

# Effectiveness of Hot Water Foot Bath Therapy on Temperature among Patients with Fever in S.R.M Medical College and Hospital, Kanjeeपुरam

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**Abstract:** Background of the Study: Fever or pyrexia is defined as a rise in the body temperature above 99° F (37.2° C). Water is an elixir of life. Natural minerals in these healing waters have long been known to promote health due to their restorative and detoxifying properties. Generally, heat quiets and soothes the body, slowing down the activity of internal organs. Emerging research study suggests the potential benefits of hot water foot bath therapy on reducing body temperature. Objectives: 1. To assess the temperature level of the patients before hot water foot bath therapy in experimental group and control group. 2. To evaluate the effectiveness of hot water foot bath therapy in reducing fever among patients in experimental group. 3. To compare the effectiveness of hot water foot bath therapy in reducing temperature level among patients in experimental group. 4. To determine the association of changes in temperature with selected base line variables. Hypotheses: 1. There will be a significant difference in the temperature between experimental and control group after hot water foot bath therapy at 0.05 level of significance. 2. There will be a significant association of changes in temperature of patients with selected base line variables at 0.05 level of significance. Methodology: An Quasi-experimental Time series Non-Equivalent Control group design was used. Using purposive sampling technique 30 adult patients above 18 years admitted with fever patients from S.R.M Medical College and Hospital, Kanjeeपुरam were selected of which 30 were assigned in experimental group and another were assigned in control group. Application of hot water foot bath therapy was done for experimental group and standard treatment for fever was given for control group and temperature was measured using thermometer. Results: The mean post-test temperature level after administration of interventions (100.267) was less than the mean pre-test temperature level before administration of interventions (101.120). The obtained 't' value was 4.004 which was significant at 0.05 level. The result shows that there is a significant improvement in the level of temperature after the application of hot water foot bath therapy. Conclusion: The study concluded that the application of hot water foot bath therapy was found to be an effective measure in reducing temperature and was also cost effective.

**Keywords:** Hot water foot bath therapy, fever, patients, effect

## 1. Introduction

Fever means elevated body temperature or pyrexia. Fever (also known as pyrexia or controlled hyperthermia) is a common medical sign characterized by an elevation of temperature above the normal range of 36.5–37.5 °C (98–100°F) due to an increase in the temperature regulatory set-point.

Fever itself is not an illness. But it is an important sign of something going wrong in the body. It is the part of body's response to disease. Fever may be beneficial to body and on many occasions it plays an important role in helping the body fighting the diseases particularly the infections. (Sembulingam K and Sembulingam 2006). During fever dilation of internal blood vessels and constriction of skin blood vessels occurs. The tiny capillaries of the skin have been called the "second heart". (Selvakumari R 2011)

Water is an excellent conductor, which allows it to transfer heat effectively and quickly. Water has a temperature-conducting capacity twenty-seven times that of air. Water gives up its heat rapidly, but does not cool quickly.

Water has been used medicinally for thousands of years, with traditions rooted in ancient China, Japan, India, Rome, Greece, the Americas, and the Middle East. There are references to the therapeutic use of mineral water in the Old Testament. During the Middle Ages, bathing fell out of

favor due to health concerns, but by the 17th century, "taking the waters" at hot springs and spas became popular across Europe (and later in the United States).

A sole of a person's foot has many vital points in oriental medicine which points have a close relation to various organs. It is well known that stimulus of the vital points causes fatigue to be overcome and also the organs to be revitalized. Since about 60% of blood which is called movable organ blood is located in a person's hands and legs, the organs which tend to have congestion of blood are the feet and legs for the person who works standing for a lot of time.

A hot foot bath is a local immersion bath covering the feet and ankles at temperatures ranging from 100° to 115° F (43°C- 46°C).

Hot water foot bath therapy regulates warmth, promotes healthy blood circulation and has a soothing, healing effect. (Schleninkofer.G, 2005) It causes congested blood to flow towards distant parts of the body and is brought to the dilated vessels in the feet and legs. (Selvakumari R 2011)

When the hot water foot bath is applied, the veins in the feet start expanding and gets improved blood circulation, neutralizing acid, killing bacteria and relieving aches, tiredness and fever. (Glaster, 1949). The improved blood circulation resets the thermostatic set points in the

hypothalamus by heat transfer from higher heat area to lower heat area. (Selvakumari R 2011)

Thus considering the above mentioned reviews, the present study was conducted to assess the effect of Hot water foot bath therapy on temperature among patients with fever.

**Objectives**

- To assess the temperature level of the patients before hot water foot bath therapy in experimental group and control group.
- To evaluate the effectiveness of hot water foot bath therapy in reducing fever among patients in experimental group.
- To compare the effectiveness of hot water foot bath therapy in reducing temperature level among patients in experimental group.
- To determine the association of changes in temperature with selected base line variables.

**Hypotheses**

- There will be a significant difference in the temperature between experimental and control group after hot water foot bath therapy at 0.05 level of significance.
- There will be a significant association of changes in temperature of patients with selected base line variables at 0.05 level of significance.

**2. Methodology**

An Quasi-experimental Time series Non-Equivalent Control group design was used. Using purposive sampling technique 30 adult patients above 18 years admitted with fever patients from S.R.M Medical College and Hospital, Kanjeepuram were selected of which 30 were assigned in experimental group and another were assigned in control group. Application of hot water foot bath therapy was done for experimental group and standard treatment for fever was given for control group and temperature was measured using thermometer.

**Tools:** The tools used for this study comprised of 4 sections:  
**Section A:** Demographic variables. It consist of age, sex, marital status, religion, education, income, income and occupation.

**Section B:** Other variables. It consist of food type, habits, fever type and fever range.

**Section C:** Clinical thermometer to check temperature of the patients. Lotion thermometer to check the temperature of water.

**Section D:** Table to record temperature.

Content validity of the tool was established by sending it to various experts. The data were collected from 10 samples to find out the reliability. The split half method was used to establish the reliability of the tool and the reliability of tool of experimental group was r=0.98, and for control group was r= 0.93. The reliability of experimental group was r=0.9, and for control group was r=0.89. Permission for data collection was obtained from the ethical committee of the college, and hospital authority. The purpose of the study was explained to

the samples and an informed consent was obtained prior to the study.

The samples were randomly allocated into two groups, experimental and control group by flipping a coin. According to the inclusion and exclusion criteria and by purposive sampling method the samples were selected.. Experimental group received hot water foot bath therapy for 10- 15 minutes and the temperature of water was 90-110<sup>0</sup> F and control group received standard treatment. The investigator used basin for the immersion of foot ankle. The temperature of the water was measured by a lotion thermometer. Investigator used an interview schedule to elicit the demographic proforma. Six observations including pre test was made to assess the temperature level using clinical thermometer. The obtained data were analyzed using descriptive and inferential statistics.

**3. Results**

**I Distribution of Samples according to Demographic Variables**

**Table 1**

S. No	Demographic variables	Groups	Experimental Group (n=30)		Control Group (n=30)	
			Frequency	%	Frequency	%
1.	Age	18 – 30	13	43.3	11	36.7
		31 – 40	13	43.3	13	43.3
		41 – 50	4	13.3	6	20.0
2.	Sex	Male	22	73.3	21	70.0
		Female	8	26.7	9	30.0
3.	Marital Status	Married	21	70.0	19	63.3
		Unmarried	8	26.7	10	33.3
		Widow	1	3.3	1	3.3
4.	Religion	Hindu	26	86.7	24	80.0
		Christian	3	10.0	5	16.7
		Muslim	1	3.3	1	3.3
5.	Education	Literate	25	83.3	22	73.3
		Illiterate	2	6.7	3	10.0
6.	Income	5,000 - 14,000	19	63.3	19	63.3
		14,001 - 30,000	9	30.0	10	33.3
		> 30,000	2	6.7	1	3.3
7.	Occupation	Unemployed	1	3.3	6	20.0
		Unskilled	20	66.7	10	33.3
		Skilled	4	13.3	11	36.7
		Professional	5	16.7	3	10.0

Table 1 reveals that most of the participants from experimental group were in the age group of 18-30 years and 31-40 years (43.3%) and control group were in the age group of 31-40 years (43.3%). Majority of them were male 22 (73.3%) in experimental group and 21 (70%) in control group. Majority of them were married 21 (70%) in experimental group and 19 (63.3%) in control group. Majority of them were married 21 (70%) in experimental group and 19 (63.3%) in control group. Majority of them were hindu in both experimental group 26 (86.7%) and 24 (80%) in control group. Majority of them were literate in both experimental group 25 (83.3%) and 22(73.3%) in control group. The monthly income was 5000-14000 19 (63.3%) in both the groups. Majority of them were unskilled

in experimental group 20 (66.7%) and skilled in control group 11 (36.7%).

**II Distribution of Samples according to Other Variables**

**Table 2:**

S.No	Other Variables	Groups	Experimental group (n=30)		Control group (n=30)	
			F	%	F	%
1.	Food Type	Vegetarian	7	23.3	4	13.3
		Non-vegetarian	23	76.7	26	86.7
2.	Habits	Smoking	2	6.7	2	6.7
		Drinking	3	10.0	2	6.7
		Exercise	5	16.7	6	20.0
		Others	20	66.7	20	66.7
3.	Fever Type	Intermittent	21	70.0	21	70.0
		Continuous	9	30.0	9	30.0
4.	Fever Range	Mild	4	13.3	4	13.3
		Moderate	24	80.0	24	80.0
		Severe	2	6.7	2	6.7

Table 2 reveals that most of the participants were non-vegetarian in both experimental group 23 (76.7%) and 26 (86.7%) in control group. Majority of them had other habits 20 (66.7%) in both the groups. Majority of them had

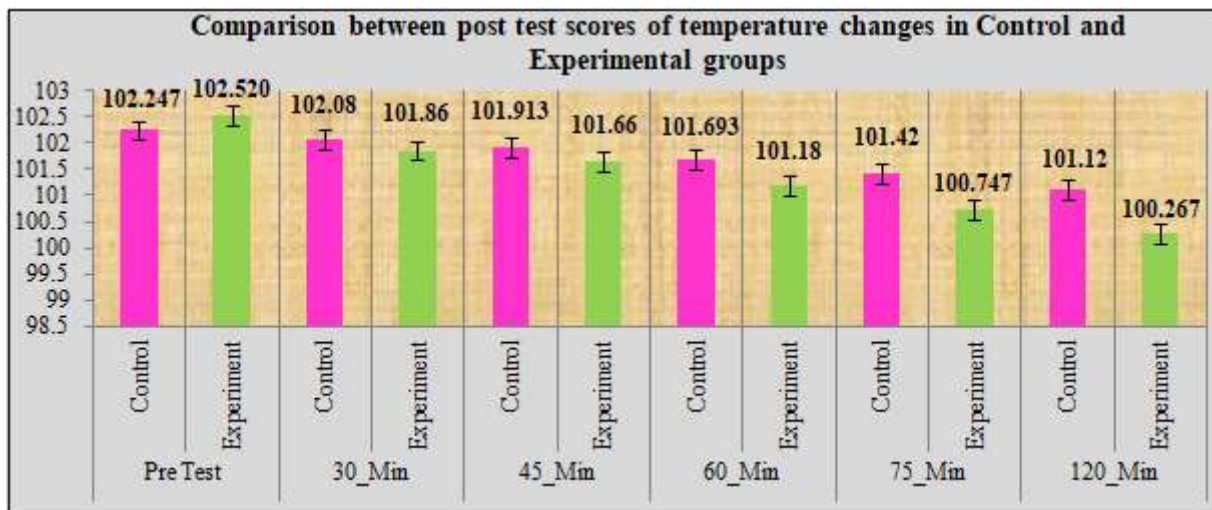
intermittent type of fever 21 (70%) in both the groups. Majority of them had moderate range of fever 24 (80%) in both the groups.

**III Effect of Hot Water Foot Bath Therapy in Experimental and Control Group Using Pre and Post Test Scores of Temperature Changes**

**Table 3**

S.No	Time	Group	N	Mean	S.D	t Value
1.	Pre-test	Experimental	30	102.520	0.8331	1.220
		Control	30	102.247	0.9106	
2.	30 minutes	Experimental	30	101.860	0.8869	0.977
		Control	30	102.080	0.8576	
3.	45 minutes	Experimental	30	101.660	0.8257	1.172
		Control	30	101.913	0.8480	
4.	60 minutes	Experimental	30	101.180	0.7989	2.428
		Control	30	101.693	0.8383	
5.	75 minutes	Experimental	30	100.747	0.7877	3.165
		Control	30	101.420	0.8588	
6.	120 minutes	Experimental	30	100.267	0.7902	4.004
		Control	30	101.120	0.8592	

\*Significance at the level of 0.05



**Figure 1:** Comparison between post test scores of temperature changes in control and experimental groups

**4. Discussion**

The mean post-test temperature level after administration of interventions (100.267) was less than the mean pre-test temperature level before administration of interventions (101.120). The obtained 't' value was 4.004 which was significant at 0.05 level. The result shows that there is a significant improvement in the level of temperature after the application of hot water foot bath therapy.

**5. Conclusion**

The study findings provide the statistical evidence which clearly indicates that Hot water foot bath therapy can be used to reduce fever. Therefore with technological advances and ever growing challenges nurses should update their knowledge in the latest innovation and should take initiative to implement Hot water foot bath therapy in fever patients to reduce temperature level.

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