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4 **ABSTRACT**

5 **AIM:** To determine mother's perception and management of fever in their children.

6 **STUDY DESIGN:** It was a descriptive cross-sectional study, carried out at the children
7 outpatient clinic of the department of Paediatrics, University of Port Harcourt Teaching
8 Hospital, over a one-year period, January to December, 2012.

9 **Methodology:** Mothers were randomly selected 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 the sample size was reached. **SAMPLE:** Three hundred and twenty-four mothers whose
13 children aged between 0-16years were recruited into the study. Half of these mothers
14 had completed secondary education.

15 **Results:** The thermometer was used by 209(64.5%) mothers and the preferred route was
16 by mouth 135(41.67%). They reported temperature < 35 °C as fever. 49.07% of the
17 mothers were worried about the consequences of the fever. 87(26.9%) would just take
18 the child to hospital once they observe a fever. 43(13.3%) would give paracetamol.
19 24(7.4%) would tepid sponge. 15(4.6%) would give a cold bath. 6(1.9%) expose the child
20 to air with reduced clothing. 4(1.2%), wrap the child with warm and thick cloth. 2(0.6%)
21 gave antibiotics. 11 (3.4%) gave antimalaria. 6(1.9%) gave teething drugs. 1 (0.3%) gave
22 nothing. Most mothers got their information on knowledge of fever management from
23 doctors and nurses-164(50.52%). Paracetamol was the most commonly used drug by
24 mothers for the treatment of fever at home-217 (67%). This study found a significant
25 association between using physical methods such as giving cold bath to reduce fever,
26 and tepid sponging to reduce fever with no formal education $P < 0.0001$ and $P < 0.01$
27 respectively. Data was analyzed using Epi-info version 7.

28 **Conclusion:** Mothers awareness of fever in Port Harcourt is low and Paracetamol is
29 commonly given to children with fever.

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

32 **1.0 Introduction**

33 Fever is a very common complaint accounting for 70% of the presenting complaints to
34 the children outpatient clinic and general medicine outpatient department. [1] A lot of
35 wrong perceptions about fever in children has led to high parental anxiety that is
36 known globally [2] in 1980, thirty-nine years ago a man called Barton Schmitt had
37 described parental concerns and anxiety about fever and called them Fever Phobia
38 [3] This fever phobia makes parents and caregivers manage fever over aggressively
39 and sometimes used wrong dosage of antipyretics to treat their children [4] Parents
40 dearth of knowledge about the cause of fever and its effect on the health of their
41 children, results in excess of fear and anxiety [5] There are several reports on
42 parents perception of fever and its management[1,6 7, 8] which have brought out the
43 fact that parents knowledge of fever management is not adequate, as a result they
44 use wrong dosage of antipyretics[4]according to Waish et al. Very few parents

45 (3.5%) knew the correct temperature definition for fever and 44.4% determined fever
46 by touching the child's forehead [1] as reported by Rkain and co-workers. According
47 to Luay Al-Noun and Khalid Basheer, 12% of mothers actually added more clothes or
48 even covered with blankets in an effort to induce sweating on the assumption that
49 sweating will end fever. [9] 67% of mothers did not know the correct body
50 temperature according to Luay Al-Noun and Khalid Basheer working in Bagdad.
51 There was evidently wrong methods of measuring fever and reducing it [10,11] These
52 differences in the knowledge and management of fever in different countries may
53 have resulted from differences in geography ,demography and education between
54 these countries Educational programs have been reported to positively influence
55 parents management of fever[12] There is a dearth of knowledge regarding mothers
56 perception of fever in children. The aim of this study is to elucidate the perception of
57 mothers and to compare our findings with what is happening in other regions.

58 2.0 Materials and Methods

59 2.1 Study area

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

64 2.2 Study population

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

69 2.3 Selection and inclusion criteria

70 2.3.1 Inclusion criteria

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

74 2.3.2 Exclusion criteria

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

78 2.4 Sampling method

79 A non-probability sampling technique (consecutive sampling method) was
80 used. In the consecutive sampling method, every next parent or caregiver who
81 brought their child/ward to the children outpatient clinic and met the inclusion
82 criteria was recruited for the study until the calculated sample size was
83 reached.

84 2.5 Data collection management and analysis

85 The study was conducted over a one-year period January to December 2012.
86 A structured questionnaire was used. The questionnaire was designed to
87 retrieve information on mothers' biodata, their knowledge, perception, fears
88 and management of their children/wards fever at home. Data analysis was with
89 Epi-info version 7.

90 2.6 Data management and analysis

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

93 3.0 Results and Discussion

94 Three hundred and twenty-four mothers who brought their children to the children
95 outpatient clinic of the department of Paediatrics at the University of Port Harcourt
96 teaching hospital met the inclusion criteria and were interviewed. Over half of the study
97 population, 183 (56.04%) completed secondary education, close to half of the mothers
98 161 (49.69%) were aged between 30years to 39years. Eighty- three (25.6%) of the
99 mothers were business mothers, 39 (12%) were civil servants .17.3% were housewives.
100 33 (10.2%) were students. 75 (23.4%) were unemployed. Most of the mothers, one
101 hundred and sixty-four (50.52%) got information on fever management from doctors and
102 nurses followed by relatives and friends 113(34.88%). 159(49.07%) were worried about
103 the consequences of fever. 175(54.01%) mothers defined fever as temperature < 35 °C.
104 Oral route was the most preferred route of monitoring fever by mothers 135 (41.67%). It
105 is worrisome that 43mothers (13.3%) would wrap the child with warm and thick clothes in
106 the presence of fever. Two hundred and seventeen mothers (67.7%) gave paracetamol
107 (acetaminophen) as the preferred drug to relieve fever in their children. Eighty -seven
108 mothers (26.9%) would take their child to hospital if fever persisted. There was a
109 significant association between using physical methods such as giving cold bath to
110 reduce fever, and tepid sponging to reduce fever with no formal education $P < 0.0001$
111 and $P < 0.01$ respectively.

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

144 49.07% of the mothers in this study worried most about the complications of the fever,
 145 although these complications were not specified, it's in keeping with other studies where
 146 parents worried about the harmful effects of fever on their children [1, 18]. Athamneh et
 147 al [6] found the most harmful effect reported by parents to be brain damage [6]. This
 148 study found a significant association between using physical methods such as giving
 149 cold bath to reduce fever, and tepid sponging to reduce fever with no formal education P
 150 < 0.0001 and $P < 0.01$ respectively. Studies have shown that educational level,
 151 socioeconomic status and cultural backgrounds are the major factors that determine
 152 knowledge and judgement of childhood fever [3,4]. It is not surprising therefore in this
 153 study to find mothers with no formal education being the most in using physical methods
 154 to reduce fever.

155 **Conclusions.**

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

164 **LIMITATIONS**

165 This was a hospital-based study and as such its findings would not be a good
 166 representation of mother's knowledge and practice of childhood management of fever
 167 by mothers in the community. It will be good to replicate this study in the community.

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169 **4.0 Tables**

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

SOCIO- DEMOGRAPHIC CHARACTERISTICS	FREQUENCY	PERCENTAGE (%)
EDUCATION		
NO FORMAL EDUCATION	3	0.93
COMPLETED PRIMARY	26	8.02
COMPLETED SECONDARY	183	56.04
TERTIARY	112	34.5
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	25.6%
Civil Servant	39	12.0%
Housewife	56	17.3%
Student	33	10.2%
Unemployed	76	23.4%
No Response	37	11.4%
Total	324	100.00%

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

TEMPERATURE	FREQUENCY	PERCENTAGE (%)
<35 °C	175	54.01
>37.5 °C ≥ 40 °C	149	45.98
TOTAL	324	100%

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174 **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	34.88
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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176 **TABLE 4. REASON WHY MOTHERS WORRY ABOUT FEVER**

REASON WHY MOTHERS WORRY ABOUT FEVER	FREQUENCY	PERCENTAGE (%)
NA	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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180 **TABLE 5. PREFERRED ROUTE OF MONITORING FEVER**

PREFERRED ROUTE OF MONITORING FEVER	FREQUENCY	PERCENTAGE (%)
NA	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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182 **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	26.9
Take care of the child at home	52	16.0
Take the child to a pharmacy	41	12.7
Take the child to a patent medicine store	57	17.6
Give antipyretics +tepid sponge + go to doctor	80	24.7
No Response	7	2.2
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)	

186 * Distribution is statistically significant ($p < 0.05$)187 **Distribution is not statistically significant ($p > 0.05$)188 **Competing Interest** There is no competing interest to this study.189 **Author's Contributions:** Author 1: Collected the data and wrote up the article, Author 2:
190 Initiated the Idea of the study and drew up the structured questionnaire191 **Consent:** All authors declare that written informed consent was obtained from the
192 mothers.193 **Ethical approval**

194 Not applicable.

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