Journal of Neonatal Surgery
ISSN(Online): 2226-0439
Vol. 14, Issue 20s (2025)
https://www.jneonatalsurg.com

OPEN ACCESS

Effectiveness of Tepid Sponging with Antipyretic Drugs Versus Antipyretic Drugs Alone in Managing Fever in Children

Ms. Ashna Mary Alex[1], Dr. Prakash Naregal*[2], Dr. Vaishali Rajsinh Mohite[3], DR.Shivaji Pawar[4], Mrs.Sunita Pawar[5]

[1]final Year BSc Nursing, Krishna Institute of Nursing Sciences, Karad.

[2*]Assistant Professor, Department of Child Health Nursing, Krishna Institute of Nursing Sciences, Krishna Vishwa Vidyapeeth (Deemed To be University), Karad

[3]Dean, Krishna Institute of Nursing Sciences, Krishna Vishwa Vidyapeeth (Deemed To be University), Karad

[4]Assitant Professor, Department of Mental Health Nursing, Krishna Institute of Nursing Sciences, Krishna Vishwa Vidyapeeth (Deemed To be University), Karad

[5]Final Year MSc Nursing, Krishna Institute of Nursing Sciences, Krishna Vishwa Vidyapeeth (Deemed To be University), Karad.

***Corresponding Author:**

Dr. Prakash Naregal

Assistant Professor, Department of Child Health Nursing, Krishna Institute of Nursing Sciences, Karad, Krishna Vishwa Vidyapeeth (Deemed To be University), Karad- 415539, Dist: Satara, Maharashtra State

Email ID: prakash.naregal20@gmail.com

Cite this paper as: Ms. Ashna Mary Alex, Dr. Prakash Naregal, Dr. Vaishali Rajsinh Mohite, DR.Shivaji Pawar, Mrs.Sunita Pawar, (2025) Effectiveness of Tepid Sponging with Antipyretic Drugs Versus Antipyretic Drugs Alone in Managing Fever in Children. *Journal of Neonatal Surgery*, 14 (20s), 728-734.

ABSTRACT

Introduction: Increased body temperature is a common symptom in children, often requiring medical intervention to alleviate discomfort and prevent complications. Tepid sponging and antipyretic drugs are commonly used to manage fever. This study aimed to compare the effectiveness of using both tepid sponging and antipyretic drugs versus antipyretic drugs alone in reducing fever among children at Krishna Hospital, Karad.

Methods: True experimental research was undertaken at Krishna Hospital, Karad. Children aged 6 months-12 years presenting with fever were included. 60 children were randomly assigned to either the intervention group (tepid sponging along with antipyretic drugs) 30 Children or the control group (antipyretic drugs alone) 30 children. The intervention group received tepid sponging using lukewarm water in addition to the prescribed antipyretic drug. The control group was provided with only the prescribed antipyretic drug. The initial temperature measurement was taken at 0 minutes. If the child was in the group receiving both tepid sponging and an antipyretic drug, paracetamol was administered, and tepid sponging was performed for 15 minutes. The temperature was then rechecked at the 15-minute mark. Children from the antipyretic drug-only group will receive paracetamol and subsequently, the temperature was monitored. Fever resolution time, reduction in temperature, and improvement in subjective symptoms were evaluated as primary outcome measures.

Results: The outcome of the study shows that there was no significant difference in the reduction of body temperature between the combined group (tepid sponging and antipyretic drug) and the control group (antipyretic drug alone) 15 minutes after the intervention. However, starting from 30 minutes and continuing at 45, 60, 90, and 120 minutes, the study group showed a greater reduction in temperature compared to the control group. This difference in temperature reduction was found to be statistically significant ($p<0.0001$), indicating that the use of tepid sponging with antipyretic drug was more effective in decreasing fever in children compared to antipyretic drug alone. These findings suggest that tepid sponging can be a beneficial adjunctive intervention for fever management in pediatric patients.

Conclusion: The study supports the notion that combining tepid sponging with antipyretic drugs can be a beneficial treatment for managing fever in children. These results can guide healthcare professionals in making evidence-based decisions and recommendations for fever management in pediatric patients

Keyword: *Effectiveness, Antipyretic drug, Tepid sponge, Fever, Children*

1. INTRODUCTION

Fever is a common organic reaction to illness and is often seen in children. It is a temporary rise in body temperature, with an average normal body temperature being around 98.6°F (37°C). Increased body temperature in children is mostly associated with various illnesses and infections, such as respiratory tract infections, viral, bacterial, and other infections. While fever itself is not usually harmful, it can cause discomfort, irritability, and other symptoms in children. Investigations and hospital admissions related to fever are indeed common, especially when fever is accompanied by severe symptoms, high temperature, or concerns about the underlying cause of the fever. Healthcare professionals often evaluate the child's condition, perform diagnostic tests, and, if necessary, admit the child to the hospital for further management and monitoring. Antipyretic drugs, such as acetaminophen (Paracetamol) and ibuprofen, are commonly prescribed to children to help lower their body temperature and alleviate symptoms associated with fever. [1-2]

Children are young individuals not reached puberty or the age of majority and commonly experience fever as a natural reaction to illness. Fever is a typical issue in children and often occurs as a result of infections, although it can also be caused by other factors. Infections, such as viral or bacterial infections, are a common cause of fever in children. Fever is the body's natural response to an infection and is part of the immune system's defense mechanism. It helps to activate the immune response and fight off the infection. Fever can be related to potentially dangerous side effects; most fevers in children are mild and resolve with appropriate care and management.[3]

Children have less developed immune systems, making them more prone to illness. Children who have prolonged fevers are more prone to experience serious health issues, such as febrile convulsions, brain death, or even death. A body temperature that is too high may indicate a dangerous illness that needs medical intervention [4]. Among common conditions that might cause fever like upper respiratory tract infections, influenza, ear infections, tonsillitis, and periodic pediatric illnesses like chickenpox and whooping cough.[5]

The majority of febrile children have a mild, self-limiting viral illness, but a small percentage may be at risk for infections that might be fatal. Perhaps as an outcome of the increased prevalence of infectious disorders, childhood fever is much more prevalent in tropical areas.[6-7]

The objective of the research study was to assess the potential benefits of incorporating tepid sponging as an adjunctive intervention for fever management in children.

2. MATERIALS AND METHODS

Ethical Approval: Authorization was acquired from the Institutional ethics committee of KIMSDU, Karad ensuring that the study is composed of ethical guidelines and regulations. Institutional Ethics Committee approval Number: KIMSDU/ IEC/08/2022.

Informed Consent: The parents or legal guardians of the children, as well as the children themselves if they were capable of understanding, were provided with a detailed explanation of the study and its purpose. Informed consent was acquired from the participants or their guardians, indicating their voluntary agreement to participate in the study.

Baseline Data Collection: Baseline data, including the initial temperature measurements, were collected from each child before administering any intervention.

Randomization: 30 children were selected for each group. The children were randomly assigned to either the tepid sponging along with the antipyretic drug group or the antipyretic drug alone group. The randomization process involved writing the names of the children on chits and selecting them randomly to ensure an unbiased distribution.

Intervention: In the tepid sponging along with the antipyretic drug group, the children received paracetamol (presumably based on their weight or age) and underwent tepid sponging for 15 minutes. After 15 minutes, the temperature was checked.

Temperature Monitoring: In the antipyretic medicine-alone group, the children were given paracetamol, and their temperatures were subsequently monitored. If the temperature remained above 99 degrees Fahrenheit (considered the threshold for fever) after 15 minutes, tepid sponging was continued for an additional 15 minutes. Temperature measurements were periodically recorded at later time points.

Statistical Analysis: Unpaired t-test or Mann-Whitney test, depending on the distribution of data, was used for the statistical analysis. A two-tailed p-value of less than 0.05 (with two tails) was considered statistically significant**.**

3. RESEARCH TOOL

PART 1

Self-Structured Questionnaire:

The demographic characteristics of children such as age, gender, place of residence, religion, birth order, monthly income of the family, and initial temperature.

PART 2

Checklist for Comparing Tepid Sponging Combined with Antipyretic Drug and Antipyretic Drug Alone at Each Time Interval.

Criteria for selection of sample:

Inclusion Criteria: children, who were,

A) Aged between 6 months and 12 years

B) Having axillary temperature ≥ 101 ºf

C) Alert, comfortable, with no seizures,

D) Not received Paracetamol six hours prior and not received antibiotics.

Exclusion Criteria: Children, who were,

A) Critically ill, not alert and with seizures.

Data Analysis Plan

Entering Data: The gathered data were recorded into a master sheet or statistical software for analysis.

Descriptive Analysis: Demographic variables, such as age, gender& other relevant variables, were summarized using frequency (F) and percentage (%) to provide an overview of the study population.

Statistical Tests: Continuous data were compared using either an unpaired t-test or a Mann-Whitney test, based on the data distribution. An Unpaired t-test was used to compare the means of two independent groups e.g., tepid sponging with the antipyretic group vs. the antipyretic group alone.

Data Presentation: Tables and diagrams were used to present the analyzed data.

4. RESULTS

Description of demographic characteristics of children

Sr. no	Demographic Variables		Groups			
			Anti- pyretic Drug + tepid sponge		Anti-pyretic Drug only	
			F	%	F	%
1	Age of the child	0 – 3 years	20	66.7	21	70
		4 – 6 years	6	20	4	13.3
		7 -9 years	0	0	3	10
		10 -12 years	4	13.3	2	6.7
2	Gender	Male	19	63.3	16	53.3
		Female	11	36.7	14	46.7
3	Place of Residence	Rural	17	56.7	22	73.3
		Urban	13	43.3	8	26.6
4	Religion	Hindu	20	66.7	23	76.6
		Christian	4	13.3	0	0
		Muslim	4	13.3	5	16.7

		Others	2	6.7	2	6.7
5	Birth Order	First Born	20	66.7	22	73.3
		Second Born	5	16.7	6	20
		Third Born	5	16.7	2	6.7
		More than Three	0	0	0	0
6	Monthly	Up to 10000	18	60	12	40
	Income	10001-20000	10	33.3	8	26.7
		20001-30000	2	6.7	6	20
		Above 30000	0	0	4	13.3
7	Initial Temperature	101^f	17	56.7	16	53.3
		102^f	13	43.3	14	46.7
8	Duration of Fever	1 day	15	50	16	53.3
		2days	13	43.3	13	43.3
		3days	2	6.7	1	3.3
9	Drug Given	Paracetamol	24	80	26	86.7
		Ibuprofen	6	20	4	13.3

Table No. 1 shows the distribution of demographic variables depicts most of the children in the combined group were from 0-3 years 20 (66.7%) and in the control group also 0-3 years 21 (70%). According to gender in the combined group majority was male child 19 (63.3%) and in the control group was also male child 16 (53.3%). According to place of residence, the majority was from the rural areas in combined group 17(56.66) and in control group 22(73.3%).In order of religion, maximum number of children were from the Hindu religion in combined group 20(66.7%) and the control group 23(76.6%). According to birth order, the majority was from the first born children, in combined group 20(66.7%) and in control group 22(73.3%). Majority of the monthly income of the family in both groups was up to 10,000 in combined group 18 (60%) and in control group 12 (40%). According to the initial temperature maximum number of the children is having 101^0F in combined group 17 (56.7%) and in the control group 16 (53.3%). Duration of temperature was 1 day in both the groups in combined it was 15 (50%) and in control it was 16(53.3%). According to the drug given majority of the children received paracetamol in both groups combined it was 24(80%) and in control it was 26(86.7%).

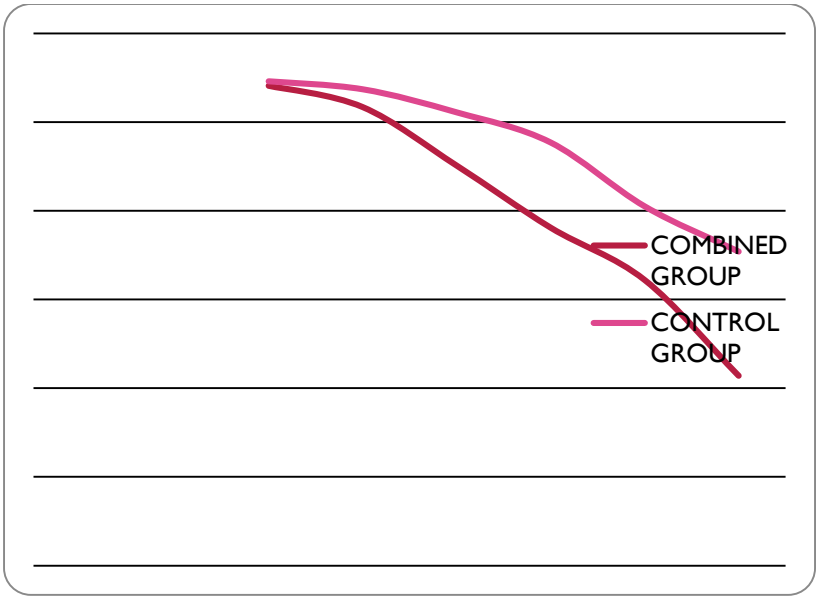
TABLE NO 2: Comparison of Tepid Sponging Combined with an Antipyretic Drug and an Antipyretic Drug Alone at Each Time Interval

TIME(MIN)	Tepid Sponge Along with Antipyretic Drug **(Mean ± SD)**	Antipyretic Drug Alone **(Mean ± SD)**	MEAN DIFFERENCE	95% CL FOR THE MEAN	T- VALUE	P- VALUE
Baseline	101.43±0.50	101.46±0.50	0.033	-0.15-0.08	0.57	P=0.57
15 minutes	101.41±0.48	101.46±0.50	0.044	-0.16-0.07	0.74	P=0.46
30 minutes	101.17±0.42	101.37±0.48	0.117	-0.19-0.04	3.28	P=0.003
45 minutes	100.51±0.44	101.11±0.53	0.595	-0.80-0.38	5.82	P=0.024
60 minutes	99.81±0.39	100.77±0.48	0.956	-1.17-0.74	9.04	P=<0.0001

90 minutes	99.22±0.45	100.05±0.41	0.834	-1.0091-0.65	9.760	P=<0.0001
120 minutes	98.14±0.38	99.54±0.56	1.397	-1.60-1.19	13.809	P=<0.0001

Table No. 2 The results of the study indicate that the combined treatment, when used alongside antipyretic drugs, is more effective in reducing temperature compared to using antipyretic drugs alone. Initially, at 15 minutes, there was no significant difference in temperature reduction between the two groups. However, at the 30-minute mark, the combined group showed a mean temperature of 101.17°F, while the control group had a mean temperature of 101.37°F, with a statistically significant difference (p-value of 0.003). From 45 minutes onward, including the 45, 60, 90, and 120-minute intervals, the combined group consistently exhibited greater temperature reduction, as evidenced by lower mean temperatures. The p-values for these intervals were all less than 0.0001, indicating a highly significant difference. These findings suggest that combination therapy is considerably more effective at reducing fever than using antipyretic drugs alone, especially in the later stages of treatment.

Graph 1: A line graph illustrating the changes in mean temperatures for both groups over various time intervals.



5. DISCUSSION

A true experimental research was performed at Krishna Hospital, Karad among 60 children aged 6 months-12 years presenting with fever randomly assigned to either the intervention group (tepid sponging along with antipyretic drugs) 30 Children or the control group (antipyretic drugs alone) 30 children. The intervention group received tepid sponging using lukewarm water in addition to the prescribed antipyretic drug. The control group was administered only the prescribed antipyretic drug. The initial temperature measurement was recorded at 0 minutes. For children in the group receiving tepid sponging in combination with the antipyretic drug, paracetamol was given, and tepid sponging was performed for 15 minutes. The temperature was then measured at the 15-minute mark. Children in the antipyretic drug only group will receive paracetamol and subsequently, temperature was monitored. Fever resolution time, reduction in temperature, and improvement in subjective symptoms were evaluated as primary outcome measures. The outcome of the study revealed that At the 15-minute mark, there was no significant difference in temperature reduction between the combined group (tepid sponging with an antipyretic drug) and the control group (antipyretic drug alone). However, starting from 30 minutes and continuing at 45, 60, 90, and 120 minutes, the combined group showed a greater decrease in temperature compared to the control group. This difference in temperature reduction was found to be statistically significant ($p<0.0001$) and the study concluded that combining tepid sponging with antipyretic drugs can be an effective treatment for managing fever in children.

At the end of 15 minutes, the temperature reduction was not significantly different between the combined group (tepid sponging with an antipyretic drug) and the control group (antipyretic drug only). Tepid sponging is effective in lowering fever in children, according to studies using medication placebo and physical treatments. A few more research came to the same conclusion about the groups' respective temperature reductions. When tepid sponging was administered alongside an antipyretic medication, as opposed to an antipyretic by itself, we noticed a substantial change in the reduction of body temperature. Some similar studies show tepid sponging along with antipyretic drugs is having a reduction in temperature

among children.[8-9]

In the study titled Effectiveness of Tepid Sponging alongside Antipyretic Drug vs. Antipyretic Drug Alone in the Management of Fever in Children by Priya DS et al. (2023), it was found that there was no statistically significant difference in the pattern of temperature reduction between the two groups at admission, 30 minutes, 1 hour, and 2 hours after intervention ($p>0.001$). Both groups showed a significant decrease in temperature from the start of the intervention up to two hours later. The study also concluded that, compared to physical methods, antipyretics are simpler and more cost-effective for managing fever in children[10].

Thomas S et al (2009) conducted a study to assess the success of tepid sponging along with an antipyretic drug compared to only using an antipyretic drug in the reduction of fever among children. The study found that there was decreased body temperature in the group receiving tepid sponging and the antipyretic drug was significantly faster than the group receiving only the antipyretic drug. However, after 2 hours, both groups had arrived at the same degree of temperature. Additionally, the study found that the children in the tepid sponging and antipyretic drug group experienced significantly higher discomfort compared to the group receiving only the antipyretic drug. However, it's important to note that the discomfort reported in the tepid sponging group was mainly mild.[11]

Athirarani et al (2013) carried out a study on warm Sponging compared to Tepid Sponging in Febrile Children. The findings reveal that tepid and warm sponging are effective in reducing body temperature but sponging with lukewarm water is more effective in enhancing comfort in children with pyrexia than tepid sponging.[(12)]

A Study conducted by **Edbor AJ et al (2011)** on the efficacy of tepid sponging and paracetamol (acetaminophen), only paracetamol, and only tepid sponging among febrile children, as well as the associated level of discomfort. According to the results of the study, the group receiving both tepid sponging and antipyretic drug (paracetamol) experienced a significantly faster reduction in body temperature compared to both the group receiving only the antipyretic drug and the group receiving only tepid sponging. By the end of 1 hour, all three groups had arrived at the same degree of temperature. The combination therapy of tepid sponging and paracetamol resulted in a clinically significant reduction in temperature, indicating that the combination was more effective in managing fever compared to the individual treatments. It is important to mention that while some discomfort was associated with the combination therapy, the reported discomfort was generally mild.[13]

Basavaraj CK et al (2018) A study presenting contrary results was conducted to evaluate the effectiveness of combining antipyretics with tepid sponging versus using antipyretics alone. The findings revealed no significant difference in temperature reduction between the group receiving antipyretics with tepid sponging and the group receiving only antipyretics. This suggests that both interventions were equally effective in managing fever. However, children in the combined group (antipyretics with tepid sponging) experienced greater discomfort compared to those in the antipyretic-only group.[4]

All the similar studies outcomes showed that tepid sponging with an antipyretic drug was showing more success in reducing the temperature than only the antipyretic drug group. Although the tepid sponging causes some mild discomfort in children it is better to use lukewarm water for giving sponge baths to children. [(10-14)]

6. CONCLUSION

The study concludes that the combination of tepid sponging with antipyretic drugs is more effective in managing fever in children compared to antipyretic drugs alone. While both methods initially show similar effects, the combined approach demonstrates significantly greater and sustained temperature reduction over time. This highlights the potential benefit of integrating physical and pharmaceutical interventions for more effective fever management in pediatric care

Acknowledgment:

The authors would like to thank all the participants for their cooperation and participation to complete the study successfully.

Financial support and sponsorship:

Self-funded study

Conflicts of interest:

There are no conflicts of interest.

REFERENCES

[1] Watts, R., Robertson, J., & Thomas, G. (2003). Nursing management of fever in children: a systematic review. International journal of nursing practice, 9(1), S1–S8.

[2] Available at: https://doi.org/10.1046/j.1440-172x.2003.00412.x.

[3] 2) Gildea JH. When fever becomes an enemy. Pediatric Nursing. 1992 Mar 1; 18(2):165-7.

[4] 3) Kaul DR, Flanders SA, Beck JM, Saint S. Brief report: Incidence, etiology, risk factors, and outcome of hospital-acquired fever a systematic, evidence-based review. Journal of general internal medicine. 2006 Nov;21:1184-7.

[5] 4) Basavaraj CK, Pocha SG, Dhati RM. Effectiveness of Antipyretic with Tepid Sponging Versus Antipyretic Alone in Febrile Children: A Randomized Controlled Trial. Journal of Nepal Paediatric Society. 2017;37(2):129-33.

[6] 5) Agbolosu NB, Cuevas LE, Milligan P, Broadhead RL, Brewster D, Graham SM. Efficacy of tepid sponging versus paracetamol in reducing temperature in febrile children. Annals of Tropical Paediatrics. 1997 Sep 1;17(3):283-8.

[7] 6) Guyton AC. Text book of medical physiology. China; 2006.

[8] 7) Sharber J. The efficacy of tepid sponge bathing to reduce fever in young children. The American journal of emergency medicine. 1997 Mar 1;15(2):188-92.

[9] 8) Friedman, A. D., & Barton, L. L. (1990). Efficacy of sponging vs acetaminophen for reduction of fever. Sponging Study Group. Pediatric emergency care, 6(1), 6–7. https://doi.org/10.1097/00006565-199003000-00003.

[10] 9) Meremikwu MM, Oyo-Ita A, Cochrane Infectious Diseases Group. Physical methods versus drug placebo or no treatment for managing fever in children. Cochrane Database of Systematic Reviews. 1996 Sep 1;2019(5).

[11] 10) Priya DS, Priya BL, K Babu A, Rajakumar PG, Rathinasamy M. Effectiveness of Tepid Sponging along with Antipyretic Drug versus Only Antipyretic Drug in the Management of Fever among Children–A Randomized Control Trial. Asian Journal of Pediatric Research. 2023 Feb 9;11(2):6-16.

[12] 11) Thomas S, Vijaykumar C, Naik R, Moses PD, Antonisamy B. Comparative effectiveness of tepid sponging and antipyretic drug versus only antipyretic drug in the management of fever among children: a randomized controlled trial. Indian pediatrics. 2009 Feb 1;46(2).

[13] 12) Athirarani MR. Warm Sponging Versus Tepid Sponging in Febrile Children: Double Blind Randomized Controlled Trial of efficacy. International Journal of Nursing Care. 2013;1(1):16..

[14] 13) Edbor AJ, Arora AK, Mukherjee PS. Early management of fever: benefits of combination therapy. Bombay Hospital Journal. 2011;53(4):702-5.

[15] 14) Antono SD. The Effectiveness of Warm Vinegar Compress in Lowering Children Body Temperature with Acute Febrile Illness. Journal International of Science and Research (IJSR). 1820:1-8.

[16] 15) Bernath VF, Anderson JN, Silagy CA. Tepid sponging and paracetamol for reduction of body temperature in febrile children. Medical Journal of Australia. 2002 Feb 4;176(3):130-3.