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Immediate Effect of Steam Bath Followed by Cold Shower on Body Temperature Among the Healthy Individuals: A Single Arm Study

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ABSTRACT

Introduction: Hydrotherapy is one of the basic methods of traditional treatment widely used in the system of naturopathy and this is the external or internal use of water in any of its forms (water, ice or steam) for health promotion or treatment of various diseases under different temperatures, pressure, duration and site depends on the condition. Steam bath is a form of hydrotherapy in which the person gets exposed to steam inside a wooden cabin except his head. This study aims to find out the immediate effect of steam bath followed by cold shower on body temperature among healthy volunteers.
Materials and Methods: Fifteen volunteers were randomly selected from medical students enrolled in a naturopathic programme. The participants were of both sexes aged between 18 and 20 years. A steam bath was given to each of the participants for 20 minutes followed by cold shower for 5 minutes. The outcome measure was body temperature.
Results: All the 15 participants were completed the study, all the participants have shown reduction in body temperature (p=.001) was statistically significant.
Discussion: This study reveals that steam bath for 20 minutes followed by cold shower duration of 5 minutes reduces body temperature significantly. This may be due to heat loss from body through evaporation of secreted sweat and cold shower. Further studies are required to confirm our findings in different population.

Keywords: Hydrotherapy, steam bath, cold shower, body temperature, healthy individuals.

1. INTRODUCTION

Hydrotherapy is one of the basic methods of traditional treatment widely used in the system of naturopathy and this is the external or internal use of water in any of its forms (water, ice or steam) for health promotion or treatment of various diseases under different temperatures, pressure, duration and site depends on the condition. Steam bath is a form of hydrotherapy in which the person gets exposed to steam inside a wooden cabin except his head. The steam bath improved cardiovascular function in healthy subjects with reductions in heart rate and systolic and diastolic blood pressure were observed. [1] Wet sauna bath

increases rectal temperature and greater increase of heart rate. [2] Exposure to sauna bath led to reduction in the body mass and elevation of tympanal temperature. [3] Regular sauna use improves cardiovascular and thermoregulatory mechanisms during endurance exercise via heat acclimation. [4] This study aims to find out the immediate effect of steam bath followed by cold shower on body temperature among healthy volunteers.

2. MATERIALS AND METHODS

2.1 Study setting

The study was conducted at the Department of Hydrotherapy, Sree Ramakrishna Medical College of Naturopathy and Yogic Sciences (SRKMCNYS), Tamilnadu, India.

2.2 Study Participants

100 students from the second year of the Bachelor of Naturopathy and Yogic science (BNYS) programme at SRKMCNYS were screened and 15 participants were selected using simple random sampling. Healthy volunteers of female gender aged between 18 and 20 were included in the study. Written consent was obtained from all the students and participation was voluntary. The study was approved by the Institutional ethical committee of SRKMCNYS.

2.3 Intervention

Steam bath is a hydrotherapy modality where the full body except head would be enclosed inside a wooden cabin with steam for 20 minutes. The intervention was provided to all the participants between 7am and 8am. Subjects were advised to drink 200 ml of cold water before and after steam bath. Cold head compress was placed during steam bath. Immediately after steam bath volunteers were underwent a cold shower for 5 mins.

2.4 Outcome measures

All participants were underwent a general physical examination before the procedure. Body temperature was measured before and after the steam bath followed by cold shower for interventional group at axilla using a thermometer (Omron digital thermometer model MC-246).

2.5 Statistical method

All the data was recorded in Microsoft excel 2007. Paired sample t test was done to evaluate the changes within the group using SPSS software.

3. RESULTS

All enrolled participants successfully completed the study and no adverse effect has been reported in interventional group. Most participants n=10 were aged between 18 and 19 years and n=5 were aged between 19 and 20 years. Body temperature significantly reduced by 2% (pre temp 96.613, SD ± .7308 post temp 95.53, SD ± .8575) after the steam bath followed by cold shower. It was tabulated in table 1. There was a statistical significant difference in temperature before and after steam bath followed by cold shower. Results of pre and post intervention comparisons are given in table 2.

Table.1 Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	pretemp	96.613	15	.7308	.1887
	posttemp1	95.533	15	.8575	.2214

Table 2. Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	pretemp - posttemp1	1.0800	1.0469	.2703	.5002	1.6598	3.995	14	.001

4. DISCUSSION

This study reveals that after steam bath for 20 minutes followed by cold shower duration of 5 minutes reduces body temperature significantly. This may be due to heat loss from body through evaporation of secreted sweat and cold shower. When the body is exposed to heat body temperature rises. Skin warmth receptors and blood convey these changes to the hypothalamic thermostat. The thermostat inhibits the adrenergic activity of the sympathetic nervous system, which control vasoconstriction and metabolic rate, thus causing cutaneous vasodilation and reducing BMR. This causes an increase in heat loss via the skin and a decrease in heat production in the core. If the heat is sufficiently intense, the cholinergic sympathetic fibers, which innervate sweat glands release ACh, stimulating sweat. Sweating is the most effective involuntary heat fighting response in man. Thermal homeostasis is maintained by achieving a balance between the various avenues of heat gain and heat loss from the body. Steam bath used in health clubs is safe when used with care but ignoring moderate recommendations expose to health risk. [5] Increase in rectal temperature and heart rate were observed during the wet sauna bath. [2] The metabolic rate increased significantly during sauna but no significant changes in body temperature (measured on forehead) [6] Dry sauna baths can induce weak changes in the superficial temperature distributions following exercise test, a certain decrease in resting heart rate and small increase in plasma volume in the elite cross-country skiers.[7]

5. CONCLUSION

The current study indicated that steam bath followed by cold shower immediately reduces body temperature significantly. Further studies are required to confirm our findings in different population.

Declaration by Authors

Ethical Approval: Approved

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Conflict of Interest: The authors declare no conflict of interest.

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