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A Study to Assess the Effectiveness of Impact of Hot Water Foot Immersion Therapy on Regulation of Body Temperature among Patients with Fever Admitted in Sharda Hospital, Greater Noida

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ABSTRACT

Background: A fever is a body temperature that is higher than normal. It is not an illness. It is part of our body's defence against infection. Most bacteria and viruses that cause infections do well at the body's normal temperature (98.6 F). A slight fever can make it harder for them to survive. Fever also activates your body's immune system. You have a fever when your temperature rises above its normal range. Fever is a natural response of the body that helps in fighting off foreign substances such as microorganisms and toxins. Hot water foot bath therapy causes blood vessels to dilate and improves blood circulation, which releases heat in the form of sweat and supplies oxygen to brain cells which aids in the elimination of toxins. The immersion of the body or part of the body in a water bath stimulates circulation and reduces body temperature.

Material and method: A quasi-experimental pre-test and post-test control group design was used. There were 60 Patients admitted with fever selected using simple random sampling technique and were randomly allocated in experimental and control group using lottery method. Control group was received standard treatment. Experimental group was received hot water foot bath therapy along with standard treatment. Content validity of the tool was established by giving it to 11 experts 5 from Medical Surgical Nursing, 3 from physicians, 2 from Psychiatric Nursing and 1 from community health nursing. Reliability of the tool was assessed by using the Cronbach's Alpha method. The correlation coefficient was 0.86. Data collection was done in March 2018.The obtained data was analyzed and interpreted in terms of objectives and research hypotheses. Analysis was done by using descriptive and inferential statistics.

Results: The results revealed that there was significance difference in reduction of temperature after application of hot water foot immersion therapy at $p<0.05$ level of significance. The mean difference between pre-test & post-test was 2.03^0F. It was effective in patients with all type of fever. Participants were highly satisfied with hot water foot immersion therapy.

Conclusion: Based on the study findings it is found that there is a significance association between experimental group (i.e after intervention) and control group only on second day morning and third day morning and evening in the temperature of the patient's, so i conclude that hot water foot immersion therapy is effective from the third day.

Keywords**:** *Body temperature; effectiveness; fever; hot water foot immersion therapy*

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INTRODUCTION

A fever is a body temperature that is higher than normal. It is not an illness. It is part of your body's defence against infection. Most bacteria and viruses

that cause infections do well at the body's normal temperature (98.6 F). A slight fever can make it harder for them to survive. Fever also activates your body's immune system. You have a fever when your temperature rises above its normal range. What's normal for you may be a little higher or lower than the average normal temperature of 98.6 F (37 C) [1].

A fever is a temporary increase in your body temperature, often due to an illness. Having a fever is a sign that something out of the ordinary is going on in your body. For an adult, a fever may be uncomfortable, but usually isn't a cause for concern unless it reaches 103 F (39.4 C) or higher. For infants and toddlers, a slightly elevated temperature may indicate a serious infection.[2]

Fevers generally go away within a few days. A number of over-the-counter medications lower a fever, but sometimes it's better left untreated. Fever seems to play a key role in helping your body fight off a number of infections.[3]

A hot water foot bath therapy increases nourishment to tissues, calms and relaxes tension. It important for the nurse to consider the treatment modality, that is effective for the client, considering all the factors affecting thermoregulation. Hot water foot bath therapy is considered as a non-pharmacological, safe and side effect free, cost effective, easy to administer. As pharmacological measures have reported side effects, it is always better to use non-pharmacological measures to reduce fever. There are very few studies that are conducted to test and compare the effectiveness of different non-pharmacological measures to reduce the fever. [4]

Warm application to the foot causes the congested blood to flow towards distant parts of the body and is brought to the dilated vessels of the foot and leg. When hot water foot bath therapy applied for 15-20 minutes the vessels in the feet starts expanding and gets improved circulation, neutralizing acid and killing bacteria, 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. [6]

METHOD

Simple Random sampling technique was used to select the sample size 60 Patients admitted with fever randomly allocated in experimental and control group by using lottery method. Control group was received standard treatment. Experimental group was received hot water foot bath therapy along with standard treatment. Informed consent was obtained from caregiver. The study excluded the patients who can't assume sitting position, loss of sensation in the leg, Unconsciousness, Ulcer, lesion or allergy in the feet and Patient who are not willing to participate.

DATA COLLECTION PROCEDURE

The research investigator met the head of the institution in order to establish support and cooperation to conduct the study successfully. The formal permission was taken from The Dean of the School of Nursing Science and Research, Sharda University, Greater Noida, U.P and The Medical Superintendent of Sharda Hospital, Greater Noida, and U.P to collect data for main study. The main Study was conducted from 5th March 2018 to 7th April 2018 in Sharda Hospital Greater Noida.

The method used for data collection was as follows

The research investigator introduced him to the subjects and establish the good rapport with them.

The written consent was obtained from each patient.

Warm the water.

The temperature of water should be 103 & 104^0 F or 39 ^{0}C – 40 ^{0}C.

Use such a bucket which helps in foot immersion easily.

Before intervention I will check the body temperature and record in temperature record table.

Steps of check the body temperature:

Wash the hands to prevent the spread of infection. Prepare all required equipments to facilitate accurate skill performance. Check the client's identification and coding to confirm the necessity. Explain the purpose and the procedure to the client to providing information fasters cooperation and understanding. Close doors and/or use a screen to maintain client's privacy and minimize embarrassment. Take the thermometer and wipe it with cotton swab from bulb towards the tube to limit spread of infection. Assist the client to a supine or

sitting position to provide easy access to axilla. Move clothing away from shoulder and arm to expose axilla for correct thermometer bulb placement. Be sure the client's axilla is dry. If it is moist, pat it dry gently before inserting the thermometer because moisture will alter the reading. Under the condition moistening, temperature is generally measured lower than the real. Place the thermometer in hollow of axilla at anterior inferior with 45 degree or horizontally to maintain proper position of bulb against blood vessels in axilla. Keep the arm flexed across the chest, close to the side of the body because close contact of the thermometer with the superficial blood vessels in the axilla ensures a more accurate temperature registration. Hold the thermometer in place for 3 minutes to ensure an accurate reading. Remove and read the level of the temperature to ensure an accurate reading. Explain the result and instruct him/her if he/she has fever or hypothermia to share his/her data and provide care needed immediately. Dispose of the equipment properly, wash the hands to prevent the spread of infection. Replace all equipments in proper place to prepare for the next procedure. Record in the client's chart for documentation provides ongoing data collection. If a report is abnormal reading to the senior staff because documentation provides ongoing data collection.

RESEARCH

Table no.:1: Post- test scores of body temperature experimental and control group in day 2 morning.

Group type	N	Mean	S.D	t value	P value
Experimental	30	3.47	.68	2.038	0.046*
Control	30	3.10	.71		

* denotes significant at 5% level.

INTERPRETATION:

Since the P value of the above analysis between experimental group and control group in day two morning session is less than 0.05 so the $H_0$2 is rejected at 5% level of significance which means there is an association between experimental (i.e. after intervention) group and control group patients with respect to the temperature.

Table no.:2: Post- test scores of body temperature experimental and control group in day 2 evening

Group type	N	Mean	S.D	t value	P value
Experimental	30	3.07	.69	.328	.744
Control	30	3.00	.87		

* denotes significant at 5% level.

INTERPRETATION

Since the P value of the above analysis between experimental group and control group in day two evening session is more than 0.05 so the $H_0$3 is accepted at 5% significance which means there is no association between experimental group (i.e. after intervention) and control group patients with respect to the temperature.

Table no.:3: Post- test scores of body temperature experimental and control group in day 3 morning.

Group type	N	Mean	S.D	t value	P value
Experimental	30	2.47	.57	-2.579	.012*
Control	30	2.87	.63		

*** denotes significant at 5% level.**

INTERPRETATION:

Since the P value of the above analysis between experimental group and control group in day three morning session is less than 0.05 so the $H_0$4 is rejected at 5% significance which means there is an association between experimental group (i.e. after intervention) and control group patients with respect to the temperature.

Table no. 4: Post- test scores of body temperature experimental and control group in day 3 evening.

Group type	N	Mean	S.D	t value	P value
Experimental	30	1.77	.50	-5.914	.000*
Control	30	2.70	.70		

* denotes significant at 5% level.

INTERPRETATION:

Since the P value of the above analysis between

experimental group and control group in day three evening session is less than 0.05 so the H_0 is rejected at 5% significance which means there is an association between experimental group (i.e. after intervention) and control group patients with respect to the temperature.

Table no. 5: Mean difference of post- test scores of body temperature among experimental and control group

Group	Mean day 1	Mean day 3	Mean difference
Exp. Group	3.80	1.77	2.03
Control group	3.83	2.70	1.13

INTERPRETATION:

From the above table I found that the mean difference of experimental group is greater than the control group.

DISCUSSION

In this study the data was obtained from patients admitted with fever in Sharda Hospital, Greater Noida regarding on thermoregulation in order to achieve the objectives of the study a Quasiexperimental pre-test & post-test control group design was adapted and 60 patients were selected by using simple random sampling technique, fulfilling the inclusion and exclusion criteria. The subjects were evaluated by using structured participation information sheet, inform consent, demographic variables, temperature record table and rating scale on level of satisfaction on hot water foot immersion therapy among patient with fever.

CONCLUSION

The findings of the study revealed that the hot water foot bath therapy was effective in thermoregulation among patients with fever. Thus study suggest that hot water foot bath therapy is a complimentary alternative therapy that helps the parents, family members and nurses in the management of fever, in an easy, cost effective way without shivering and complication. We can use footbath as a non-pharmacological, easy and safe technique to maintain the body temperature. As this method can be performed for the elderly by themselves or other people, it can be recommended in health programs for them. The hot water is cheap and simple way to thermoregulation by increasing the foot vessel expansion and blood volume is increased and timely ought to brain of oxygen & nutrients needed to fight against microorganism.

Conflict of Interest: Nil

Source of Funding : Self

Ethical Clearance: Taken

REFFERENCES

1. Right diagnosis. Fever. 2015 August 13 (1:54). Available from: www.rightdiagnosis.com/f/fever/intro.htm.
2. Merck, Kenilworth, NJ. Fever. The Merck Manuals: The Merck Manual for Health care Professionals. Professional version. 2014 February. 4. Available from: http://www.merckmanuals.com/professional/sec14/ch167/ch167e.html.
3. Merck, Kenilworth, NJ. Fever in adults. The Merck Manuals: Home Edition for Patients and Caregivers. 2014 February 25. Available from: http://www.merckmanuals.com/home/infections/biologyofinfectious.html.
4. Karen I Plaisance, Philip A Mackowiak. Antipyretic therapy. Physiologic rationale, Diagnostic Implications, and clinical consequences. Arch Interim Med. 2000; 160: 449-456.
5. Selvakumari S. Hot water foot bath therapy for patients with fever. Nigtingle nursing times.2011; 6 (12): 24-27.