



## RESEARCH ARTICLE

### A STUDY TO ASSESS THE EFFECTIVENESS OF HOT WATER FOOT BATH THERAPY ON BODY TEMPERATURE AMONG PATIENTS WITH FEVER IN SELECTED ICUs OF A TERTIARY CARE HOSPITAL, LUDHIANA, PUNJAB

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#### ABSTRACT

**Background of the study:** Fever itself is not an illness. A fever is a common side effect of illness like the flu. It happens when there is a temporary rise in body temperature. A fever is usually a sign that immune system is busy fighting an infection or other illness. 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. When Hot Water Foot Bath applied for 15-20 minutes the blood vessels in the feet starts expanding and gets improved circulation, neutralizing acid and relieving aches, tiredness and fever. The improved blood circulation resets the hypothalamic set points by heat transfer from higher heat area to lower heat area. **Objectives:** To assess the effectiveness of hot water foot bath therapy on body temperature among patients with fever. **Methodology:** Quantitative approach was used for the study. Pre-test and post-test control group design was used to conduct the study. This study was conducted in ICUs of DMCH, Ludhiana, and Punjab. The target population consists patients with fever admitted in ICUs of DMCH, Ludhiana, Punjab. Purposive sampling technique was used to draw sample from target population as per inclusion and exclusion criteria. With lottery method patients were divided in (N= 50)  $n_1$  (group 1) = 25 Experimental group and  $n_2$  (group 2) = 25 Control group. Pre assessment of body temperature was done using standardized scale digital thermometer. For experimental group hot water foot bath therapy 42 °C (107.6 °F) was given for 15 minutes. A post assessment of body temperature was done to determine the effectiveness of hot water foot bath therapy. **Result:** The findings of the study showed that significant difference has been found in experimental group and control group in pre-assessment mean of body temperature (100.632±0.4110) (100.624 ± 0.4944) and post -assessment mean of body temperature (99.424±0.5811) (100.648 ± 0.5516) respectively at  $p < 0.05$  level of significant. **Conclusion:** The finding of the study demonstrated that hot water foot bath therapy was an effective non pharmacological method to reduce the body temperature. The mean post assessment body temperature were lower than mean pre assessment body temperature. There was significant difference found in pre-assessment and post assessment in experimental group.

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## INTRODUCTION

The fever unique to the ICU settings could result from interventions or therapies provided during ICU care or the patient manifesting new-onset fever due to SIRS, septic, metabolic or neuroendocrine response. However, clinical and/or management-related overlaps between different patient groups are not unexpected.<sup>1,2</sup> In ICUs patients, various factors are the cause of fever. Catheter-associated bloodstream infections are one of the most common reasons for patients to have fever in the ICU. Central venous and arterial catheters are important tools for monitoring patients and delivering fluids, antibiotics,

nutrition, and other therapies. Pneumonia is the second most common cause of infection acquired in the ICU and ventilator-associated pneumonia (VAP) is a common source of fever in the intubated patient. Between 10% and 25% of patients on mechanical ventilation will develop VAP during their ICU stay. Surgical site infections can be important causes of fever in patients recovering from recent surgery. These infections will often present with erythema and purulence at a surgical site and eventually may lead to dehiscence of the wound. Prompt surgical debridement is generally required for patients with this etiology of fever. Numerous medications may be associated with an allergic response that includes fever. Any medication can cause fever due to hypersensitivity, which may

manifest as fever alone to life-threatening hypersensitivity. Most common drugs known to cause fever are beta-lactam antibiotics, phenytoin, quinidine, procainamide, and methyldopa.<sup>15</sup> Tepid water and cold water are commonly used for sponging which can be uncomfortable for many patients. 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.<sup>4</sup>

Basically, heat calms and soothes the body, slowing down the activity of internal organs. Water also has a hydrostatic effect. It has a massage-like feeling. Thus the hot water foot bath therapy can have a significant effect on reducing fever. So in this study we aimed to assess the effectiveness of hot water foot bath therapy on body temperature among patients with fever.

**Problem statement:** A study to assess the effectiveness of hot water foot bath therapy on body temperature among patients with fever in selected ICUs of a tertiary care hospital, Ludhiana, Punjab.

**Aim of study:** To assess the effectiveness of hot water foot bath therapy on body temperature among patients with fever.

### Objectives

- To assess the baseline body temperature of the patients in both control group and experimental group.
- To assess the post interventional body temperature of the patients in both control group and experimental group.
- To develop and disseminate hot water foot bath therapy guidelines (pamphlet) among patients with fever and nurses working in ICUs.

### Operational definitions

**Patients with fever** - It refers to all the adult patients admitting with fever or who will develop fever during their period of hospitalization with a temperature of  $\geq 100$  °F.

**Body temperature**-It is the degree of heat maintained by the body or it is the balance between heat produced in the tissues and heat lost to the environment. Temperature measure of hotness or coldness expressed in terms of any of several arbitrary scales and indicating the direction in which heat energy will spontaneously flow i.e. from hotter body (one at a higher temperature) to a colder body (one at a lower body) .

**Hot water foot bath therapy**- It refers to immersing of both the feet in hot water with a temperature of 107.6°F for a period of 15 minutes administering by the investigator.

### Hypothesis

**Ho:** There will be no significant difference in the body temperature reduction between experimental and control group after hot water foot bath therapy at 0.05 level of significance.

### Delimitation

Study was delimited to only 50 ICUs patients suffering from fever and all these patients were allocated in 2 groups i.e. experimental group(n1=25) and control group(n2=25) admitted in ICUs of DMCH, Ludhiana, Punjab.

## METHODS AND MATERIALS

**Research approach:** Quantitative approach was used for the study. Research approach involves the description of the plan to investigate the phenomenon under study in a qualitative (unstructured) or a structured (quantitative) or a combination of two methods. For the present study quantitative research approach was used.

**Research design:** The research design for the present study was experimental design i.e. Pretest- posttest control group design. It was used to carry out the present study.

**Research setting:** The study was conducted in the Intensive Care Units of DMCH, Ludhiana. DMC & Hospital is a tertiary care providing renowned institute with bed capacity of 1500 beds and was established in 1937. At present, the institute is being run in its new building The New "Dayanand Medical College & Hospital" in Tagore Nagar. It provides comprehensive tertiary care in Emergency Units, Medical Units, Surgery units and Intensive Care Units. Thus, Multi-specialty care services are being provided to the patients. DMC & Hospital is also providing training to the undergraduate, graduate, postgraduate and super specialty medical and nursing students.

**Target population:** The target population was consist patients with fever admitted in all ICUs (Pulmonary, Gestro Medical, Stroke, Trauma, Surgery and Neurosurgery) in DMCH, Ludhiana, Punjab who were fulfilling the following inclusion and exclusion criteria:

### Inclusion criteria and Exclusion criteria

#### Inclusion criteria

##### Patients who were:

- Above 18 years old
- Having temperature  $\geq 100$  °F
- Willing to participate in the study
- Understand English, Hindi or Punjabi

#### Exclusion criteria

##### Subjects who will be admitted with:

- Peripheral vascular disorder
- Unconsciousness
- Peripheral neurology
- Ulcer, lesion, or allergy in the leg
- Chronic organ damage
- Paralyzed
- Diabetes mellitus

**Sample and sampling technique** **Sample:** The total sample was 50 Patients with fever admitted in which were included in both the groups i.e. experimental group (n=25) and control group (n=25).

**Sampling technique:** Purposive sampling technique was used to draw sample from target population as per inclusion and exclusion criteria. The study subjects i.e. 30 were drawn from

the target population by using Purposive sampling technique and all the 50 patients with fever were included in experimental group ( $n_1=25$ ) and control group ( $n_2=25$ ) by lottery method.

**Duration of the study:** Study was conducted from 1st January, 2021 to 31st January, 2021.

Description of the study

**Independent variable-** Hot water foot bath therapy.

**Dependent variable-**Body temperature

**Intervention:** In experimental group (i.e. 25 patients with fever), Hot water foot bath therapy will be given to assess its effectiveness on body temperature.

**Application of Hot water foot bath therapy:** It refers to immersing of foot and ankles with the hot water for a period of 15 minutes with the water temperature 42 °C (107.6 °F).

- Take a written consent.
- Wash hands with soap and water.
- Check the body temperature of the patient.
- Provide comfortable position to the patient.
- Take the hot water in the tub temperature 42 °C (107.6 °F).
- Dip the feet and ankle of the patient in the tub for 15 minutes.
- After 15 minutes check the temperature.
- Wipe and clean the foot of the patient.
- In control group i.e. 25 patients with fever, hot water foot bath therapy will not be applied.

**Selection and development of tool:** The most important and indispensable part of conducting a research study was to collect relevant data to find the solutions to the questions arising from the problem statement. Thus a detailed and thorough review of the available literature on the effect of effectiveness of hot water foot bath therapy on body temperature among patients with fever was done. Assessment sheet was developed with the help of literature review and was validated by various experts from the field of nursing, nursing research and critical care.

Description of tool

The tool is divided into two parts

### Section-1

**Part A-** Socio-demographic profile.

**Part-B** Clinical Profile

### Section-2

Temperature recording sheet **It consist of 2 Sections:-Section I:-** Patients profile

- **PART A-Socio demographic profile:** It includes 9 items to obtain information about age in years, gender, habitat, religion, educational status, marital status, dietary pattern, occupation and socio economic status.

- **PART B- Clinical profile:** It includes 11 items to obtain information about day of hospitalization, diagnosis of patient, day of onset of fever after history of hospitalization, T.L.C, E.S.R., 24 hours highest spike, duration of fever, blood culture, relative reasons of fever, associated symptoms with fever is present, any antipyretic given.

- **Section II:-**Temperature recording sheet

### Validity and reliability of research tool Validity

- Consultation with guide and co-guides regarding the content and language of the tool was done.
- Various experts from field of nursing, nursing research and critical care have validated the content of GRV assessment sheet related to ICU stay for critically ill patients.

**Reliability:** Assessment sheet was self-structured tool and its reliability was ( $r=1$ ) which was calculated by Inter-rater formula i.e.

$$r = \frac{\text{No. of agreements}}{\text{No. of agreements} + \text{No. of disagreements}}$$

**Pilot study:** To assess the feasibility of the study, a pilot study was conducted in Intensive Care Units of DMCH, Ludhiana, Punjab. It was conducted on 6 patients i.e. 3 in experimental group and 3 in control group. After the pilot study it was found that planned study was feasible to be conducted as the study subjects were available and methodology was appropriate for research study. The language used in tool was clear and adequate. Needed modifications were done according to the difficulty faced during pilot study.

### Data collection procedure

- The permission was taken from the Institutional Ethics committee of DMC & Hospital to carry out the study.
- A written permission was taken from Principal, College of Nursing and Head of Department of Critical Care Medicine.
- Data was collected from 1st January to 31st January, 2021.

### Pre-intervention

- Screening of the ICU patients on the basis of inclusion and exclusion criteria was done.
- Obtained the written informed consent from the patients/attendants.
- The study subjects i.e. 50 patients with fever were drawn from the target population by using purposive sampling technique and all the 50 patients were included by lottery method in experimental group ( $n_1= 25$ ) and control group ( $n_2= 25$ )
- Patients were interviewed for self report, observations, Bio-physiological methods and records and reports were used to collect the data regarding socio-demographic profile and clinical profile.
- Hot water foot bath therapy was planned for patients in experimental group and not in control group.

## Intervention

**Application of Hot water foot bath therapy:** It refers to immersing of foot and ankles with the hot water for a period of 15 minutes with the water temperature 42 °C (107.6 °F).

- Take a written consent.
- Wash hands with soap and water.
- Check the body temperature of the patient.
- Provide comfortable position to the patient.
- Take the hot water in the tub temperature 42 °C (107.6 °F).
- Dip the feet and ankle of the patient in the tub for 15 minutes.
- After 15 minutes check the temperature.
- Wipe and clean the foot of the patient.
- In control group i.e. 25 patients with fever, hot water foot bath therapy was not be applied.

## POST INTERVATION

- Check the body temperature of the patients with digital thermometer of experimental group and control group.
- Record the body temperature on data collection sheet of experimental group and control group.

## Ethical consideration

**Following things were considered to ensure ethical consideration of study:**

- A written permission was taken from Institutional Ethics committee of DMCH, Ludhiana.
- The study was approved by Baba Farid University of Health Sciences, Faridkot.

- A written permission was taken from Principal, College of Nursing and Head of Department of Intensive Care Unit.
- The patients/attendants were explained about the study and its objectives in their language and written consent was taken from them.
- Anonymity of the patients and confidentiality of information was maintained.
- It was ensured that intervention was cost effective and patient did not have to pay any charges.
- It was ensured that study did not affect the participants in any way.

## RESULTS

It depicts Comparison of pre test assessment and post test assessment of body temperature among experimental group and control group . In pre test assessment Mean  $\pm$ SD of experimental group and control group was 100.632  $\pm$ 0.4110 and 100.624  $\pm$ 0.4944 respectively. No significant difference was found between the group in pre test. In post test assessment Mean  $\pm$ SD of experimental group and control group was 99.424  $\pm$ 0.5811 and 100.648  $\pm$ 0.5516 respectively. Significant difference result was found between the group in post test at  $p < 0.05$  level of significance. In experimental group pre test assessment, and post test assessment 100.632  $\pm$ 0.4110 and 99.424  $\pm$ 0.5811 respectively. There was significant difference was found within the groups at  $p < 0.05$  level of significance. In control group pre test assessment, and post test assessment 100.624  $\pm$ 0.4944 and 100.648  $\pm$ 0.5516 respectively. There was no significant difference was found within the group in control group. Findings revealed significant difference in experimental and control group at post-test and specifically experimental group had significant difference in values of pre-test and post-test.

**Table 1. Frequency and percentage distribution of patients as per socio – demographic profile**

Socio-demographic	Experimental group (n=25)		Control group (n=25)		$\chi^2$ statistics
	f (%)	f (%)	f (%)	f (%)	
Age					
19-38	11(44%)	5 (20 %)	11 (44 %)	9 (36%)	3.3889
39-58	7 (28%)	11 (44 %)	18 (72 %)	15 (60%)	df=2 p=0.1836 NS
59-78	7 (28%)	11 (44 %)	7 (28 %)	10 (40 %)	df=1 p=0.2385 NS
Gender Male Female	14 (56%)	18 (72 %)	11 (44 %)	7 (28 %)	1.3889
Habitat Rural Urban	17 (68%)	15 (60 %)	5 (32%)	10 (40 %)	0.3472
Religion Hindu Muslim Sikh	13 (52%)	9(36 %)	13 (52%)	9(36 %)	df=1 p=0.5556 NS
	0	1(4 %)	0	1(4 %)	df=1 p=0.3946 NS
	12 (48%)	15(60%)			

(\*-Significant at  $p \leq 0.05$ ) (NS – Non Significant), (□ merge), (# – Yates correction) Mean age  $\pm$  SD (years) in experimental group = 44.840  $\pm$  1.7648 , control group = 51.760  $\pm$  1.582

Education □ Primary Secondary Undergraduate		Experimental group (n=25)		Control group (n=25)		$\chi^2$ statistics
		f (%)	f (%)	f (%)	f (%)	
		9 (36 %)	17 (68 %)	12 (48 %)	6 (24 %)	5.1282
		12 (48 %)	6 (24 %)	4 (16 %)	2 (8 %)	df=1 p=0.0235 *
Marital Status □ Unmarried Married Divorced		3 (12 %)	1 (4 %)	21 (84 %)	24 (96 %)	0.8889
		1 (4 %)	0	14 (56 %)	11 (44 %)	df=2 p=0.345779 NS
Dietary pattern □ #		14 (56 %)	11 (44 %)	11 (44 %)	9 (36 %)	0.7200
Vegetarian		11 (44 %)	9 (36 %)	0	5 (20 %)	df=1 p=0.3
Non-vegetarian Lacto-ova vegetarian		0	5 (20 %)	0	5 (20 %)	NS
Occupation Working Not working		11 (44 %)	13 (52%)	14 (56 %)	12 (48 %)	0.3205
		14 (56 %)	12 (48 %)	11 (44 %)	9 (36 %)	df=1 p=0.5
Scio Economic Status Upper middle class		17 (68%)	19 (76 %)	0	6 (24 %)	713 NS
Lower middle class		8 (32 %)	6 (24 %)	17 (68%)	19 (76 %)	0.3968
				8 (32 %)	6 (24 %)	df=1 p=0.5
						28 NS

**Table 3. Frequency and percentage distribution of patients as per Clinical profile**

Clinical profile	N=50		$\chi^2$ statistics
	Experimental group (n=25)	Control group (n=25)	
Day of hospitalization <sup>□</sup>			
1-7 days			1.2987
8-14days	13 (52 %)	9 (36 %)	df=1 p=0.2544 <sup>NS</sup>
More than 15 days	9 (36 %)	9 (36 %)	
	3 (12 %)	7 (28 %)	
Diagnosis of patient <sup>□</sup>			
Neurology disorders	3(12 %)	4(16 %)	4.1596
Cardiac vascular disorder	3(12 %)	8(32 %)	df=1 p=0.0413 *
Respiratory disorders	0	7(28 %)	
GI disorders	16(64 %)	6(24%)	
Renal disorders	3(12 %)	0	
Day of onset of fever after admission			
1-7 days			
8-14days			
	25 (100 %)	23 (92 %)	
Previous history of hospitalization			
yes		2 (8 %)	0.7389
no			df=1 p=0.3899 <sup>NS</sup>
	16 (64 %)	13 (52 %)	
	9 (36 %)	12 (48 %)	
T.L.C <sup>□</sup>			8.1169
4-10	8 (32 %)	6 (24 %)	df=1 p=0.00043 *
<4	1 (4 %)	0	
> 10	16 (64 %)	19 (76 %)	

Mean days of hospitalization  $\pm$ SD in experimental group = 3.928  $\pm$  4.173, control group = 11.680  $\pm$  7.553

Mean day of onset of fever after admission  $\pm$ SD in experimental group = 7.800  $\pm$  5.845, control group = 2.958  $\pm$  2.578 Mean T.L.C  $\pm$  SD in experimental group = 14.6520  $\pm$  9.85149, control group = 18.7120  $\pm$  1.790 (T.L.C 10<sup>^3</sup>/ul) (\*-Significant at p $\leq$ 0.05) (NS – Non Significant),

**Table 4. Comparison of changes in body temperature of the patients in both Experimental group and control group in post test**

Group	Change in body temperature						
	Same	Reduced temperature			Increased temperature		
		Some extent (0.1°F-1.7 °F)	Average extent (1.8°F-3.5 °F)	Great extent (3.6°F-5.4 °F)	Some extent (0.1 °F-1.7 °F)	Average extent (1.8F-3.5 °F)	Great extent (3.6°F-5.4°F)
Experimental group	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)
	0	22 (88%)	3 (12%)	0	0	0	0
control group	11 (44%)	7 (28%)	0	0	7 (28%)	0	0
Total	11 (22%)	29 (58%)	3 (6%)	0	7 (14%)	0	0

**Table 5. Comparison of mean pre test assessment and post test assessment of body temperature**

Pre/Post	Experimental group n=25	Control group n=25	Unpaired-t test
	Mean $\pm$ SD	Mean $\pm$ SD	
Pre-test assessment	100.632 $\pm$ 0.4110	100.624 $\pm$ 0.4944	t=0.062 df=48 p=0.951 <sup>NS</sup>
Post test assessment	99.424 $\pm$ 0.5811	100.648 $\pm$ 0.5516	t=7.638 df=48 p=0.000*
Paired t-test	t=13.028 df=24 p=0.000*	t=0.562 df=24 p=0.543 <sup>NS</sup>	-

## DISCUSSION

The findings of the study have been discussed in accordance with objectives of study and previous reviewed studies. Review of literature enlighten that there are vast number of studies conducted to assess the effectiveness of hot water foot bath therapy on body temperature among patients with fever. Evidence based practice is the integration of best research evidence with clinical expertise and patients values which when applied by practitioners will lead to improved outcome. It is an ongoing and continuous process. A fever is a common side effect of illness like the flu. It happens when there is a temporary rise in body temperature.

A fever is usually a sign that immune system is busy fighting an infection or other illness. In babies and toddler even, a slight fever may be a sign of a serious illness. In adults a fever is not usually serious or life-threatening. However, sometimes a fever in adults can be a warning signal that something is not right. A high or persistent fever might be a sign of a serious health condition. 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. Thus, a study was conducted to assess the effectiveness of hot water foot bath therapy on body temperature among patients with fever in selected ICUs of a tertiary care hospital, Ludhiana, Punjab. Quantitative approach was used for the study. Pre-test and post-test control group design was used to conduct the study. This study was conducted in ICUs of DMCH, Ludhiana, and Punjab.

The target population was consist patients with fever admitted in ICUs of DMCH, Ludhiana, and Punjab. Patients with fever admitted in ICUs. Purposive sampling technique was used to draw sample from target population as per inclusion and exclusion criteria with lottery method patients were divided in ( $N= 50$ )  $n_1$  (group 1) = 25 Experimental group and  $n_2$  (group 2) = 25 Control group . Pre assessment of body temperature was done using standardized scale digital thermometer. For experimental group hot water foot bath therapy was given for 15 minutes. A post assessment was conducted to determine the effectiveness of hot water foot bath therapy. Discussion of the findings of this study has been done in accordance with the analysis and interpretations and the major findings of the present study with other studies conducted in different settings under following sections:

**Section 1: Distribution of patients as per socio-demographic profile and clinical profile.** In present study as per socio-demographic profile among 50 patients, majority of patients in experimental group were in (44%) with mean (44.84±1.764) 19-38 years age and in control group were also (44%) with mean (51.760±1.583) in 39-58 years age respectively. Majority of the patients in experimental group (56%) and in control group (72%) were males. Most of the patients (68%) were living in rural area in experimental group and in control group were (60%). Most of patients were belonging to Hindu religion (52%) in experimental group and (60%) were belonging to Sikh religion in control group , most of the patients (48%) were educated up to secondary in experimental group and (68%) were in control group . Majority of the patients in experimental group (84%) and in control group (96%) were married. Most of the patients were in experimental group (56%) in control group (44%) were vegetarian, most of the patients were in experimental group (56%) were not –working and in control group (52%) were working and (68%) in experimental group and (76%) in control group were belonging to upper middle class. These findings are supported by study to assess the effectiveness of hot water foot bath therapy in reducing body temperature among patients with fever in medical wards in Rajiv Gandhi government general hospital, Chennai showed that out 60 patients, highest number were in experimental group (50%) and in control group (63.3%) between the age 20-30 years of age in experimental group (63.3%) and in control group (50%) . Majority of the patients were male (50%) in experimental group and (66.7%) in control group. Majority of the patients were belong to Hindu religion (73.3%) in experimental group and (76.7%) in control group. Most of the patients were diploma (30%) & degree holder (30%) in experimental group and primary education (26.7%) in control group respectively. Majority of the patients (46.7%) in each of experimental group and control group were unmarried. Majority of the patients were unemployed (46.7%) in experimental group and (40%) were working in control group. Most of the patients were taking non vegetarian diet

(63.3%) in experimental group and (76.7 %) in control group respectively. In present study as per clinical profile among 50 patients, majority of patients in experimental group were in day of hospitalization majority of patients .i.e. 13 (52%) were in 1-7 days of hospitalization and in control group day of hospitalization equal of the patients .i.e. 9(36%) were in 1-7 and 8-14 days of hospitalization. Majority of patients .i.e. 16(64%) were diagnosed with GI disorders followed by equal number of the patients i.e. 3(12%) were diagnosed with Neurology disorders, Cardiac vascular disorder and renal disorders and in control group 8(32%) were diagnosed with Cardiac vascular. Majority of the patients in day of onset of fever after admission all of the patients i.e. 25(100%) were 1-7 days in experimental group and in control group to day of hospitalization equal of the patients .i.e. 9(36%) were in 1-7. Majority of the patients 16(64%) of them had previous history of hospitalization and in control group 13(52%) of them have previous history of hospitalization. Majority of the patients 16 (64%) were T.L.C >10( $\wedge$ 3/ul) in experimental group and in control group (76%) were >10( $\wedge$ 3/ul). Majority of the patients i.e. (88%) were E.S.R >20(mm /hr) in experimental group and (92%) were >20(mm /hr) in control group. Majority of the patients (60%) were 1week & above duration of fever in experimental group and 18(72%) were 1week & above duration of fever in control group . Majority of patients i.e. 19(76%) were negative blood culture in experimental group and (80%) were negative in control group. Majority of patients (40%) were septicemia in relative reasons of fever in experimental group and (48%) were septicemia in control group. Majority of the patients (64%) of them have no associated symptoms in experimental group and (72%) of them have no associated symptoms in control group. Majority of the patients 24(96%) of them given the antipyretic in experimental group and all of the patients i.e. 25(100%) of them given the antipyretic in control group respectively. The similar study conducted to assess the effectiveness of hot water foot bath therapy in reducing body temperature among patients with fever in medical wards in Rajiv Gandhi government general hospital ,Chennai showed that out 60 patients , majority of the patients in each (43.3 %) past 2 days and past 1 week in experimental group and in (40%) past 1 week in control group . Many patients in both control group (76.6%) and control group (83.3%) had no history of hospitalization. Majority of the patients had associated symptoms (40%) in experimental group and (50%) in control group. The similar study conduced “A study to evaluate the effectiveness of warm water foot bath therapy on adults with fever admitted in Raghav Hospital, Appakudal, Erode District” by Miss.Nisha.R in (2018). Majority of the patients all of the patients (100%) of them given the antipyretic in experimental group and in control group respectively.

**Section II: Assessment and comparison of the post interventional body temperature of the patients in both experimental group and control group:** The present study shows that the Comparison of changes in body temperature of the patients in both Experimental group and control group in post interventional . In experimental group among 25 patients. According to reduced temperature majority of patients i.e. 22(88%) were in some extent (0.1°F-1.7°F) body temperature and 3(12%) were in average extent (1.8°F-3.5°F) body temperature. In control group among 25 patients, majority of the patients i.e. 11(44%) were in same body temperature and 7(28%) some extent (0.1°F-1.7°F) body temperature. According to increased the body temperature the patients

followed by 7(28%). The similar studies conducted in Mangaluru by Aileen Christal Pereira and Shanthi Sebastians shows that the Comparison of changes in body temperature of the patients in Both Experimental group and control group in post interventional . In experimental group among 30 patients. According to reduced temperature majority of patients i.e. (70%) were in some extent (0.1°F-1.7°F) body temperature and (30%) were in average extent (1.8°F-3.5°F) body temperature. In control group among 25 patients, all of the patients (100%) were in some extent (0.1°F-1.7°F) body temperature.

**Section III : Comparison of mean pre - test assessment and post test assessment of body temperature:** The present study shows that Comparison of pre test assessment and post test assessment of body temperature among experimental group and control group . In pre test assessment Mean  $\pm$ SD of experimental group and control group was 100.632  $\pm$ 0.4110 and 100.624  $\pm$ 0.4944 respectively. No significant difference was found between the group in pre test.

In post test assessment Mean  $\pm$ SD of experimental group and control group was 99.424  $\pm$ 0.5811 and 100.648  $\pm$ 0.5516 respectively. Significant difference result was found between the group in post test at  $p < 0.05$  level of significance. The similar study conducted to assess the effectiveness of hot water foot bath therapy in reducing body temperature among patients with fever in medical wards in Rajiv Gandhi government general hospital, Chennai showed that out 60 patients, In pre test assessment Mean  $\pm$ SD of experimental group and control group was 101.45  $\pm$ 1.07 and 101.33  $\pm$ 1.06 respectively. In post test assessment Mean  $\pm$ SD of experimental group and control group was 99.83  $\pm$ 0.83 and 100.80  $\pm$ 1.00 respectively. The difference between pre assessment and post assessment temperature is large and it is statistically significant.

## CONCLUSION

The finding of the study demonstrated that hot water foot bath therapy was more effective non pharmacological method to reduce the body temperature. The mean post assessment body temperature were lower than mean pre assessment body temperature. There was significant difference found in pre-assessment and post assessment in experimental group .

### Limitations of the study

- The study was conducted on small sample which impose restrictions on generalization of the study.
- The study was conducted only on the 15minutes.

### Recommendations

- The study can be conducted among large group of patients.
- A study can be conducted to assess the effectiveness of hot water foot bath therapy on patients with fatigue.
- A study can be conducted to assess the effectiveness of hot water foot bath therapy on patients having headache.
- A study can be conducted to assess the effectiveness of hot water foot bath therapy on patients with insomnia.

- A comparative study can be conducted to assess the effectiveness of hot water foot bath therapy and combination with other complementary therapies.
- After giving foot bath therapy check body temperature of the patient firstly 15 minutes, later half an hour to check consistency in temperature reduction after hot water foot bath therapy.

## REFERENCES

1. Healthline.com/health/cold-flu/fever-in-adult.
2. Paciolian and S. Shanti effectiveness of hot water foot therapy in reduction of temperature among children (6-12 years) with fever. International journal of applied research 2018 (page number: 86-92)
3. Jobson effectiveness of hot water foot bath therapy on temperature among patients with fever. International journal of science and research IJSR 2016 (page number: 382-385)
4. Pavithra C. effects of tepid vs. warm sponging on body temperature and comfort among children with pyrexia. International journal of science and applied research 2018 (page number: 382-385)
5. Ncbi.nlm.nih.gov/Pmc/articles/PMC4049052
6. S. Stuti, an experiment study to assess the effect of hot water foot bath in patient with fever community and public health nursing 2017, Page no. 25 to 29
7. Ahamed Nargis, Mandal Ishita, Datta Sunita, De Piyali effectiveness of hot water foot therapy on physiological parameters of children with fever. Journal of nursing science and practice 2014 Vol. 4 (page number: 43-57)
8. Malarvizley.R. karthi, a study to assess the effectiveness of hot water Foot bath therapy on quality of sleep among elderly. International journal of science and healthcare research 2019 vol.4, (page number: 83-88)
9. MS.J. Sharber, Jame sharber MS “the effectiveness of tepid sponge bathing to reduce fever in young children., The American journal of emergency medicine march 1997 (page number: 188-192)
10. Silva De Hemal ,Weliange Silva De Shreenika ,Weerasekera Kumudh “ knowledge and practices on fever and home management of a febrile child and antipyretic use. A srilankan experience(2020). <https://www.researchsquare.com/article/rs-47934/v1>
11. RN.Kiekkas Panagiotis “A study to fever effects and treatment in critical care in Australian critical care, August 2013,Vol.26, Issue .3 , Page no. (130-135)
12. Sun Yong, Jeong & Kim Jin Sun “ fever and fever management in children., Korean Academy of child health nursing ,Vol .16, Issue .1, Page no.(30-40)
13. Peter .TJ ,S. Hollinghurst, M. Fletcher, Montyomery. AA, C. Costelloe, NM Redmond,& AD Hay “ Paracetamol and ibuprofen for the treatment of fever in children the PITCH
14. randomized controlled trial., Health technology assessment NIHR HTA Programme may 2009., DOI : 10.3310/hta 13270 , Vol.13 , no.27.
15. Donnell’O Judith “Use and effectiveness of hypothermia blankets and febrile patients in the intensive care unit from the section of infectious diseases , Temple University School of Medicine , Philadelphia , Pennsylvania , 1997 Page no. (1208-1213)
16. Original article PJMHS Vol.14,jul-sep 2020, Page no.(1444-1448)

17. Mrs. Gunasekaran Malathi “A quasi experimental study to assess the effectiveness of hot water foot bath therapy in reducing body temperature among elderly patients with fever residing in selected rural community areas, Krishnagiri. International Journal of Advance Research in Nursing Volume 3; Issue 2; July-Dec 2020; Page No. 160-16
18. Indian Journal of applied research Vol.101,Issue-1,2020 ,Print ISSN No 2249-555X/DOI:10.36106/ijar , Page no.(35-36)
19. URL :<http://ehj.ssu.ac.ir/article -1-144-en .html>
20. Mrs. S. Venisha Suja, Dr. P. Pandiammal Effectiveness of warm water foot bath therapy in reduction of temperature among children (6-12 years) with fever in selected hospital at Tirunelveli. The Genesis ISSN 2395-2164 Volume: 6 Issue: 3 July – September – 2019
21. Masriadi, Eha Sumantri “Effectiveness of foot soak therapy with warm water on decreasing blood pressure in patients with stage one hypertension, Indonesia , Indian Journal of Forensic Medicine & Toxicology ,jul-sep 2019, Vol 13, Page no. (391-396)
22. R. Rekha. “ A study to evaluate the effectiveness of hot water Foot bath therapy on level of fatigue among patients undergoing hemodialysis in a selected Hospital at Coimbatore 2018.
23. Pendichelvi .G.MS. “A quasi experimental study to evaluate the effectiveness of warm water foot bath therapy on fever among children with fever.,, Government head quarters hospital Pudukkottai,2016 .
24. <https://doi.org/10.1111/jjns.12066>, Japan Journal of Nursing Science / Vol.12, Issue.4 , Page no. (276-286)
25. International Journal of science and research (IJR) ISSN (online) 2319-7064, Index copernicus value 2013:6.14, Impact factor (2013) : 4.438.
26. Naggarr EL.M.S .Nahed & Mohamed R. Hoda “ Effectiveness of warm water foot bath on temperature and fatigue among children with fever ,, Evidence-based nursing research ,Vol .4, no.4,2019 article number -19, Page no. (1-11.)
27. www.Jetir org (ISSN-23495162) 2019,JETIR Vol-6 ,Issue -5, Page no. (349-355)
28. <http://repository-tnmgrmu.ac.in/11592/1/300121618nisha>.
29. Ashwin Hospital, Coimbatore “ A comparative study to assess the effectiveness of warm and tepid sponging in reducing hyperthermia among children between the age group of 1to 6 years.,, 2018 .
30. <http://repository-tnmgrmu.ac.in/2056/1/3002102lintueldo>.
31. Mrs. Priya .M.M. “ A study to assess the effectiveness of hot water foot bath therapy in reducing body temperature among patients with fever in medical wards in Rajiv Gandhi government general hospital Chennai,, 2014.
32. Methew Mary Jini “ A study to assess the effect of hot water foot bath therapy on temperature among patients with fever in a tertiary care hospital Bangalore,, 2013.

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