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3
4 **ABSTRACT**

5 To determine mother's perception and management of fever in their children. It was a
6 descriptive cross-sectional study, carried out at the children outpatient clinic of the
7 department of Paediatrics, University of Port Harcourt Teaching Hospital, over a one-
8 year period, January to December, 2012. Every mother who presented with her child to
9 the children outpatient clinic was recruited and interviewed using a structured
10 questionnaire after obtaining written informed consent, as they presented their children
11 to the children outpatient clinic of the University of Port Harcourt Teaching Hospital until
12 we recruited **324mothers**, whose children aged between 0-16 years into the study. A
13 little over half of these mothers had completed secondary education. **The thermometer**
14 **was used by 209(64.50%) mothers and the preferred route was by mouth 135(41.67%).**
15 **175(54.01%)mothers reported temperature < 35 °C as fever. 49.07% of the mothers**
16 **were worried about the consequences of the fever. 43(13.3%) would give paracetamol.**
17 **24(7.4%) would tepid sponge. 15(4.6%) would give a cold bath. 6(1.9%) expose the child**
18 **to air with reduced clothing. 4(1.2%), wrap the child with warm and thick cloth. 2(0.6%)**
19 **gave antibiotics. 11 (3.4%) gave antimalaria. 6(1.9%) gave teething drugs. 1 (0.3%) gave**
20 **nothing. Most mothers got their information on knowledge of fever management from**
21 **doctors and nurses-164(50.62%). Paracetamol was the most commonly used drug by**
22 **mothers for the treatment of fever at home-217 (67%). 87(26.852%) would take the child**
23 **to hospital if fever persisted. This study found a significant association between using**
24 **physical methods such as giving cold bath to reduce fever, and tepid sponging to reduce**
25 **fever with no formal education P < 0.0001 and P< 0.0165 respectively. Data was analyzed**
26 **using Epi-info version 7. Mothers awareness of fever in Port Harcourt is low and**
27 **Paracetamol is commonly given to children with fever.**

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29 **KEY WORDS:** Fever, mothers, Perception, management

30 **1. Introduction**

31 Fever is a very common complaint accounting for 70% of the presenting complaints to
32 the children outpatient clinic and general medicine outpatient department. [1] A lot of
33 wrong perceptions about fever in children has led to high parental anxiety that is
34 known globally [2] in 1980, thirty-nine years ago a man called Barton Schmitt had
35 described parental concerns and anxiety about fever and called them Fever Phobia
36 [3] This fever phobia makes parents and caregivers manage fever over aggressively
37 and sometimes used wrong dosage of antipyretics to treat their children [4] Parents
38 dearth of knowledge about the cause of fever and its effect on the health of their
39 children, results in excess of fear and anxiety [5] There are several reports on
40 parents perception of fever and its management[1,6, 7, 8] which have brought out
41 the fact that parents knowledge of fever management is not adequate, as a result
42 they use wrong dosage of antipyretics according to Waish et al [4]. Very few parents
43 (3.5%) knew the correct temperature definition for fever and 44.4% determined fever
44 by touching the child's forehead [1] as reported by Rkain and co-workers. According
45 to Luay Al-Noun and Khalid Basheer [9], 12% of mothers actually added more clothes
46 or even covered with blankets in an effort to induce sweating on the assumption that

47 sweating will end fever. 67% of mothers did not know the correct body temperature
48 according to Luay Al-Noun and Khalid Basheer working in Bagdad. There were
49 evidently wrong methods of measuring fever and reducing it [10,11]. These
50 differences in the knowledge and management of fever in different countries may
51 have resulted from differences in geography, demography and education between
52 these countries Educational programs have been reported to positively influence
53 parents management of fever [12]. There is a dearth of knowledge regarding
54 mothers' perception of fever in children. The aim of this study was to elucidate the
55 perception of mothers and to compare our findings with what is happening in other
56 regions.

57 2. **Materials** and Methods

58 2.1 Study area

59 Children outpatient clinic of the Department of Paediatrics , University of Port
60 Harcourt Teaching Hospital. It is a Tertiary hospital located in Port Harcourt,
61 Southern Nigeria. The Paediatrics department provides both inpatient and
62 outpatient care.

63 2.2 Study population

64 The study population consisted of mothers who presented their children to the
65 children outpatient clinic of the department of Paediatrics at University of Port
66 Harcourt Teaching Hospital. The children aged between 0-16 years and their
67 mothers consented for the study.

68 2.3 Selection and inclusion criteria

69 2.3.1 **Inclusion** criteria

70 **Every Parent/ caregiver who brought their child or ward to the**
71 **children outpatient clinic during the study period and consented for**
72 **the study.**

73 2.3.2 **Exclusion** criteria

74 **Every Parent/ caregiver who brought their child or ward to the**
75 **children outpatient clinic during the study period and did not give**
76 **consent for the study**

77 2.4 Sampling method

78 A non-probability sampling technique (Opportunistic sampling method) was
79 used. All the mothers in the children outpatient clinic who were approached
80 agreed to be part of the study. Every next mother who brought their child to the
81 clinic was recruited until we had 324 subjects.

82 The study was conducted over a one-year period January to December 2012.

83 A structured questionnaire was used. The questionnaire was designed to
84 retrieve information on mothers' biodata, their knowledge, perception, fears
85 and management of their children/wards fever at home.

86 2.5 Data management and analysis

87 Data was collected using a structured questionnaire, and entered into
88 Microsoft excel spread sheet and analysis was done using Epi-info version 7

89 3. **Results and Discussion**

90 Three hundred and twenty-four mothers who brought their children to the children
91 outpatient clinic of the department of Paediatrics at the University of Port Harcourt
92 **teaching hospital were recruited and interviewed. Over half of the study population, 183**
93 **(56.48%) completed secondary education, close to half of the mothers 161 (49.69%) were**
94 **aged between 30 years to 39 years. Eighty- three (25.62%) of the mothers were business**
95 **mothers, 39 (12.04%) were civil servants. 56(17.28%) were housewives. 33 (10.19%)**

96 were students. 76 (23.46%) were unemployed. Most of the mothers, one hundred and
97 sixty-four (50.62%) got information on fever management from doctors and nurses
98 followed by relatives and friends 113(34.87%). 159(49.07%) were worried about the
99 consequences of fever. 175(54.01%) mothers defined fever as temperature < 35 °C. Oral
100 route was the most preferred route of monitoring fever by mothers 135 (41.67%). It is
101 worrisome that 4mothers (1.2%) would wrap the child with warm and thick clothes in the
102 presence of fever. 43 (13.3%) gave paracetamol (acetaminophen) to relieve fever at
103 home, while 217 (67.0%) would give paracetamol as the preferred analgesic for relieving
104 fever. Eighty -seven mothers (26.852%) would take their child to hospital if fever
105 persisted. There was a significant association between using physical methods such as
106 giving cold bath to reduce fever, and tepid sponging to reduce fever with no formal
107 education $P < 0.0001$ and $P < 0.0165$ respectively.

108 **Discussion:** This work was on mothers' perception of fever, its monitoring and
109 management in Port Harcourt, Nigeria. Similar to the work of Rkain and coworkers in
110 Morocco [1]. About half of the mothers in this study completed secondary education,
111 there ages ranged from 20years to over 50years and most of them were business
112 women. Roughly half of them were unable to correctly define fever, they reported
113 temperature < 35 °C as fever which is comparable to the findings of Rkain et al in
114 Morocco where more than half of the parents did not know the correct temperature for
115 fever [1]. Oral route 135 (41.67%) and rectal route 13 (4.01%) were the preferred routes
116 by mothers in this study for recording their children's fever, this is in keeping with the
117 findings of Athamneh et al [6] working in Jordan where oral and rectal routes were the
118 preferred routes of monitoring children's fever by mothers in Jordan. Although this is in
119 contrast to the NICE guideline which recommends the axilla as the recommended route
120 [13]. Thota et al [14] in India reported that over 90% of parents in their study used the
121 armpit (axilla) in recording their children's fever which is in keeping with the NICE
122 guideline [13]. Parents should therefore be encouraged to use the axilla as a preferred
123 route for monitoring their children's temperature. Physical methods of temperature
124 reduction offer little benefit and cause crying and shivering in some children. It has been
125 reported that they should not be encouraged [13,15]. These physical methods to reduce
126 fever are therefore not recommended except in cases of hyperthermia [13]. 43.75% of
127 mothers in this study who responded to the method they use in reducing their children's
128 fever said they used physical methods. Rkain et al [1] reported that towel soaked in
129 water was used by parents to reduce children's fever in Morocco while Zyoud and
130 coworkers [16] reported that tepid sponging was used in Palestine and Chang et al [17]
131 working in Taiwan reported use of herbal medicines among other methods. Parents
132 should therefore be educated not to use physical methods in reducing their children's
133 fever. The NICE guideline [13] recommends the use of antipyretics Paracetamol or
134 Ibuprofen for reducing children's fever. Paracetamol is the most widely used
135 antipyretics and its dose is 10- 15mg/kg body weight/dose every 4-6hours. [12] In this
136 study, about 13.3% of the mothers administered paracetamol in attempt to reduce their
137 children's fever. Majority of Moroccan parents used paracetamol to reduce their
138 children's fever. [1] 12.87% of the mothers used other not recommended drugs such as
139 antibiotics 2%, antimalaria 14%, teething drugs 2%, herbal drugs 1% etc. Use of herbal
140 medicines was also reported in Taiwan by Chang et al [17] and is comparable to the
141 finding in this study while Athamneh et al reported 77% antibiotic use in reducing fever
142 [6]. It is worrisome that mothers are still using herbal medicines to reduce their
143 children's fever as they may be harmful. 49.07% of the mothers in this study worried
144 most about the complications of the fever, although these complications were not
145 specified, it's in keeping with other studies where parents worried about the harmful

146 effects of fever on their children [1, 18]. Athamneh et al [6] found the most harmful effect
 147 reported by parents to be brain damage [6]. 34.87% of the mothers in this study got
 148 information on knowledge of fever management from relatives and friends, this is a
 149 common practice in south urban Indian population as reported by Thota et al who
 150 reported an association between the advising source of antibiotics (other than
 151 doctors)and inappropriate fever management practices.[14] This study found a
 152 significant association between using physical methods such as giving cold bath to
 153 reduce fever, and tepid sponging to reduce fever with no formal education $P < 0.0001$
 154 and $P < 0.0165$ respectively. Studies have shown that educational level, socioeconomic
 155 status and cultural backgrounds are the major factors that determine knowledge and
 156 judgement of childhood fever [3,4]. It is not surprising therefore in this study to find
 157 mothers with no formal education being the most in using physical methods to reduce
 158 fever.

159 **Conclusions.**

160 This study found a poor knowledge of fever management among mothers who bring their
 161 children to the children outpatient clinic of university of Port Harcourt Teaching hospital.
 162 Mothers are still using physical methods to reduce their children’s fever contrary to the
 163 NICE guideline. It is encouraging that Paracetamol is the most commonly used
 164 antipyretics by mothers to reduce their children’s fever. Mothers with no formal
 165 education are more likely to use physical methods to reduce their children’s fever than
 166 the educated mothers. I would recommend that Paediatric association of Nigeria should
 167 come up with a guideline on Childhood fever management practice. This will help our
 168 mothers.

169 **LIMITATIONS**

170 This was a hospital-based study and as such its findings would not be a good
 171 representation of mother’s knowledge and practice of childhood fever management
 172 practices by mothers in the community. It will be good to replicate this study in the
 173 community.

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175 **4.0 Tables**

176 **TABLE 1. SOCIO- DEMOGRAPHIC CHARACTERISTICS OF THE MOTHERS**

SOCIO-CHARACTERISTICS	DEMOGRAPHIC	FREQUENCY	PERCENTAGE (%)
EDUCATION			
no formal education		3	0.93
completed primary		26	8.02
completed secondary		183	56.48
tertiary		112	34.57
total		324	100

DISTRIBUTION OF MOTHERS AGE		
AGE GROUP IN YEARS	FREQUENCY	PERCENTAGE
20-29	2	0.62
30-39	161	49.69
40-49	114	35.19
≥50	21	6.48
no response	26	8.02
grand total	324	100

MOTHER'S OCCUPATION	FREQUENCY (n)	PERCENTAGE (%)
business	83	25.62
civil servant	39	12.04
housewife	56	17.28
student	33	10.19
unemployed	76	23.46
no response	37	11.41
total	324	100

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178 **TABLE 2 MOTHER'S KNOWLEDGE FEVER**

TEMPERATURE	FREQUENCY	PERCENTAGE (%)
<35 °C	175	54.01
>37.5 °C ≥ 40 °C	149	45.99
TOTAL	324	100

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180 **TABLE 3. SOURCE OF KNOWLEDGE ON FEVER MANAGEMENT**

SOURCE OF KNOWLEDGE ON FEVER MANAGEMENT		
OPTIONS	FREQUENCY	PERCENTAGE (%)
doctors and nurses	164	50.62
relatives and friends	113	34.87
reading	16	4.94
pharmacist	15	4.63
internet	2	0.62
others	9	2.78
no response	5	1.54
total	324	100

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182 **TABLE 4. REASON WHY MOTHERS WORRY ABOUT FEVER**

REASON WHY MOTHERS WORRY ABOUT FEVER	FREQUENCY	PERCENTAGE (%)
Not available	6	1.85
need to go to hospital	69	21.30
consequences of fever	159	49.07
restlessness of the feverish child	79	24.38
need to wake up frequently because of the child	11	3.40
total	324	100

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186 **TABLE 5. PREFERRED ROUTE OF MONITORING FEVER**

PREFERRED ROUTE OF MONITORING FEVER	FREQUENCY	PERCENTAGE (%)
Not available	63	19.44
oral	135	41.67
axilla	46	14.20
anus	13	4.01
ears	15	4.63
unspecified	52	16.05
total	324	100

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188 **TABLE 6. MANAGEMENT OF FEVER AT HOME**

MANAGEMENT OF FEVER AT HOME	FREQUENCY	PERCENTAGE (%)
Give the child a cold bath	15	4.6
Tepid sponge	24	7.4
Expose the child to air with reduced clothing	6	1.9
Wrap the child with warm and thick clothes	4	1.2
Give paracetamol	43	13.3
Give antibiotics	2	0.6
Give antimalarial drugs	11	3.4
Give teething drugs	6	1.9
Give Nothing	1	0.3
No Response	212	65.4
Total	324	100.0
TYPES OF DRUGS USED TO TREAT FEVER AT HOME BY MOTHERS		
	FREQUENCY	PERCENTAGE (%)
Paracetamol	217	67.0
Ibuprofen	6	1.9
Chloroquine	7	2.2
Artesunate	12	3.7
Teething powder	2	0.6
Bonababe	5	1.5
Antibiotics	2	0.6
Multivitamins	12	3.7
Herbal Medicine	1	0.3
No Response	60	18.5
Total	324	100.0
WHAT MOTHERS DO IF FEVER PERSISTS OPTIONS		
	FREQUENCY	PERCENTAGE (%)
Take the child to the hospital	87	26.852
Take care of the child at home	52	16.05
Take the child to a pharmacy	41	12.654
Take the child to a patent medicine store	57	17.593

Give antipyretics +tepid sponge + go to doctor	80	24.691
No Response	7	2.16
Total	324	100.0

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Table 7. Cross-Tabulation of Mother's method of controlling fever and Educational level

Method of controlling fever	No Response	No Formal education	Completed Primary	Completed secondary	Tertiary	Chi-square (p-value)
Give the child a cold bath	1 (33.3)	2 (7.7)	0 (0.0)	0 (0.0)	2 (1.8)	29.34 (0.0001)*
Tepid sponge	1 (33.3)	1 (3.8)	32 (22.2)	12 (30.8)	41 (36.6)	12.11 (0.0165)*
Expose the child to air with reduced clothing	0 (0.0)	4 (15.4)	33 (22.9)	2 (5.1)	13 (11.6)	10.72 (0.0300)*
Wrap the child with warm and thick clothes	1 (33.3)	5 (19.2)	23 (16.0)	3 (7.7)	9 (8.0)	7.42 (0.1150)*
Give paracetamol	0 (0.0)	10 (38.5)	25 (17.4)	13 (33.3)	9 (8.0)	22.18 (0.0002)*
Give antibiotics	0 (0.0)	4 (15.4)	30 (20.8)	8 (20.5)	38 (33.9)	4.41 (0.3523)**
Give antimalarial drugs	0 (0.0)	0 (0.0)	1 (0.7)	1 (2.6)	0 (0.0)	0.99 (0.3191)**
Total	3 (100.0)	26 (100.0)	144 (100.0)	39 (100.0)	112 (100.0)	

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* Distribution is statistically significant ($p < 0.05$) Mothers did not indicate more than one option

**Distribution is not statistically significant ($p > 0.05$)

Competing Interest There is no competing interest to this study.

Author's Contributions: Author 1: Collected the data and wrote up the article, Author 2: Initiated the Idea of the study and drew up the structured questionnaire

198 **Consent:** All authors declare that written informed consent was obtained from the
199 mothers.

200 **Ethical approval**

201 **There were no ethical issues in this study**

202 **References**

- 203 [1] Rkain M, Rkain I, Safi M, Ahid S, Benjelloun BDS. Knowledge and management of
204 fever among Moroccan parents East Mediterr Health J. 2014 Jun 18; 20(6):397-402
- 205 [2] Jones T Jacobsen SJ Childhood febrile seizures: Overview and Implications.
206 International J Med Sci. 2007;4(2):110-4
- 207 [3] Crocetti M, Moghbeli N, Serwint J. Fever Phobia revisited: have parental
208 misconceptions about fever changed in 20years? Pediatrics 2001 Jun,107(6);1241-
- 209 [4] Waish A, Edwards H, Fraser J. Parents childhood fever management: community
210 survey and instrument development. **J Adv Nurs**. 2008 Aug 63(4);376-88
- 211 [5] Rideout ME, First LR. Fever measuring and managing a sizzling symptom.
212 Contemp Pediatr 2001;18;42-50
- 213 [6] Athamneh L, El-Mughrabi M Atharmneh M, Essien EJ, Abughosh S.J Appl Res
214 Child 1. Vol 5 Informing Policy Child Risk; 2014, Parents Knowledge, attitudes and
215 beliefs of childhood fever management in Jordan: a cross sectional study; p.8
- 216 [7] Oshikoya K.A, Senbanjo I.O, Fever in children: Mothers Perceptions and their
217 home management. Iran J Pediatr. 2008;18 (3)229-36
- 218 [8] Bertille N, Fournier-Charrie're E, Kneller P. Pons G. Chalumeau M. Managing
219 Fever in children: ANational survey of Parents 'Knowledge and practices in France.
220 PLoS ONE. 2013;8(12): e83469
- 221 [9] Luay Al-Nouri, Khalid Basheer. Mothers Perception of Fever in Children; Journal
222 of Tropical Pediatrics **volume 52. Issue 2 2006, 113-6**
- 223
- 224 [10] Gohar UF, Khubaib S, Mehmood A. Self-medication trends in children by their
225 parents. J Develop Drugs. 2017;6: 173,
- 226 [11] Chiappini E, Parretti A Becherucci P, Pierattelli M, Bonsignori F, Galli L, Martino
227 M Parental and medical knowledge and management of fever in Italian preschool
228 children. BMC Pediatr. 2012; 12:97.
- 229 [12] Alqudah M, Johnson M, Cowin L, George A. An innovative fever management
230 education program for parents, caregivers and emergency nurses. **Adv Emerg Nurs J**
231 2014;36(1);52-61.
- 232 [13] NICE National Institute for Health and Care Excellence Clinical Guidelines.
233 "Feverish illness in children" assessment and initial management in children younger
234 than 5 years issued. National Collaborating Centre for Women and Children's health
235 (UK) London Royal College of Obstetrics and Gynaecologists (UK) May 2013.
- 236 [14] Thota S, Ladiwala N, Sharma P.K, Ganquly E Fever awareness, management
237 practices and their correlates among parents of under-five children in urban India. **Int**
238 **J Contemp Pediatrics**. 2018 5(4): 1368-76
- 239 [15] Meremikwu M, Oyo-Ita A. Physical methods for treating fever in children.
240 Cochrane Database Syst Rev 2003;(2) (2):1-23
- 241 [16] Zyoud S, Al-Jabi S, Sweileh W, Nabulsi M, Tubaila M, Rahmat Awang et al. Beliefs
242 and practices regarding childhood fever among parents: A cross- sectional study
243 from Palestine. **BMC Pediatr**, 2013; 13:66.
- 244 [17] Chang L, Lui C, Huang M. Parental Knowledge, concerns and management of
245 childhood fever in Taiwan. **J Nurs Res** 2013;21(4):252-60

246
247
248

[18] Ravanipour M, Akaberian S , Hatam G. Mothers' perceptions of fever in children
J Educ Health Promot. 2014; 3:97

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