

## Original Article

# Physical methods used by Sudanese mothers in rural settings to manage a child with fever

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## ABSTRACT

Although the mainstays of antipyretic treatments are drugs such as paracetamol and ibuprofen, physical methods are also used. These include tepid sponging, removing clothes, and cooling the environment with fans to improve ventilation. The objective of this study is to assess the physical methods used by Sudanese rural mothers to manage a child with fever. A cross-sectional descriptive study was designed and conducted within 6 months; it involved 332 mothers of children under five. The data were collected through using a standardized administered questionnaire and focus group discussion and analyzed by statistical package for social science version 15.0 (SPSS ).

Tepid sponging was used by 47% of the interviewed mothers. 15% of the mothers increased fluid intake,

7% bathed the child and 5% put the child in light clothes. 59% of mothers applied tepid sponging on head, 33.9% on all the body, 3.7% and 2.2% on groin area and axilla, respectively. The majority of mothers (86%) used water from refrigerator or zeir [water clay pot] for applying tepid sponging, 9% used tap water, and 3% used ice water.

In conclusion, this study revealed that the common physical treatment method for fever used by mothers was tepid sponging with inappropriate application.

### Key word:

Child; Fever; Physical treatment methods; Tepid sponging.

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## INTRODUCTION

Fever is a common response of the body to infection. It makes people feel unwell and can result in serious complications such as convulsions [1]. Although the mainstays of antipyretic treatments are drugs such as paracetamol and ibuprofen, physical methods are also used [2]. Physical methods for cooling are often recommended for treating fever. The methods that are cheap, readily available and most commonly used include; tepid sponging, bathing, fanning, and cooling blankets [1,2]. Tepid sponging and bathing are widely used by caregivers and doctors. Rubbing alcohol on the skin, cool enemas, and ice packs have also been used for cooling the body during fever, but there are indications that these methods may cause severe adverse effects in exceptional cases. Heat stroke or extremely high body temperature (hyperthermia), conditions under which antipyretic drugs are deemed unsuitable, submerging patients in cold water is recommended to cool them quickly. Sponging reduces heat through conduction, convection, or evaporation [1].

Opinions vary among experts about the actual benefits and harms of physical methods. The common adverse effects of physical methods include shivering, crying, and discomfort. Sponging with cold water may cause peripheral cooling, but the constriction of the blood vessels can actually cause heat conservation. Tepid sponging has also been reported to cause these adverse effects [1].

There is a lack of evidence about opening windows or fanning as methods of reducing temperature, but tepid sponging offers no significant benefit over antipyretic agents alone. In studies looking at combinations of sponging techniques and drugs, sponging seemed to have no or only short-lived additive effects on the reduction in temperature. Undressing alone had little effect on temperature. Discomfort was also significant, following tepid sponging [3]. Sheets and blankets may be cooler than a duvet, so are safer for

children under one year old. Infants lose excess heat from their heads, so it is important to keep their heads uncovered when they have a fever [4]. Having fever can increase a child's risk of becoming dehydrated by excessive perspiration [1,3,5]. Fluids containing sugar are preferable to plain water as the child's calorie intake is likely to be reduced and hypoglycaemia can occur in infants, especially if there are ongoing losses such as vomiting or diarrhoea. It is recommended to continue breastfeeding during period of fever if the child is already on breastfeeding [3].

The objective of this study is to assess the physical methods used by Sudanese rural mothers to manage a child with fever.

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## MATERIAL AND METHODS

This is a descriptive, community-based study. It was conducted in a rural area on Masaad village in Barakat locality, which is located in Al Jazirah State of Central Sudan. The Study population was composed of 332 mothers who lived in the study area and had at least one child under five years of age. Standardized pre tested questionnaire was used for data collection from the mothers. The data was analysed using statistical package for social science (SPSS), version 15.

Ethical clearance was obtained from the Institutional Review Board of Alneelain University, Faculty of Medicine and Health Science. Approval was also obtained from the popular committee of the village. Verbal consent was obtained from those who accepted to participate prior to the interview after thorough explanation of the aims and methods of the study.

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## RESULTS

The majority of the 332 mothers of children under five participating in this study were either illiterate (40.4%), or had primary school education (19.9%)

with variable socioeconomic status (Tables 1, 2, 3). Tepid sponging was used by 47% of the interviewed mothers. 15% of the mothers increased fluid intake, 7% bathed the child and 5% put the child in light clothes. 59% of mothers applied tepid sponging on head, 33.9% on all the body, 3.7% and 2.2% on

groin area and axilla, respectively (Figures 1, 2). The majority of mothers (86%) used water from refrigerator or Zeer [water clay pot] for applying tepid sponging, 9% used tap water, and 3% used ice water (Figure 3).

**Table 1 - Background characteristics of the study population**

Characteristics		Frequency	Percentage
Age in years	Less than 20 years old	33	9.9
	20-29 years	128	38.6
	30-39 years	147	44.3
	40-49 years	24	7.2
	Total	332	100.0
Educational level	Illiterate	134	40.4
	Informal education	2	0.6
	Primary school	66	19.9
	Secondary school	72	21.7
	University	55	16.6
	post university	3	0.9
Total	332	100.0	
Current Occupation	Government employee	20	6.0
	Private sector employee	3	0.9
	Farmer	53	16.0
	Shepherd	1	0.3
	Retired	2	0.6
	Housewife	251	75.6
	Others	2	0.6
	Total	332	100.0

**Table 2 - Socio-economic characteristics of the study population**

Characteristic		Frequency	Percentage
Living with a husband	Yes	225	67.8
	No	107	32.2
	Total	332	100.0
Number of under five children	One child	141	42.4
	Two children	138	41.6
	Three children	46	13.9
	More than three	7	2.1
	Total	332	100.0
Coverage by health insurance	Yes	62	18.7
	No	270	81.3
	Total	332	100.0
Annual income	Low income	285	85.8
	Moderate income	19	5.7
	High income	28	8.4
	Total	332	100.0

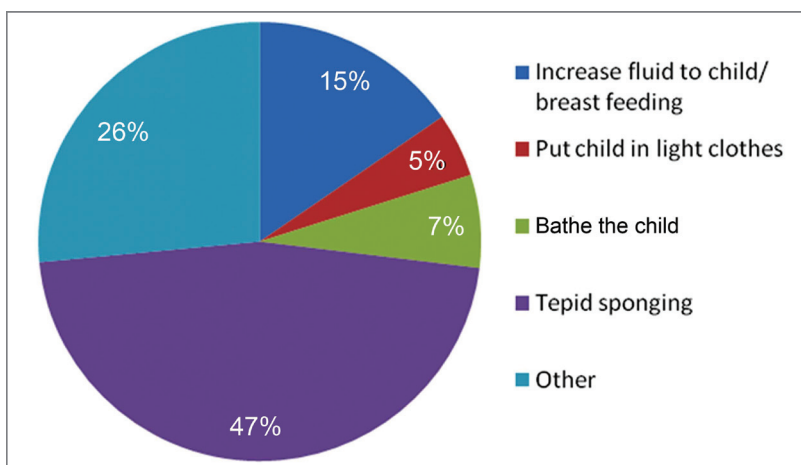


Figure 1- Physical method used by 332 mothers for treating fever

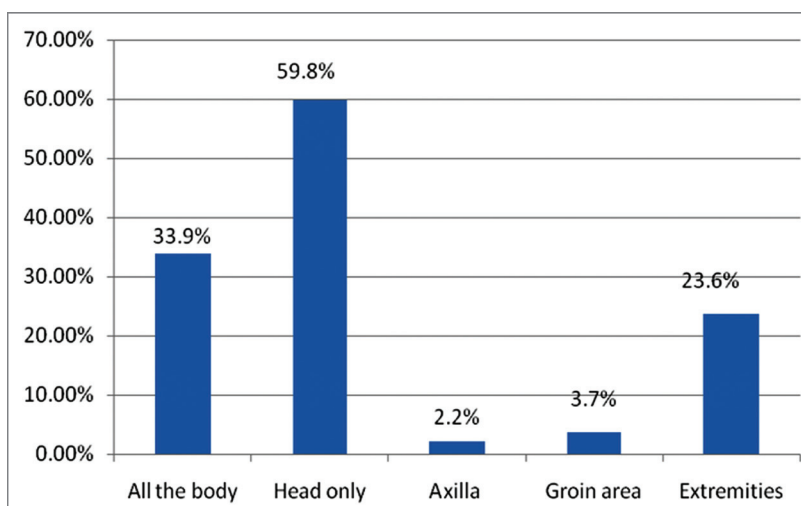


Figure 2 - Site of body where 332 mothers applied tepid sponging

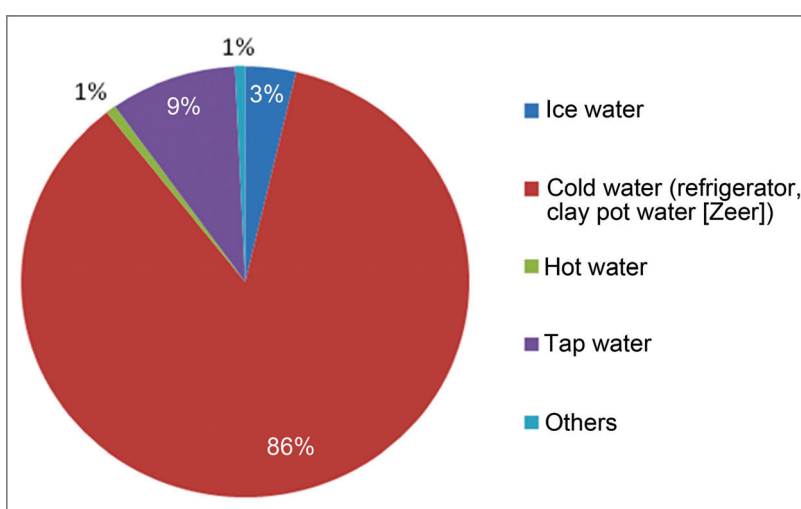


Figure 3 - Types of water used for tepid sponging by 332 mothers

**Table 3 - Types of water for tepid sponging used by mothers in relation to educational level.**

Types of water used		Educational Level					Total	
		Illiterate	Primary school	Secondary school	University	Above university		Informal education
Ice water	Count	3	3	3	1	0	0	10
	%	3.4%	5.3%	4.5%	1.9%	0%	0%	3.7%
Cold water (refrigerator/Zeer)	Count	82	47	57	42	3	2	233
	%	92.1%	82.5%	85.1%	79.2%	100.0%	100.0%	86.0%
Hot water	Count	0	1	1	0	0	0	2
	%	0%	1.8%	1.5%	0%	0%	0%	0.7%
Tap water	Count	3	6	6	9	0	0	24
	%	3.4%	10.5%	9.0%	17.0%	0%	0%	8.9%
Others	Count	1	0	0	1	0	0	2
	%	1.1%	0%	0%	1.9%	0%	0%	0.7%
Total	Count	89	57	67	53	3	2	271
	%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

P – Value = 0.824

**Table 4 - Part of body where mothers apply tepid sponging in relation to age**

Site for applying tepid sponging		Age				Total
		less than 20 years	20 - 29 years	30 - 39 years	40 - 49 years	
All the body	Count	8	31	43	7	89
	%	33.3%	29.2%	35.0%	38.9%	32.8%
Head only	count	10	55	59	9	133
	%	41.7%	51.9%	48.0%	50.0%	49.1%
Axilla	Count	0	2	4	0	6
	%	0%	1.9%	3.3%	0%	2.2%
groin area	Count	2	2	1	0	5
	%	8.3%	1.9%	0.8%	0%	1.8%
Extremities	Count	4	16	16	2	38
	%	16.7%	15.1%	13.0%	11.1%	14.0%
Total	Count	24	106	123	18	271
	%	100.0%	100.0%	100.0%	100.0%	100.0%

P – Value = 0.637

## DISCUSSION

This study revealed that only home management of fever in children is practiced by 3.6 % of participants, while home management combined with antipyretic was used by 53%. Mothers used variety of physical methods including; tepid sponging (47%) increased fluid intake (15%), and bathing the child (7%).

It seems that mothers were not well informed about the role of fluid and optimum ventilation of exposed area in management of fever. Eighty six percent of mothers used cold water, (from the refrigerator or zeir) which can result in vasoconstriction, shivering and discomfort for the child. Although 47% of mothers used tepid sponging, however the majority argued that tepid sponging was ineffective. This is probably due to the fact that most of mothers applied tepid sponging on the head only instead of the under armpit, groin area and whole body.

WHO guidelines for the management of fever associated with common childhood illnesses recommend undressing the child to reduce the fever [6].

In comparison to our study group, supportive ways of fever management at home adopted by the Nigerian mothers include reducing clothing and exposure to air (91.7%), tepid sponging (90.1%), cold bath (67.7%), fanning (9.4%) [7]. Similarly, the most commonly reported methods to treat feverish child in Palestine are sponging and giving antipyretic medication [8].

Dalal et al found that during febrile episodes, increasing fluid intake, removing excess clothing

and linens, bathing or sponging with tepid water, and using antipyretics may offer relief [9]. In the very sick, administration of fluids intravenously or subcutaneously may be warranted. Other comfort measures include applying a lubricant to dried lips and keeping mucous membranes moist with ice chips. Convective cooling via increasing air circulation using fans or an airflow blanket may be effective to reduce the temperature and improve patient comfort. Additionally, clothes and bed linens should be dry and changed as needed [9].

Although there is no consensus on using, it is generally agreed that tepid compresses on the forehead, axilla or groins may comfort the child and help to reduce the fever. On the other hand, immersion of a child in a cold bath or the extensive use of cold compresses is not recommended as it reduces temperature too rapidly [10].

## CONCLUSION

This study revealed that the common physical treatment method for fever used by mothers was tepid sponging without optimum type of water and with mostly incorrect site of application.

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