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CLINICAL STUDY TO EVALUATE THE EFFICACY OF KAPAL BHATI AND TRIKONASANA IN STHOULYA (OBESITY)

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ABSTRACT

Obesity is the abnormal expansion of adipose tissue brought on by an increase in the number, size, or both of fat cells. This study aims to evaluate the effects of *Yoga* therapy (*Kapal Bhati* & *Trikonasana*) on *Sthoulya* in Obese patients. Objectives are to bring about a reduction of body weight, reduction of Waistline, and improvement in their quality of life by decreasing stress levels. 40 Obese patients aged 18-45 years, who were willing to participate in the trial were recruited. Those suffering from any medical and Steroid treatment and any other Disorders were excluded. Their body mass index, waist circumference, hip circumference, and blood pressure were measured. Dietary habits and exercise details were recorded. As a part of a clinical trial, they were taught *Yoga* (*Kapal Bhati & Trikonasana*) for 30-45 minutes. They were instructed to practice twice daily, followed by Shavasana for a few minutes with balanced dietary intake and *Pathya* and *Apathya*. A baseline assessment of the various parameters was taken. The trial was done for three months. *Yoga* therapy for three months resulted in a significant reduction in all body weight measures. Thus, the significant changes observed using different parameters in this study found that yoga therapy has several beneficial effects in reducing body weight.

Keywords: *Sthoulya*, Obesity, *Yoga* therapy, *Kapal Bhati*, *Trikonasana*, Hip & Waist circumference.

INTRODUCTION

The excessive increase in the *Meda* and *Mans Dhatu* causes the buttocks, abdominal and breast regions to become so thick and slug that they move as they move, firearms are not appropriately grown, and enthusiasm for work is also not in a proper way. Such human beings are called supranormal (*Atisthoulya*).[1] Although many physical, psychological, and social variables contribute to obesity, bad eating habits and insufficient exercise are the main culprits. We no longer need strenuous physical labour because modern technologies have made life easy and enjoyable. Our attitude about physical labour has changed, and we feel increasingly elite when not engaged in physical labour. Due to a lack of suitable medications, obesity is challenging to treat despite advancements in medical science. A well-balanced diet and more physical activity should often be the first line of defence. A diet that is minimal in calories contains all of the necessary nutrients, has a variety of flavours, and is easy to obtain is perfect. Contrarily, exercise needs to be performed more naturally and without equipment. Always recommend *yoga* or exercise based on the individual *Satmya* and *Bala.* The estimates for global levels of overweight and obesity (BMI ≥25kg/m²), also referred to as high BMI throughout this Atlas, suggest that over 4 billion people may be affected by 2035, compared with over 2.6 billion in 2020. This reflects an increase from 38% of the world's population in 2020 to over 50% by 2035 (figures exclude children under five years old). The prevalence of obesity (BMI ≥30kg/m²) alone is anticipated to rise from 14% to 24% of the population over the same period, affecting nearly 2 billion adults, children, and adolescents by 2035. The rising prevalence of obesity is expected to be steepest among children and adolescents, rising from 10% to 20% of the world's boys during the period 2020 to 2035 and rising from 8% to 18% of the world's girls.[2] Overweight and obesity once thought to be a concern in high-income countries, are now sharply increasing in poor and middle-income countries. *Sthoulya* has also become a topic of concern in underdeveloped and developing countries, particularly in metropolitan environments. There are numerous medications available on the market for obesity. Although there are many side effects, the outcomes are still unsatisfactory; thus, natural disease control methods are required.

MATERIAL AND METHODS:

Ethical clearance no. DSRRAU/UPGIAS&R IEC/2021/416 dated 12/06/22.

CTRI NO. CTRI/2022/11/047224 registered on 11/11/2022

AIMS & OBJECTIVES

The main aim of the study is to evaluate the efficacy of *KAPAL BHATI* and *TRIKONASANA* in the management of *STHOULYA* (OBESITY)

1. To Study *Kapal Bhati* and *Trikonasana.*
2. To Study the *Sthoulya* (obesity) in detail.
3. Find an exercise therapy that is Safe, economical, and easy to administer.

Every research project needs a methodology. As a result, the researcher presented the yogic practices in this section, followed by his right from the problem diagnosis to the conclusion.

For the present study, two materials were utilised, as furnished below.

LITERARY REVIEW

Literature from the *Ayurveda* classics, commentaries, contemporary literature, Pubmed, Wikipedia, Google Scholar, and Ayush research portal were gathered and discussed. These were examined to clarify the literary elements.

CLINICAL STUDY-

1. SAMPLE SIZE: 40 subjects aged 18 to 45 years were selected randomly for the study. Irrespective of sex, religion, etc.

2. SOURCE OF SUBJECTS: - OPD and IPD of Dr. S.R. Rajasthan Ayurved University, Jodhpur Magra Punjala, and also from surveys or camps (if needed).

3. PROTOCOL OF RESEARCH

1. Consent of patient after making her aware of merits/demerits of trial with duration of the proposed trial.
2. Fulfilment of inclusion criteria.
3. Registration of patients.

4. The investigations mentioned were advised to her.
5. Data so available and deducted clinically was statistically analysed.

4. INFORMED CONSENT

The study was explained clearly to the subjects, and their signed, written informed consent was taken before starting the trial.

4. **SELECTION CRITERIA**

Inclusion Criteria

The patient is aged 18-45, irrespective of caste, race, sex, etc.BMI is between 25 to 35. The patient has clinical Signs & Symptoms of *Sthoulya*. The patient should not be on any other medicine for *Sthoulya*.

Exclusion Criteria

Patient with endocrinal disorder and other systemic diseases. Patient with long-term steroid treatment. Patients with a BMI > 35 were also excluded. The Patient's obesity is hereditary and secondary in origin—Pregnant Women. Patients aged more than 45 years should also be banned—drug-induced Obesity.

5. **STUDY TYPE**

Randomly clinical study

6. STUDY DESIGN

Random clinical study.

A total of 40 subjects were selected randomly and divided into two groups (Group A and Group B), with subjects each from two different groups.

In Group A:

Twenty patients were advising *Kapal Bhati*.

In Group B:

Twenty patients were advised *Asanas* such as *Trikonasana.*

7. PATHYA -APATHYA

Pathya- *Intake* of a regular and balanced diet. Use of Lukewarm water for drinking. Use of *Yava, Jowara, Amla* and *Takra*. Use of *Moong, Kulathi, Chana* (Bengal gram) and *Arhar*. *Plenty* of green leafy vegetables and fruits. Fibrous food items. Regular exercise and physical activity. Mental Exercise. Jogging in fresh air every day in the early morning. Practice yoga with a specialist.

Apathya- Sleeping in the daytime. (*Diva-Swapna*) Sleeping immediately after eating meals. Canned food products.Sedentary lifestyle (*Asyasukham*)Junk food like burgers, pizza, cold drinks and fried food items. Frequent and excessive intake of oily/ heavy food items. Later, Pathya and Apathya were taken as per the patient.

DIAGNOSTIC CRITERIA The majority was based on a specially created proforma that included all clinical indications and symptoms of the condition and on which a thorough history and physical examination were conducted. Additionally, BMI and circumference values were employed as diagnostic criteria.

INVESTIGATIONS

Routine haematological, urine, and stool examinations were conducted to determine the patient's current condition and rule out other clinical conditions. Patients underwent in-depth subjective and objective tests. A thorough history was kept systematically, including information about the method of onset, past treatments, family history, *Dashvidha Pareeksa*, etc. *Ayurvedic* and contemporary parameters were used to build a region-based specialised research Performa, and all the information above was recorded.

PLAN OF STUDY

Patients were randomly chosen and placed into the following two groups, with 20 patients in each group, regardless of age, gender, religion, or caste. Out of 40 registered patients, all patients completed the trial; patients were divided into two groups, each containing 20 patients. Before starting the primary process, patients in both groups were asked to do warm-up exercises. After completing the primary method, each patient is advised to do Shavasana for a few minutes.

Group A: Consists of 20 obese samples

Kapal Bhati: A healthy person can initially perform 03 sets of Kapal Bhati, and each set consists of 20 rounds on expiration and then gradually increases according to capacity. So, for obese Subjects in this trial, 15 Sets of Kapal Bhati were done, each consisting of 50 rounds. There was a pause of a few seconds between the three sets. For a beginner, it was according to their strength and capacity.

Practices were being done in the early morning and evening on an empty stomach.

Duration: - 3 months

Group B: Consists of 20 obese samples

Trikonasana: **The Asana was done for 10 to 15 minutes, and every time, 10 to 15 rounds of Asana were performed for beginners, and then the number was gradually increased according to their strength** and capacity. The holding time of the final step proper was up to 30 seconds.

Practices were being done in the early morning and evening on an empty stomach.

Duration: - 3 months

Follow Up: - Every 15 days.

EXAMINATION OF PATIENTS

All the O.P.D. patients were asked to report every 15th day to assess the variations in symptomatology during the *Yoga* therapy.

ASSESSMENT CRITERIA

Patients were examined every 15 days, a proper scoring procedure was used, and objective signs were documented to measure the variables. After a three-month yoga treatment programme concluded, effectiveness was evaluated using the following subjective and objective criteria.

SUBJECTIVE CRITERIA

1 *Chala sphika Udara Stana*
2 *Alasya*
3 *Kshudra Shwasa*
4 *Atinidra*
5. *Swedadhikya* (Excess Sweating)
6. *Anga Daurgandhya*
7.*AngaGauravata*
8.*AtiPipasa*
9.*Atyagani (Ati Ksudha)*

(B) OBJECTIVE CRITERIA

Although obesity can easily be identified, a precise assessment requires measurements and reference standards. The most widely used Criteria are:

1. Body weight
2. BMI

CIRCUMFERENCE MEASUREMENTS -The girth of specific locations was measured using tape before and after the therapy as part of the current investigation. The following locations were measured for girth where adiposity is typically more prevalent:

1. Waist – At the level of umbilicus.
2. Hip – At the level of the highest point of distension of the buttock.

RESULTS

GraphPad Instat 3.0 was used to calculate all of the results.

Intra-group and Intergroup comparison

For non-parametric data Wilcoxon and Mann Whitney U Test Used.

For Parametric data Paired t Test and Unpaired t Test Used.

EFFECT OF THERAPY

Table 1 Subjective Parameter

Subjective Parameter	% Relief	
	Group A	Group B
Chala Sphika Udara Stana	30.76	31.25
Alasya	47.22	37.83
Kshudra Shwasa	19.23	20.58
Atinidra	19.23	26.08
Swedadhikya	25.64	27.02
Anga Daurgandhya	17.64	20.00
Anga Gauravata	43.75	46.87
Ati Pipasa	30.00	29.41
Atyagni(Ati Ksudha)	38.88	31.57

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Table 2 Anthropometric Profile

Anthropometric Profile	% Relief	
	Group A	Group B
Body Weight	4.38	4.80
Body Mass Index (BMI)	4.43	4.43
Waist Circumference	2.52	2.91
Hip Circumference	2.18	2.70

DISCUSSION

The primary foundation of any form of research project is discussion. It consists of a discussion of the study's findings. Discussion is merely the logical justification of observations.

Discussion on the probable mode of action of the therapy.

Yoga is a way of life predominantly concerned with maintaining stability at all costs. It brings steadiness and health to the individual's physical, mental, emotional, and spiritual dimensions. *Yoga* comprises eight limbs, i.e., *Yama, Niyama, Asana, Pranayama, Pratyahara, Dharana, Dhyana,* and *Samadhi*.[3] *Yoga* practice helps revitalise the body that has been inactive due to obesity. *Yoga* significantly contributes to refining the body's toxins and reduces fatigue. The yogic technique helps smoothen excess fat, recover metabolism, tone up muscles, and facilitate the practitioner's enjoyment of a healthy life. The Study shows that the total work on the abdominal muscles during Yogic exercise was five times greater than during abdominal crunches. Because of the high muscle activity, this form of exercise would be suitable for people who cannot easily exercise on the floor, such as obese people. Lorenzo A Gordon et al. (2008) have demonstrated the efficacy of *Hathayoga* exercise on blood glucose, lipid profile, oxidative stress markers and antioxidant status in patients with type 2 diabetes obesity and suggested that *Hathayoga* exercise and conventional physical training exercise may have therapeutic preventive and protective effects on diabetes mellitus and obesity by decreasing oxidative stress and improving antioxidant status[5]. *Kapal Bhati* is essential to *Shatakarma*, the *Yogic* system of body refinement techniques[6].

Kapal Bhati –

Kapal Bhati practices recommended for obesity are the more vibrant forms that promote metabolism and influence different hypothalamic centres controlling thirst and satisfaction with food. *Kapal Bhati* practice is very accommodating for weight loss because it works on the abdominal muscles, reduces fat and develops body tone[7]. K.V.V. Prasad et al. (2006) studied the efficacy of Pranayama and Yogasanas on blood lipid profiles in regular healthy volunteers. They concluded that Yoga practices might be helpful in patients with lipid metabolism disorders such as diabetes mellitus, coronary heart disease and dyslipidaemia[8]. This is responsible for the effect of *Kapal Bhati* on fat metabolism. This causes an increase in basal metabolic rate, and because of this, there is an increase in calorie consumption and a decrease in fat deposition, and so a reduction in weight[9]. The review on yoga showed that it had a beneficial effect on body weight, blood pressure, blood glucose level, and cholesterol level[10].

Nirmala N. Nayak reported that various *Yogasanas, including Kapal Bhati,* reduce obesity11 positively. Swami Ramdev mentioned that *Kapal Bhati* helps reduce obesity[12]. *Kapal Bhati* works on the Navel Centre (Manipura Chakra) and associated organs and systems of that region, thus causing improvement in the digestion and elimination process. Cures diseases and imbalances related to this region, such as indigestion, gas, diabetes, etc.

Trikonasana

This *Asana* stretches the hamstring muscles and increases flexibility in the hip joints. It tones and massages the entire abdominal and pelvic region, including the liver, pancreas, spleen, uro- genital system, kidneys and adrenal glands and thus helps to remove excess weight in this area and stimulates circulation to the nerves and muscles of the spine. As it decreas-

es the amount of fat accumulated in various body parts, the symptom *Chalasphigodarastana* is relieved by practising this, *Asana*. *Meda Dhatu* is the main *Dhatu* vitiated in *Sthoulya Roga, which, when corrected by Trikonasana,* causes the symptom of *Swedadhikya* to get relieved, *Sweda* being the *mala* of *Meda Dhatu*. *Sweda, being the causative factor for Daugandhya,* relieves the symptoms of *Daugandhya* upon its alleviation. *Nidra* is caused by the dominancy of Kapha and Tama Doshas; Meda, Kapha, and Tama are interrelated; hence, Meda reduction tends to relieve the symptoms of *Nidradhikya* in obese patients. This *Asana* affects the muscles on the sides of the trunk, the waist, and the back of the legs. It stimulates the nervous system and alleviates nervous depression. It improves digestion. It also strengthens the pelvic area and tones the reproductive organs. Regular practice will help to reduce waistline fat[12].

CONCLUSION

At the end of the study, the following conclusion can be drawn based on Observations made, Results achieved and thorough discussion in the present context and can be summarised as below:

Due to this artificial lifestyle, a person has many disorders. *Sthoulya* (Obesity) is one of the major diseases of the modern era. Obesity is one of the diseases which are gaining more and more attention from scientists at the global level. *Sthoulya* is a predominant metabolic disorder, which Charaka describes in *Ashtaunindita Purusha*. Nowadays, W.H.O. has undertaken obesity in 10 selected risks to health in "The World Health Report - 2002". The three Doshas are involved in Sthoulya, but *Kapha-Vata Prakriti* people were found especially more prone to Sth0ulya, so they should be advised of proper diet regimens and exercise. *Ati Kshudha* is aggravated by *Vata* remaining in the *Kostha, which increases the disease's gravity and makes* the *Sthoulya Krrichhrsadhaya*. In the condition of *Medo-Dhatvagni Mandya*, there is excessive formation of there is excessive formation of improper *Meda-Dhatu* leading to *Sthoulya.* The plus point observed in the case of Yogic technique management is the absence of any hazardous effect, which greatly benefits the patients and is of vital importance given the global acceptance of *Yoga.*

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