

## Effect of Tepid Vs Warm sponging on body temperature and comfort among children with Pyrexia at Sri Ramakrishna hospital, Coimbatore

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### Abstract

#### Objectives:

1. Evaluate the effect of tepid sponging among children with pyrexia.
2. Evaluate the effect of warm sponging among children with pyrexia.
3. Compare the effect of tepid sponging with warm sponging among children with pyrexia.

**Materials and methods:** 34 children aged between 1-12 years with the body temperature of 100°F -103°F were selected for the study. Pre test post test - repeated measures design was used. Total enumerative (consecutive) sampling technique 34 samples were selected, 17 were assigned to experimental group-I and 17 to experimental group-II. Initial body temperature (0 minute) was assessed by using digital thermometer and recorded in temperature measurement table. Tepid sponging (30°C-40°C) was given for experimental group-I and warm sponging (60°C-70°C) for experimental group-II, for 15 minutes. Comfort level was assessed by using modified comfort behavior check list during intervention. After intervention the body temperature was assessed and recorded at 15<sup>th</sup> minute, 30<sup>th</sup> minute, 45<sup>th</sup> minute and 60<sup>th</sup> minute.

**Results:** Paired 't' test was used to test the effect of both tepid and warm sponging. Results showed that, there is a significant difference in the level of body temperature in children before and after sponging among two groups. Student 't' test was used to analyze the changes in body temperature between the two groups. The calculated 't' values at 15<sup>th</sup> minute, 30<sup>th</sup> minute, 45<sup>th</sup> minute and 60<sup>th</sup> minute were 0.04, 0.62, 0.8 and 1.12 respectively are not significant at 0.05 level, which shows that there is no difference between tepid and warm sponging in reducing body temperature. Analysis on effect of tepid Vs warm sponging on comfort was done. The calculated 't' value of 6.69 for comfort is significant at 0.001 level, which shows that warm sponging is effective in promoting comfort among children.

**Conclusion:** The findings revealed that, tepid and warm sponging are effective in reducing body temperature, but warm sponging is effective in promoting comfort among children with pyrexia than tepid sponging.

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**Keywords:** Fever, tepid sponging, warm sponging

**Introduction**

Fever is very common in young children, with 20% to 40% of parents reported illness in each year. As a result, fever is probably the commonest reason for a child to be taken to the doctor. Fever is also the second most common reason for a child being admitted to hospital.

Fever is an important symptom of underlying disease condition and in general it is considered as harmful in pediatric age group as it may lead to dehydration, febrile seizures and stupor. The increase metabolic demands, stress the patient with marginal cardiac and cerebral vascular supply. The physical therapy offers a simple and cost effective way of lowering the body temperature.

Paracetamol is readily absorbed from the gastrointestinal tract with peak plasma concentrations occurring about 10 to 60 minutes after oral administration. The elimination half-life varies from about 1 to 3 hours. There is a chance of abrupt increase of temperature during the interval between doses of antipyretics after its peak action of 2 hours. Tepid water and cold water are commonly used for sponging which can cause some discomfort. Bathing with warm water will certainly help in dilating the sweat glands and reducing the stink of sweat and will give some freshness and will provide comfort.

In febrile patients the use of luke warm water must be encouraged to reduce the level of discomfort and settles down the temperature from its peak level. Bathing with luke warm water will certainly help in dilating the sweat glands and reducing the stink of sweat and will give some freshness to the children. Luke warm bath was given to children, sick patients and bed ridden. A regular bath or cold sponging is not advisable in these patients.

Tepid water and cold water are commonly used for sponging which can cause discomfort like shivering goose bumps and

crying. This can be avoided by the use of warm water sponging to the pyrexia children. Many studies show that warm sponging is affective in promoting comfort during children with pyrexia. Hence the researcher felt a need to compare the effects of two physical methods, tepid water sponging and warm water sponging in lowering body temperature and promoting the comfort among children with pyrexia.

A study conducted on the efficacy of warm sponging with tepid sponging among children aged 6 months to 5 years with fever ( $\geq 100^{\circ}\text{F}$  to  $\leq 104^{\circ}\text{F}$ ) and Receiving syrup paracetamol 15mg/kg body weight. Experimental group received warm sponging and paracetamol. Control group received tepid sponging and paracetamol. The result showed that there was a statistically significant difference in proportion of target temperature reduction between warm and tepid sponging groups. The study concluded that warm sponging along with oral paracetamol, was found to be more effective than tepid sponging along with oral paracetamol in reducing temperature in febrile children.

**Methodology**

The basic experimental design, pre test post test- repeated measures design was used for the present study. The study was conducted at pediatric ward of Sri Ramakrishna Hospital, Coimbatore. Children with pyrexia aged between 1-12 years. Total Enumerative (consecutive) sampling technique was used and all the samples (n=34) who met the eligibility criteria were included in the study. These samples were randomly assigned to Experimental Group-I (n=17) and Experimental Group-II (n=17).

Tools for data collection are Questionnaire to collect Demographic Profile like age, sex and diagnosis. Temperature measurement table was used to assess, the initial temperature at 0 minute by using digital thermometer through axillary method and

recorded in the temperature measurement table. Intervention was given for 15 minutes. Tepid sponging was given to experimental group-I and warm sponging was given to experimental group-II.

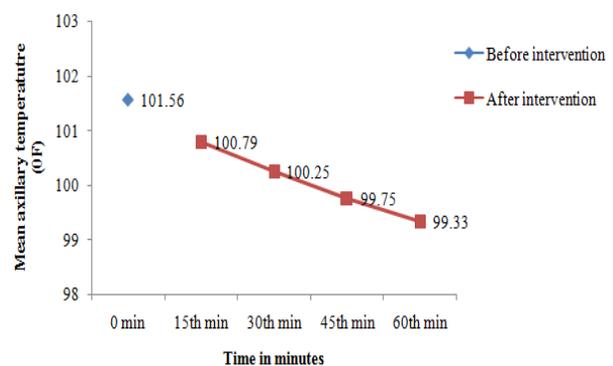
During the intervention comfort of the child was assessed by using modified comfort behavior checklist. The tool was developed by K. Kolcaba (2002). This tool is modified and used for this research study. The tool consists of 30 items which includes different aspects, like vocalization, motor signs and performance, facial and miscellaneous aspects. The researcher deleted two contents (fidgety and awakens smoothly) and added three contents (shivering, goose bumps and vomiting) since these are related to fever signs. The responses were scored as No (1), Somewhat (2), Moderate (3), Strong (4) and Not appropriate (0) (for the children who are sleeping or because of diagnosis). Reverse scoring was given to the numbers 2, 3, 5, 7, 8, 10, 11, 13, 18, 19, 20, 21, 23, 24, and 26. The scoring of comfort checklist for children was done by adding the total score of each item. The response was observed during the intervention and documented in the checklist. The maximum score was 120 and minimum score was 0. After intervention, body temperature was checked at 15<sup>th</sup> minute, 30<sup>th</sup> minute, 45<sup>th</sup> minute and 60<sup>th</sup> minute and recorded in the temperature measurement table.

### Results and discussion

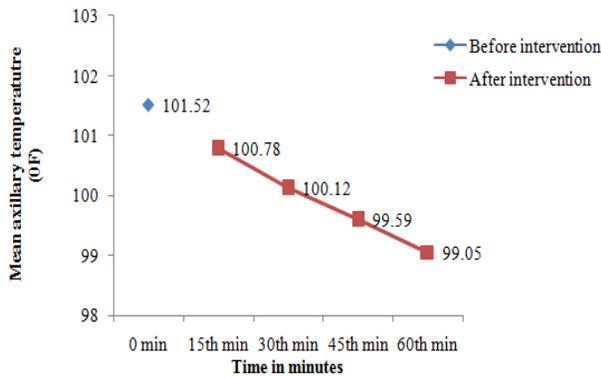
The analysis on the effect of Tepid Sponging on Body Temperature among Children with Pyrexia in Experimental Group-I, revealed that the mean and STD of body temperature before tepid sponging was 101.56°F and after tepid sponging at 15<sup>th</sup> minute, 30<sup>th</sup> minute, 45<sup>th</sup> minute, 60<sup>th</sup> minute were 100.79°F, 100.25°F, 99.75°F, 99.33°F and STD were 0.36, 0.39, 0.46, 0.76 respectively. The calculated 't' value was compared with the table value. It showed that, the calculated 't' value is greater than

the table value (4.02) at 0.001 ( $p > 0.001$ ) level of significance. There is a significant difference in the body temperature after tepid sponging among children with pyrexia" was accepted at 0.001 level of significance. Hence tepid sponging is effective in reducing body temperature among children with pyrexia. (Fig 1)

The analysis on the effect of Warm Sponging on Body Temperature among Children with Pyrexia in Experimental Group-II, revealed that the mean and STD of body temperature before warm sponging was 101.52°F and after warm sponging at 15<sup>th</sup> minute, 30<sup>th</sup> minute, 45<sup>th</sup> minute, 60<sup>th</sup> minute were 100.78°F, 100.12°F, 99.59°F, 99.05°F and STD were 0.19, 0.31, 0.41, 0.76 respectively. The calculated 't' value was compared with the table value. It showed that, the calculated 't' value is greater than the table value (4.02) at 0.001 ( $p > 0.001$ ) level of significance. There is a significant difference in the body temperature after warm sponging among children with pyrexia" was accepted at 0.001 level of significance. Hence warm sponging is effective in reducing body temperature among children with pyrexia. (Fig 2)



**Figure 1: Effect of Tepid Sponging on Body Temperature among Children with Pyrexia in Experimental Group-I.**



**Figure 2: Effect of Warm Sponging on Body Temperature among Children with Pyrexia in Experimental Group-II.**

The comparison between tepid Vs warm sponging on body temperature among children with pyrexia in experimental group-I and experimental group-II by using student ‘t’ test. It showed that, the calculated ‘t’ values was compared with the table value (2.04) at 0.05 ( $p < 0.05$ ) level of significance was lesser than the table value. Thus the research hypothesis, “There is a significant difference in the body temperature among pyrexia children in experimental group-I and

experimental group-II after tepid sponging and warm water sponging” was rejected. Hence there is no difference between tepid and warm sponging in reducing of body temperature (Fig 3).

To analysis on effect of tepid Vs warm sponging on comfort among children with pyrexia in experimental group-I and experimental group-II. The student ‘t’ test was used to assess tepid and warm sponging on comfort among children with pyrexia. It was identified that, the mean comfort during tepid and warm sponging was 62.76 and 90.29. The STD was 9.40 and 13.14 respectively. The calculated ‘t’ value was compared with the table value. It showed that, the calculated ‘t’ value 6.69 was greater than the table value (3.65) at 0.001 level ( $p > 0.001$ ) of significance. Thus the research hypothesis, “There is a significant difference in comfort among children with pyrexia in experimental group- I and experimental group-II during tepid and warm sponging” was accepted (Fig 4).

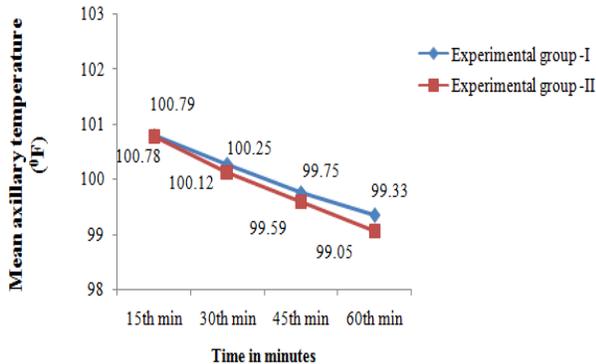
**Table 1: Comparison on Effect of Tepid Vs Warm Sponging on Body Temperature among Children with Pyrexia in Experimental Group-I and Experimental Group-II (n=34).**

Time	Group	Mean body temperature (°F)	Standard deviation	Mean difference	‘t’ value
15 <sup>th</sup> min	Experimental group -I	100.79	0.70	0.01	0.04
	Experimental group-II	100.78	0.39		
30 <sup>th</sup> min	Experimental group -I	100.25	0.58	0.13	0.62
	Experimental group -II	100.12	0.56		
45 <sup>th</sup> min	Experimental group -I	99.75	0.50	0.16	0.8
	Experimental group -II	99.59	0.59		
60 <sup>th</sup> min	Experimental group -I	99.33	0.73	0.28	1.12
	Experimental group -II	99.05	0.64		

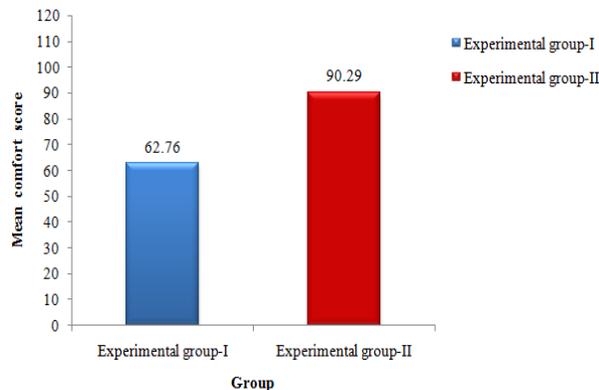
**Table 2: Analysis on Effect of Tepid Vs Warm Sponging on Comfort among Children with Pyrexia in Experimental Group-I and Experimental Group-II (n=34).**

Group	Mean	Standard deviation	Mean difference	't' value
Experimental group-I	62.76	9.40	27.53	6.69***
Experimental group-II	90.29	13.14		

\*\*\*Significant at 0.001 level



**Figure 3: Comparison of Tepid VS Warm Sponging on Body Temperature among Children with Pyrexia in Experimental Group-I and Experimental Group-II.**



**Figure 4: Comfort during Tepid Vs Warm Sponging on Body Temperature among Children with Pyrexia.**

**Conclusion**

In the present study, the researcher adopted Tepid Vs Warm sponging to children with pyrexia, the result revealed that there was a substantial reduction in the level of body temperature in tepid and warm sponging.

Tepid sponging and warm sponging is one of the cost effective method in reducing body temperature among children with pyrexia. Tepid sponging causes mild discomfort when compared to warm sponging. Hence it is proved that Warm sponging is effective in reducing body temperature and promotes comfort among children with pyrexia.

**References**

1. Agbolosu, N.B., Broadhead, R.L., Brauster, D., & Graham, S.M. (1998). Efficacy of tepid sponging versus paracetamol in reducing temperature in febrile children. *Annals Trop Pediatr*, 18, 335-336.
2. Alastair, D, Hay. (2014). National Institute for Health and Care Excellence. Retrived from website: file:///C:/Users/user/Downloads/Antipyretic+therapy+for+children+with+fever%20(1).pdf
3. Athirarani, M.R. (2012). Warm sponging Vs Tepid Sponging in Febrile Children: Double blind randomized controlled trial of efficacy. *Inte national journal of nursing care*.vol-1, issu-1.
4. Chandra, J., & Bhatnagar, S.K. (2002, Jan) *Antipyretics in children*. *Indian J Pediatr*. 69(1), 69-74, PMID: 11876124.
5. Corrad, F. (2002, March). *Ways to reduce fever*. *Arch Pediatr*, 9(3):311-5.
6. Edbor, A.J., Arora, A.K., and Mukherjee, P.S. (2011). Early Management of Fever: Benefits of Combination Therapy, *Bombay Hospital Journal*, vol 53(4).

7. Ferry, R. (2014). Fever in children. Retrieved from website: [http://www.emedicinehealth.com/fever\\_in\\_children/page2\\_em.htm](http://www.emedicinehealth.com/fever_in_children/page2_em.htm).
8. Greisman, L.A., and Mackowiak, P.A.(2002, June). Fever: beneficial and detrimental effects of antipyretics.15(3), 241-5, MID 12015457.
9. Kinnmonth, A.L. (1992, Nov 7). Management of fever. *British Medical Journal*. 305 (6862), 1134-6.
10. Kolcaba K. (2002). Comfort behavior checklist. Retrieved from website:[www.thecomfortline.com/resources/.../Comfort Behavior checklist.doc](http://www.thecomfortline.com/resources/.../Comfort_Behavior_checklist.doc)
11. Leung Luk Yin Ha Ha. Siu Mai Hui (2008) *Fever management* Macau Journal of Nursing, v-01. 7 No. 1.
12. Medicines and healthcare products regulatory agency. (2012). New guidance for the treatment of paracetamol overdose. vol 6, issue 2: A1.
13. Meremikwu, M.M., &Oyo -Ita, A. (2003). Physical methods versus drug placebo or no treatment for managing fever in children .*Cochrane Database Syst. Rev.* ( 2), CD004264.
14. National Institute of Health and Clinical Excellence. (2013). *Understanding NICE guidance. Feverish Illnessin Children*, London: NICE. Available at:[www.nice.org.uk](http://www.nice.org.uk)
15. Patricia A. Potter, Anne Griffin Perry. *Fundamentals of Nursing*, 6<sup>th</sup>edition, India, Mosby Company, 2005.
16. Shackell, S. (1996 Nov-Dec). Cooling hyperthermic and hyperpyrexia patients in intensive care. *Nurs Crit Care*, 1(6),278-82. PMID:9594131.
17. Sureelak, Sujritpongsa.,Boonying, Manaboriboon., Chutintorn, India., & Chulathida Chomchai. (2006, Number 8). Added Efficacy of Paracetamol in Tepid Sponging for Fever Reduction. *Sriraj Medical Journal*, Volume 58
18. Thomas,S., Vijaykumar,C., Naik,R., Moses, P.D., & Antonisamy, B. (2009,Feb). Comparative effectiveness of tepid sponging and antipyretic drug versus only antipyretic drug in the management of fever among children: a randomized controlled trial. *Indian Pediatr*,46(2), 133-6, PMID:19242030.
19. Watts, R., Robertson, J., & Thomas, G. (2003). Nursing management of fever in children: a systematic review. *International Journal of Nursing Practice*,9(1), S1-8.