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EFFECT OF ALTERNATE HOT AND COLD COMPRESS ON WAIST HIP RATIO ON OBESITY

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ABSTRACT

Background: Alternate hot and cold compress is the naturopathy technique which is commonly used in the clinical practice of naturopathy and yoga for therapeutic purpose as well as to rejuvenate and restore normal bodily functions. Its effect was less understood and hence the present study was conducted to evaluate the waist hip ratio among healthy individuals. **Materials and methods:** A total of 50 Subjects with in age of 20 to 30 years and who have agreed to give consent for participation in the study are assessed at baseline. The subjects were applied alternate hot and cold compress for 20 minutes and various parameters being recorded before and after the practice. **Result:** There was a reduction in weight, waist circumference, hip circumference, and waist hip ratio after the application of alternate hot and cold compress with the p-value < 0.05. **Interpretation and conclusion:** The present study concludes that, alternate hot and cold compress for 20 minutes have significant effects in reducing the weight, waist circumference, hip circumference and waist hip ratio in healthy individuals. Hence, the regular practice of alternate hot and cold compress for a period of 20 minutes daily by young healthy students has shown a positive influence on waist hip ratio.

KEYWORDS: Compress, waist circumference, hip circumference, waist hip ratio.

INTRODUCTION

Naturopathy or naturopathic medicine is a form of alternative medicine that employs an array of scientific practices which are "natural", "non-invasive", and promotes "self-healing". The ideology and methods of naturopathy are based on vitalism and folk medicine, rather than evidence-based medicine. Abdominal obesity is a major risk factor for morbidity and mortality. The aim of this study was to investigate the effect of yoga on waist circumference and other anthropometric and self-reported variables in women with abdominal obesity.[1] Naturopathy is a system of health care and called as science of healthy living. It is a drugless system of healing based on well founded philosophy. Lack of specific guidelines, improperly designed protocols, poor research methodologies and lack of trained man power are some of the limitations which act as the main set back in developing naturopathy system as the scientific ones.[2] The main modalities of Naturopathy includes naturopathy diet therapy, fasting therapy, hydrotherapy, Massage therapy, Mud therapy, Chromo therapy, Air therapy which are applied in various forms and with equipment for the treatment purpose.[3]

According to Bilz, who followed Kneipp's methodology in all water applications, the abdominal compress was called upon "in cramp-like attacks, in constipation, various diseases of women, affections of the stomach and more particularly in cases in which it is desired to draw the blood from the heart and chest." (Bilz, 1898, p.1682) The abdominal compress was an excellent means of hardening the body and removing "great obstructions or inactivity of the bowels." (Kneipp, 1909, p.631) Kneipp would apply the compress according to the vitality of the patient. "A rough towel folded several times is dipped into cold or warm water according to the purpose it is to serve, laid on the abdomen and covered with flannel." (Bilz, 1898, p.1682) Kneipp explains that the number of layers of cloth used in a compress was the following: "For a weak person a two-fold, for a strong person four-fold, and for a person who is robust six-fold, or even eight-fold." The compress would be dipped in cold water and wrung out and cover "the pit of the stomach to the middle of the thigh, where it should remain for an hour and a half and then be removed. The effect would be greater if, at the end of ¾ of an hour, it were again dipped in water and laid on afresh.[4] The recuperative and healing properties of hydrotherapy are based on its mechanical and/or thermal effects. It exploits the body's reaction to hot and cold stimuli, to the protracted application of heat, to pressure exerted by the water and to the sensation it gives. The nerves carry impulses felt at

the skin deeper into the body, where they are instrumental in stimulating the immune system, influencing the production of stress hormones, invigorating the circulation and digestion, encouraging blood flow, and lessening pain sensitivity. Generally, heat quiets and soothes the body, slowing down the activity of internal organs. Cold, in contrast, stimulates and invigorates, increasing internal activity. Its mechanical action occurs during the bath when the body weight decreases by 50% to 90% when submerged in a bath, a pool, or a whirlpool, experiences a kind of weightlessness. Body is relieved from the constant pull of gravity. Water also has a hydrostatic effect. It has a massage-like feeling as the water gently kneads your body. Water, in motion, stimulates touch receptors on the skin, boosting blood circulation and releasing tight muscles.[5]

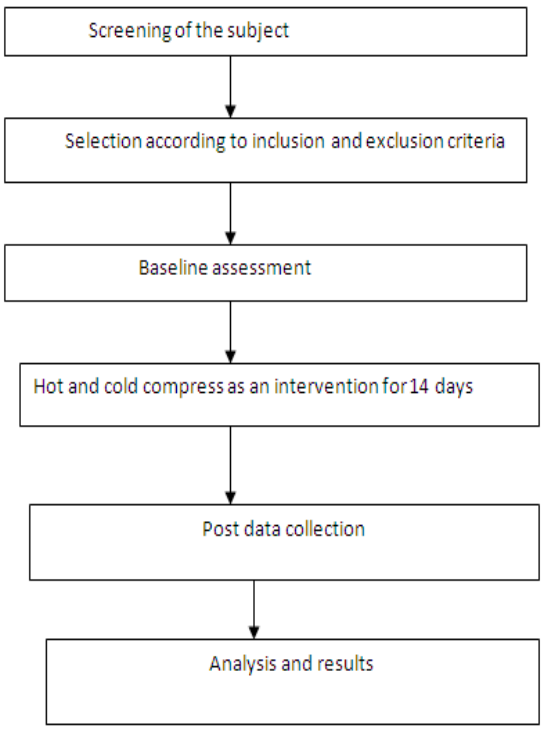
Generalized obesity measured by body mass index (BMI) is one of the major causes of ill health in the society. However, abdominal obesity, which is closely associated with intra abdominal fat and measured either by waist circumference or waist-to-hip ratio, predicts subsequent coronary artery disease.[6] Obesity is associated with the development of some of the most prevalent diseases of modern society, such as Type-II Diabetes Mellitus, hypertension, coronary artery disease, certain forms of cancer, arthritis, renal failure and gall bladder disease, and is associated with high morbidity and mortality.[7] Various other measures to reduce weight like dieting, hydrotherapy, steam bath, pharmacological therapy, surgical therapy, etc. are in use with variable results.

METHODOLOGY

Source of data: A total of 50 subjects, females with an age ranging between 18-30 years were recruited for the study. Subjects who fulfilled the inclusion criteria were appraised about the purpose of the study and their rights as a research subject. Subjects those who residing at the hostel, who has a regulated diet and activities as prescribed by the college authorities. Those who voluntarily agreed to participate in the study alone were selected and recruited from the SDM College of naturopathy and yogic sciences, Ujire. The institutional Ethical committee of SDMCNYS has approved this study.

The subjects were given to practice alternate hot and cold compress for 20 minutes and for 14 days in which before practicing the subjects were explained about the procedure, then the weight, waist circumference, hip circumference and waist hip ratio was collected. The subjects were asked to practice for 14days and later the subjects post data is collected. The data was then tabulated, compared and relevant statistical analysis was done for results.

Illustration of study plan



Assessments: The pre and post measurement of Weight, Waist circumference, Hip circumference, Waist hip ratio.

Intervention: hot and cold alternate compress on abdomen.

Essentials: Two pieces of cotton or towel-type cloth folded into 6 or 8 layers. Water Temperature: cold 55^0 to 65^0 F and hot 98^0 to 104^oF. Procedure: Soak one piece of cloth in warm water and after wringing out the excess water, keep the cloth on the abdomen for three minutes. To maintain the cloth's warmth, place a hot water bag or another cloth soaked in warm water on it. After three minutes, remove it and keep a cloth soaked in cold water over the abdomen for only one minute. Repeat this alternate process for three times, but the last compress (cold) should be for three minutes. On the advice of the Naturopath, the treatment can be varied by keeping warm compress for 5 minutes and cold for 2 minutes alternatively.

RESULTS

Combined effects of Hot and Cold compress and Konasanas on Anthropometric measurements.

Table 1: Paired Samples Test on on Anthropometric measurements.

Pairs	Variables	Paired Differences					T	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	PRE_WEIGHT - Post_WEIGHT	2.04545	1.18035	.17795	1.68659	2.40431	11.495	43	.000
Pair 2	PRE_WAIST - Post_WAIST	10.34659	3.51004	.52916	9.27944	11.41374	19.553	43	.000
Pair 3	PRE_HIP - Post_HIP	3.71818	2.17726	.32823	3.05623	4.38013	11.328	43	.000
Pair 4	PRE_WAISTHIP - Post_WAISTHIP	.07041	.02787	.00420	.06193	.07888	16.756	43	.000
Pair 5	PRE_BMI - POST_BMI	.88227	.53697	.08095	.71902	1.04553	10.899	43	.000

From the above table, we observe that the pre and post-measurement of the variables is under consideration are significant at the 5 percent level of significance as P value is < 0.05. We conclude that treatment is effective.

DISCUSSION

Obesity is one of the most common and most neglected public health problems in both developed as well as developing countries. Abdominal obesity is strongly associated with other metabolic disorders like diabetes, hypertension, and cardiovascular diseases and has higher rates of mortality and morbidity compared to non obese individuals.[7] Naturopathy is a system of health care and called as science of healthy living. It is a drugless system of healing based on well founded philosophy Lack of specific guidelines, improperly designed protocols, poor research methodologies and lack of trained man power are some of the limitations which act as the main set back in developing naturopathy system as the scientific ones. The main modalities of Naturopathy includes naturopathy diet therapy, fasting therapy, hydrotherapy, Massage therapy, Mud therapy, Chromo therapy, Air therapy which are applied in various forms and with equipment for the treatment purpose.[4]

Decrease in body fat is more advantageous compared to mere body weight because increase in fat percentage is the major risk factor for associated morbidity with obesity. Recent study has shown waist circumference (WC) is the better indicator of overweight and obesity, since it is better associated with metabolic risk factors than BMI and Waist-hip ratio. Present study results show decrease in WC compared to the baseline values both in overweight and obese subjects.[8]

Cold application capable of inducing shivering has shown to encourage production of Irisin, an adipokine that facilitates white adipose tissue to mimic functions similar to brown adipose tissue and enhance metabolism. Though the exact effect of local mud pack and cold abdominal pack on adiposities is not so evident, it had marked effects on skin microcirculation, with a very large blood flow increase and stimulation of vasomotion. Studies shows that variations in the vascularisation of different types of adipose tissue and between white adipose tissue.[9] Cold induced thermogenesis is the ability to generate heat by increasing metabolism in response to cold, to maintain a stable core body temperature which is the basic property of endothermic thermoregulation.[10] When we expose a small surface area to cold as like CAP application, cold fibers evoke transient afferent discharges, inducing cold sensation and heat-gain responses while the temperature of skin decreases cold exposure is associated with hypothalamic signals to constrict the peripheral blood vessels.[11,12] This in turn produces a compensatory vasodilatation in deeper vascular system resulting increased blood flow to the tissues underlying the site of exposure and that increase the metabolic rate in order to maintain constant deep tissue temperature. Cold exposure was reported to be a potential therapy for diabetes by increasing brown adipose tissue mass and activity.[13] Cold exposure is associated with increase in metabolic heat production (i.e., shivering and non shivering thermogenesis) to prevent dangerous drops in core temperature. Although, shivering is the major contributor to increases in heat production, during mild cold exposure, non shivering thermogenesis plays a vital role to produce physiological response.[14]

CONCLUSION

The present study concludes that, alternate hot and cold compress have highly significant effects in improving waist hip ratios among normal individuals.

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