questionnaire. Variables included sociodemographic characteristics, knowledge of febrile seizures, and reported attitudes and practices.
Results: The mean maternal age was 34.9±9.2 years, and 70% had previous exposure to febrile seizures. The most commonly recognized clinical signs were abnormal limb movements (85.75%), fever (85.25%), and loss of consciousness (85%). However, neurovegetative signs were less frequently identified (56%). Overall knowledge was considered adequate in 60.5% of participants but remained insufficient regarding causes (74%). While 85% of mothers reported immediate healthcare seeking, first-aid management skills were limited.
Conclusions: Despite relatively good recognition of clinical features and high healthcare utilization, significant gaps persist in understanding and home management of febrile seizures. Targeted health education programs adapted to the sociocultural context are essential to improve early management and reduce inappropriate practices.

Keywords: Febrile seizures, Knowledge, Attitudes, Practices, Madagascar

INTRODUCTION

Febrile seizures represent one of the most common neurological emergencies in pediatrics. They are defined as seizure events occurring in children aged 1 to 5 years, associated with a core temperature exceeding 38°C, in the absence of intracranial pathology, a history of afebrile seizures, or an identified metabolic cause.[1] Due to their dramatic and anxiety-inducing nature, they constitute a major reason for pediatric emergency department visits, accounting for approximately 20% of fever-related consultations in these departments worldwide.[2] The perception and management of these seizures vary considerably across socio-cultural contexts. In Bangladesh, parental knowledge remains limited: only 16.7% of respondents associate fever with seizures, while

anxiety regarding life-threatening risks (50.8%) or physical sequelae (18.3%) predominates.[3] Conversely, in other settings such as Ghana, although 95% of parents have previously heard of the phenomenon and a majority (59%) possess correct knowledge, home care practices remain heterogeneous. For instance, 69% of parents resort to cooling the child with cold water as a first-line measure, and 91% seek hospital care following the failure of home-administered interventions.[4]

In Madagascar, and more specifically within the Atsimo-Andrefana region, scientific literature on this topic remains scarce. Yet, understanding the cultural perceptions and therapeutic reflexes of mothers is crucial to optimizing the initial management of these episodes. Given this context, this study aims to explore how mothers in the city of Toliara perceive and react to the occurrence of a febrile seizure in their child. The primary objective of this work is therefore to assess the knowledge, attitudes, and practices (KAP) of mothers in order to identify levers for improving therapeutic education and local medical management.

METHODS

This cross-sectional Knowledge, Attitudes, and Practices (KAP) study was conducted in April 2023 in Toliara, located within the Atsimo-Andrefana region of Madagascar. The study took place at two facilities: the Antanambao Primary Health Center (CSB2) and the pediatric department of the Antanambao University Hospital Center. These two urban facilities record approximately 140 and 400 monthly pediatric consultations for children under 15 years of age, respectively.

The target population comprised mothers accompanying their children aged 1 to 5 years for a consultation. Exclusion criteria included refusal to participate, any caregiver status other than the biological mother (notably fathers), being a healthcare professional to prevent expertise bias, as well as the presence of a mental or sensory disability, or a state of intoxication that would hinder questionnaire administration.

The minimum sample size was set at 400 participants, calculated using Schwartz's formula based on an assumed prevalence of 50% due to the lack of prior local data, with a 5% margin of error and a 95% confidence interval.[5] Sampling was performed using a systematic approach, selecting the first ten eligible mothers who presented each working day. If the daily turnout fell below this threshold, recruitment continued into the following day.

Weekends and public holidays were excluded due to the investigator's unavailability. Data were collected by a single investigator through face-to-face interviews lasting approximately five minutes, utilizing a standardized questionnaire that had been pre-tested on ten parents to validate its relevance and clarity. The questionnaire included both open-ended and closed-ended questions, with either single or multiple-choice formats. Questions were phrased neutrally to minimize leading bias.

The analyzed variables included maternal characteristics such as age, occupation, educational level, religion, place of residence, and history of exposure to a seizure event. The study also assessed knowledge regarding febrile seizures, including their definition, recurrence, possible complications, and contagiousness. In addition, participants' ability to recognize clinical manifestations was evaluated, along with their understanding of potential causes. Finally, attitudes and practices adopted during a febrile seizure episode were also analyzed.

A scoring system was established to evaluate knowledge, attitudes, and practices. Each correct response was awarded one point. Scores were classified into two categories (insufficient/inappropriate vs. good/adequate) based on predefined thresholds for each domain (general knowledge, clinical manifestations, causes, attitudes, and practices). Statistical analysis was performed using Microsoft Excel 2016 software.

Categorical variables are presented as proportions, and continuous variables as means with standard deviations. The study was conducted after obtaining the required institutional authorizations. Verbal informed consent was obtained from each participant following a presentation of the study's objectives, thereby ensuring anonymity and data confidentiality. The limitations of this work, which are inherent to self-reported studies and the use of closed-ended questions, were taken into account during the interpretation of the results.

RESULTS

The study population consisted of 400 mothers, with a mean age of 34.9±9.2 years. The most represented age groups were 31-35 years and over 45 years. Socio-professionally, 34% of the mothers were unemployed, while more than half of the total cohort had attained a formal education level (Table 1). Furthermore, 70% of the participants reported having previously witnessed a seizure event in a child. Regarding the recognition of clinical manifestations, the most frequently identified signs were abnormal limb movements (85.75%;n=343), fever (85.25%;n=341), loss of consciousness (85%; n=340), and eye rolling (85%; n=340).

Conversely, signs associated with the tonic-clonic phase or autonomic functions were less familiar: tongue biting was correctly identified by 231 mothers (57.75%), urinary incontinence by 224 mothers (56%), and salivation by 224 mothers (56%). The causes suspected by the mothers are presented in Table 2. With respect to the attitudes and practices observed during a seizure event (Figure 1), the most frequently reported measures were attempts to lower body temperature (90%), securing the child to prevent injury (88.75%), and immediately seeking hospital

emergency services without administering prior first aid (85%). In contrast, maintaining composure during the episode was reported by only 29% of the participants. The mothers' level of knowledge is detailed in Table 3.

Table 1: Socio-demographic characteristics of the mothers (n=400).

	Frequency (N)	Proportion (%)
Maternal age (years)		
Under 21	25	6.25
21–25	51	12.75
26–30	62	15.50
31–35	71	17.75
36–40	65	16.25
41–45	55	13.75
Over 45	71	17.75
Occupation		
Salaried employee	150	37.50
Self-employed	114	28.50
Unemployed	136	34.00
Educational level		
Illiterate	25	6.25
Primary school	63	15.75
Secondary school	160	39.75
University	153	38.25
Religion		
Catholic	132	33.00
Protestant	188	47.00
Muslim	14	3.50
Traditional	66	16.50
Place of residence		
Urban	323	80.75
Suburban	33	8.25
Rural	44	11.00

Table 2: Mothers' perceived causes of febrile seizures (n=400).

	Frequency (N)	Proportion (%)
Fever		
Correct	351	87.75
Does not know	32	8.00
Incorrect	17	4.25
Meningeal infection		
Correct	197	49.25
Does not know	119	29.75
Incorrect	84	21.00
Malaria		
Correct	265	66.25
Does not know	68	17.00
Incorrect	67	16.75
Emotion/stress		
Correct	152	38.00
Does not know	110	27.50
Incorrect	138	34.50
Ingestion of medication or toxic substance		
Correct	147	36.75
Does not know	103	25.75
Incorrect	150	37.50

Continued.

	Frequency (N)	Proportion (%)
Sleep disorder		
Correct	136	34.00
Does not know	104	26.00
Incorrect	160	40.00
Intense light		
Correct	137	34.25
Does not know	87	21.75
Incorrect	176	44.00
Demonic possession		
Correct	197	49.25
Does not know	77	19.25
Incorrect	126	31.50
Witchcraft		
Correct	144	36.00
Does not know	98	24.50
Incorrect	158	39.50

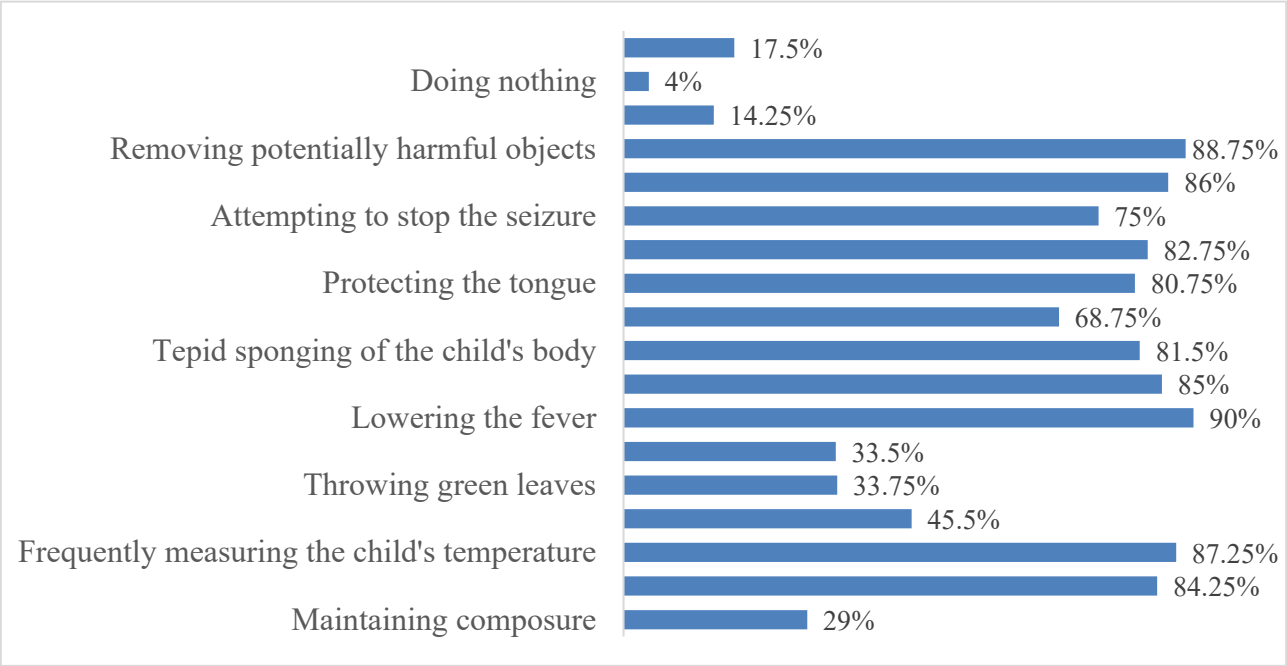

Figure 1: Mothers' attitudes and practices during a child's febrile seizure.

Table 3: Mothers' level of knowledge, attitudes, and practices (n=400).

	Frequency (N)	Proportion (%)
Febrile seizures (general knowledge)		
Insufficient	158	39.50
Adequate	242	60.50
Clinical manifestations		
Insufficient	242	60.50
Good	158	39.50
Causes		
Insufficient	296	74.00
Good	104	26.00
Attitudes and practices		
Inappropriate	60	15.00
Appropriate	340	85.00

DISCUSSION

This study, conducted among 400 mothers in Toliara, highlights a classic paradox observed in resource-limited settings: high recognition of the motor manifestations of febrile seizures (FS), contrasting with persistent gaps in etiological understanding and the strong influence of socio-cultural beliefs.

Clinical knowledge

Although direct experience (70% of mothers) facilitates visual recall of abnormal movements (85.75%) and fever (85.25%), this awareness remains superficial. Repeated exposure to febrile seizures does not necessarily improve parental understanding or the quality of management, as misconceptions and anxiety frequently persist.[6] This finding is further supported by data from India, where the misinterpretation of seizures as chills or fainting spells can delay diagnosis.[7] Conversely, the low recognition of autonomic signs (56%) suggests an incomplete understanding of febrile seizures, which is primarily based on their visible clinical manifestations. This aligns with findings from African studies showing that parents predominantly identify motor and dramatic signs at the expense of a comprehensive understanding of semiology and pathophysiology.[8,9]

The influence of cultural perceptions

The persistence of non-biomedical explanatory models, such as witchcraft or spirit possession, remains a major barrier. More than a quarter of the respondents still believed that seizures could be caused by evil spirit possession, a proportion close to the 30% reported by Abotsi et al in Ghana.[10] This mystical dimension, also documented by Anigilaje et al which includes misconceptions such as "black blood" or constipation directly influences therapeutic choices.[11] Indeed, fear of social stigma (40.8%) and attributing seizures to exogenous causes (e.g., vaccine side effects in Nigeria) sometimes encourage the initial use of traditional medicine, thereby delaying appropriate care.[12]

Attitudes and practices

An encouraging finding of our study is the high proportion of mothers (85%) who opt for immediate health facility utilization, demonstrating significant trust in the hospital system despite healthcare access constraints. However, this inclination toward biomedical care stands in stark contrast to an inadequate mastery of first-aid measures, revealing a major breakdown in the pre-hospital care chain. As Owusu highlights, the perception of causes plays a decisive role in the healthcare-seeking pathway: when families identify supernatural or domestic causes, the propensity to delay hospital visits in favor of attempting traditional remedies increases significantly.[13] This explanatory dualism does not vanish with simple hospital access; it persists in the daily lives of families who, while recognizing the clinical severity of the crisis, continue to incorporate empirical practices into their immediate response. Yarney et al confirm this observation in their study on home management in Ghana, highlighting that parent, despite being informed about the need to consult a physician, retain inappropriate reflexes such as excessive physical stimulation or forced oral administration of substances due to fear of a fatal outcome.[14]

This deficit in therapeutic education is exacerbated by a misinterpretation of fever. Corrard and Cohen demonstrated that parental perception is often focused on body temperature as an absolute danger indicator, overshadowing the underlying pathophysiological mechanisms of the seizure. This confusion leads mothers to focus their efforts on aggressive cooling measures or the immediate suppression of fever, while neglecting essential protective actions such as placing the child in the recovery position or securing the airway. The risk of invasive interventions, although strongly discouraged in the literature, remains high due to this persistent parental anxiety.[15]

Limitations

This research has certain limitations inherent to its design. The cross-sectional nature of the study precludes any causal inferences. Furthermore, reliance on self-reported data exposes the findings to recall and social desirability biases, as mothers may underestimate traditional practices that are perceived as less socially valued.

CONCLUSION

This study highlights that while mothers in Toliara display high recognition of the visible manifestations of febrile seizures, significant gaps remain regarding their understanding of causes and mastery of first-aid practices. Healthcare facility utilization is high, reflecting trust in the medical system; however, it coexists with a notable persistence of traditional beliefs, particularly demonic possession and witchcraft. This dual care-seeking behavior underscores a deficit in therapeutic education. It justifies the implementation of health education programs tailored to the local socio-cultural context to improve the early and safe management of febrile seizures.

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