

Effect of Shankhprakashalana (Varisara Dhauti) in the management of Overweight and Obesity

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Abstract

Introduction: Obesity and overweight are growing diseases all over the world. These are also the cause of many non-communicable diseases. There is evidence that Yoga is a nonpharmacological intervention that can balance and improves serum lipid concentrations, adipose tissue, metabolic syndrome factors, improve eating habits, and helps in weight reduction. **Aim:** The purpose of the study is to observe and access the outcome of the effect of shankhprakashalana practice in overweight and obese adults. **Methods:** It is a camp based clinical Study carried out at Andhra University for eight weeks, the purpose of the study was to analyze the effects of shankhprakashalana and diet on 52 adults with BMI, ≥ 25 to < 35 and age group of 20-50 years without referred to intricacies was chosen as subjects for the study of pre-post trial. Before and after the yoga intervention, we measured their anthropometric parameters like height, weight, waist circumference, hip circumference, body fat mass, body fat percentage, waist/hip ratio, and BMI. The data were analyzed through the student paired t-test and the significance value of 0.05 was considered for all analyses. **Results:** The results had shown that there is a substantial decrease in weight from 78.8 ± 4.9 to 73.64 ± 4.5 and 73.5 ± 3.2 to 67.40 ± 3.1 and in BMI from 27.87 ± 0.7 to 26.08 ± 0.6 and 28 ± 1 to 25.66 ± 1 of the male and female overweight participants. Also, decrease in weight from 92.71 ± 7.5 to 82.44 ± 6.6 and 86.67 ± 7.7 to 76.67 ± 6.1 and BMI from 32.21 ± 1.3 to 28.64 ± 1 and 32.32 ± 1.2 to 28.61 ± 1.3 of the male and female obese participants. Similarly, there is a substantial decrease in waist circumference, hip circumference, waist-hip ratio, body fat percentage, and body fat mass of the overweight and obese participants. It observed that the p-value for all the variables is less than 5%, which is statistical significance. **Conclusion:** According to the findings, the practice of shankhprakashalana and yogic diet for eight weeks reduces overall body weight, BMI, waist-hip ratio, body fat mass, and body fat percentage of the overweight and obese subjects.

Keywords: Overweight, Obesity, Body Mass Index, Body fat mass, Yoga, Diet, Shankhprakashalana

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Introduction

Obesity is a state of imbalance between calories consumed versus calories expended which might cause excessive or abnormal fat accumulation to the extent that it may have an adverse effect on health, leading to reduced life expectancy and increased health problems including hypertension, type-II diabetes, coronary heart disease, dyslipidemia, stroke, non-alcoholic fatty liver disease, osteoarthritis, and endometrial, colon, prostate, and breast, cancers.¹ Obesity is a heterogeneous group of conditions with numerous causes including hereditary, metabolic, and neural structures on one hand and behavior, food habits, physical activity, and socio-cultural factors on the other.²

The World Health Organization has emerged obesity and overweight as an epidemic in many parts of the world and has warned of the accelerating epidemic of obesity and overweight that could put the population in India and many countries at risk of increasing non-communicable diseases. Globally, more than one billion adults are overweight, of which a minimum of 300 million are obese.³ The body mass index (BMI) is commonly used to assess the prevalence of overweight and obesity, which is defined

as body weight (in kilograms) divided by height square (meters) (kg/m^2). BMI exceeding $25 \text{ kg}/\text{m}^2$ is defined as overweight and BMI exceeding $30 \text{ kg}/\text{m}^2$ as obese.⁴

Obesity is strongly associated with a change in lipid metabolism, overproduction of very low-density lipoprotein (VLDL), diminished circulating thyroglobulin lipolysis and weakened peripheral free fatty acid (FFA) trapping, increased free fatty acid fluxes from adipocytes to the liver and other tissues and the formation of small dense low-density lipoprotein (LDL), insulin resistance and the metabolic syndrome, especially with abdominal obesity.⁵ Potential healing approaches for obesity are hospitalization, nutritional modification, medicinal drug therapy, and bariatric surgery.⁶ Despite, pharmacological agents reducing obesity it causes adverse effects like cardiovascular diseases, insomnia, nervousness, and increased blood pressure.⁷ Although, controlling obesity is an important aspect to maintain healthy life so, non-pharmacological interventions should practice reducing weight without any adverse effects.

Yoga is an ancient therapeutic practice based on ancient yoga texts and its definitive goal is the union of jivaatma with paramatma. Yoga techniques influence the mind, body, internal organs, endocrine glands, and other factors regarding the Body-Mind complex. Evidence shows that stress contributes to the etiology of obesity, heart disease, cancer, and stroke as well as other chronic conditions and diseases. Various Yogic techniques have been used in the management of obesity-associated with other disorders. Varisara dhauti is more commonly known today as shankhprakashalana.⁸ Shankhprakashalana(SP) is a yoga practice (kriya) recommended for cleansing the bowel. Practicing this yogic technique effectively will result in a reduction in BMI, glycaemic control, malondialdehyde, and an increase in glutathione, and vitamin C in persons with type 2 diabetes mellitus and achieve a normal healthy condition of Mind and Body.⁹

It is well known that yogic practice can reduce the level of cholesterol, triglyceride, and LDL. It has been observed in one study that through the practice of Shatkarmas there is a significant decrease in serum glucose and serum cholesterol.¹⁰ In one randomized

study practicing Laghu Shankhprakashalana results in a decrease in Hypertension, BMI, fatigue state, and anxiety and it increases the quality of sleep.¹¹ Stress is a major triggering factor for obesity, overweight, hypertension, and other health problems which can be managed through the regular practice of pranayama and meditation.¹² A comparative study of obese patients shows that there is a significantly reduced BMR, probably long-term practice of yoga using a combination of stimulatory and inhibitory yogic practices.^[13,14] A study conducted by Seo DY et al, for eight weeks including yoga training and observed that there is a reduction in weight and improvement in body composition and total cholesterol levels in obese adolescent boys.¹⁵

A comparative study by Shirley Telles, et al, between residential and non-residential weight loss programs including yoga and vegetarian diets like low fat and high fiber food. It has been observed that there are significant decreases in BMI, waist and hip circumferences, mid-arm circumferences, total cholesterol, High-density lipoprotein, and serum leptin values in the residential participants than in the non-residential participants.¹⁶ So, a yogic Diet along with yoga practice

expedites the reduction of weight. In another research study by Shashi Kiran et al, practicing Laghu Shankhaprakshalana (LSP) once a week for four weeks there is a significant decrease in constipation score and improved bowel health.¹⁷ Practicing this LSP once every 10 days for 4 months can improve Irritable Bowel Syndrome, Anxiety Neuroses, and Thyrotoxicosis.¹⁸ Through the practice of this yogic technique and following strictly the pure vegetarian diet tones the entire intestinal tract and removes excessive accumulated toxic waste, reducing obesity, high blood cholesterol, and high lipid levels.¹⁹ Apart from these, in an experimental study, forty obese individuals in Chennai were intervened LSP weekly once a month for two months and daily one hour practice of yoga asanas with a yogic diet. The post-assessments resulted in a decrease in anthropometric measurements such as body weight, Body Mass Index, and Waist Hip ratio and also a decrease in lipid profile such as total cholesterol, triglycerides, low-density lipoprotein, and very-low-density lipoprotein.^[20]

There is sufficient scientific evidence that practicing this Shankhaprakshalana has a significant positive effect on obesity and overweight and can manage and prevent metabolic disorders

and diseases with a simple economical procedure. This randomized study was carried out in the urban area because the prevalence of obesity and overweight is more than in rural areas. Hence the present study was undertaken to find the impact of Shankhaprakshalana on anthropometric measures, body composition, and serum lipid profile in overweight and obese adults.

Materials and Methods

Study Design and participants.

A qualitative and a single-centre study with a selective sampling method was conceived, this study was conducted at the yoga camp “Yoga for Obesity”, which is a non-residential camp organized at Andhra University. The camp was advertised on social media like WhatsApp, Facebook, and local print media to invite enrolment at the camp and it is a voluntary participation camp. 52 healthy adults with $BMI \geq 25 \text{ Kg/m}^2$ but not greater than 36 Kg/m^2 with ages between 20 - 48 years (group average age Mean \pm SD of 37.55 ± 7.14 yrs) have participated in the study and the participants were explained about the purpose, procedures, and risks of the study and avoided the contra indicatory patients. The selection procedure includes $BMI \geq 25 \text{ Kg/m}^2$ but not greater than 35 Kg/m^2 . The exclusion criteria were physical and

physiological challenged persons who were unable to perform the prescribed yogic exercises and this yogic kriya for the requisite duration and intensity, involvement in any other dietary or exercise program during the study, and any co-morbidities associated with obesity such as severe hypertension, cardiovascular disease, chronic peptic ulcers, and chronic renal failure.

Data were collected through a questionnaire in the mode of a face-to-face interview and physical measurements were also included. The questionnaire included personal basic information (such as age, gender, marital status, profession) and behavioural characteristics (such as eating habits, smoking, and alcohol consumption). The participants underwent and half-hour daily yoga program for eight weeks (7 am to 8.30 am) under the supervision of certified yoga. Pre-camp parameters were assessed by recording Body weight, height, waist circumference, hip circumference, waist-hip ratio, body fat mass, body fat percentage, and BMI. All the measurements were recorded at the start of the Yoga camp on the first day and post parameters were taken after the practice of shankhprakhshalana and yogic diet for eight weeks. For the statistical analysis of data, a paired t-test has been

used. At the start of the camp, the participants were randomly allocated yoga and a yogic diet. However, participants had practical constraints. After a few days of practice, they have been habituated and all the participants were assigned the same yoga postures and same yogic diet

Anthropometric-measurements:

The participants were instructed to remove their shoes and remain at the centre of the platform motionless to measure their Weight (Kg) and to measure the Height (meters) the participants were instructed to stand with their spine and neck perpendicular to the platform of the stadiometer (Omron digital body weight scale HN-289 and SECA 285 digital measuring stadiometer were used to measure weight and height). Body Mass Index (BMI) was calculated by Weight (Kg)/ height squared (m^2), which was given by Adolphe Quetelet. ^[21] The instrument was standardized & examined for replicability. Age was defined as the age in completed years at the time of the interview. Body fat percentage was measured using the BMI formula method. To access the Body Fat Percentage, we US Navy formula. This Body Fat Percent formula varies for male and female adults (for adult males: $BFP = 1.20 \times BMI + 0.23 \times Age - 16.2$ and for adult females: $BFP = 1.20 \times BMI + 0.23 \times Age - 5.4$). ^[22] To

assess the Body Fat Mass, the equation $FM (kg) = (PBF/100) \times \text{weight (kg)}$ was utilized.^[23] We use non-stretchable tape to measure the waist circumference, the participants were lightly clothed and asked to stand upright with their feet about 20-25 cm apart and the measurement was taken from the lower margin of the last palpable rib and the top of the iliac crest. The same tape was used to measure the hip circumference and was taken around the widest portion of the buttocks. The ratio of the waist circumference to the hip circumference was derived.

Intervention

All the participants had no previous experience with yoga. Participants of the study have undergone one and half hours of yoga practice sessions in the morning between 7 am to 8.30 am for 8 weeks at a non-residential camp. Each of the participants was intervened postures such as shankhprakashalana asanas (Tadasana, Tiryaka Tadasana, Katichakrasana, Tiryaka Bhujangasana, and Udarakarshanasana), after practicing these asanas eight times each about five rounds, then asanas like Surya Namaskaras, arthamatsyendrasana, salabhasana, sarpasana, bhujangasana, dhanur-asana, uttanapadasana, setubandh-asana, chakrasana and paschimottanasana also

made them practice about 3-4 minutes each asana after practicing these asanas Kapalabhati, Breathing techniques such as Bhastrika and Anuloma-Viloma and followed by OM Meditation. After 3 weeks of practice, all the participants were made to practice shankhprakashalana, it is a kriya that one has to be with preparedness about 3 weeks before the practice of this kriya. At the time of practice, one has to drink two glasses of lukewarm saline water (for 1 litre of water 2 teaspoons of salt should be added) and then practice the five asanas for about two rounds, if any bowel movements go to the toilet and then again resume the practice by drinking two glasses of saline water. Continued this practice till the stool is in yellowish water and after pure water is excreted. After the practice lie in shavasana for 45 minutes and give khicheri (two cups of moong dal, one cup of rice, and one tablespoon of ghee) to each participant. The practice has been completed not under the extreme weather conditions like too cold or too hot.^[24] At the time of practice, every participant is medically fit. After the practice of this kriya was advised to take a low calories vegetarian and easily digestible diet like khicheri (two cups of moong dal, one cup of rice, and one tablespoon of ghee) for two weeks and after that, vegetables

(lentils) are added in khicheri which is taken into account of the patient's obese or overweight status to create a shortage of energy up to 500 to 1000 kcal/day. Every participant has been restricted to avoid chemically processed, acidic, pungent, and non-vegetarian foods. After taking complete rest for three days i.e., on the 4th day of the practice of shankhprakashalana, again started practicing asanas and followed the same diet for 6 weeks as we mentioned above.

Statistical analysis

The 52 participants were divided into two groups, overweight (BMI is 25 to 29.99) and obesity (BMI is 30 to 35). The

data which had taken during the pre-intervention and post-intervention of yoga were statistically analyzed using SPSS version 1.6.3. with student paired t-test which is also known as a dependent t-test. Of the overweight participants, 10 were male with a mean age of 36.5±7.2 and a mean height of 168.1±5.85, and 11 were female with a mean age of 39.09±6.3 and mean height of 162.05±4.2. Of obese participants, 15 were male with a mean age of 37.66±6.36 and mean height of 169.63±7.51, and 16 were female with a mean age of 36.5±8.42 and a mean height of 163.63±6.08. and all the *p* values were two-tailed and statistical significance was defined as *P*< 0.05.

Table:1 shows the overweight and obese participants

Variables	Overweight (n=21) (BMI in kg/m ² : 25.00 to 29.99)		Obesity (n=31) (BMI in kg/m ² : 30 to 35)	
	Male (n=10)	Female (n=11)	Male (n=15)	Female (n=16)
Age (Mean ± SD)	36.5±7.24	39.09±6.37	37.66±6.36	36.5±8.42
Height (Mean ± SD)	168.1±5.85	162.05±4.23	169.63±7.51	163.63±6.08

Results

The baseline demographic data of sample size, age, and height are given in the table-1. From table-2, it was observed that the mean values of the overweight

male and female participants were significantly reduced and the significant findings of the p-value were less than 0.05 (*p*<0.05) when the pre-data and post-data are analyzed and compared.

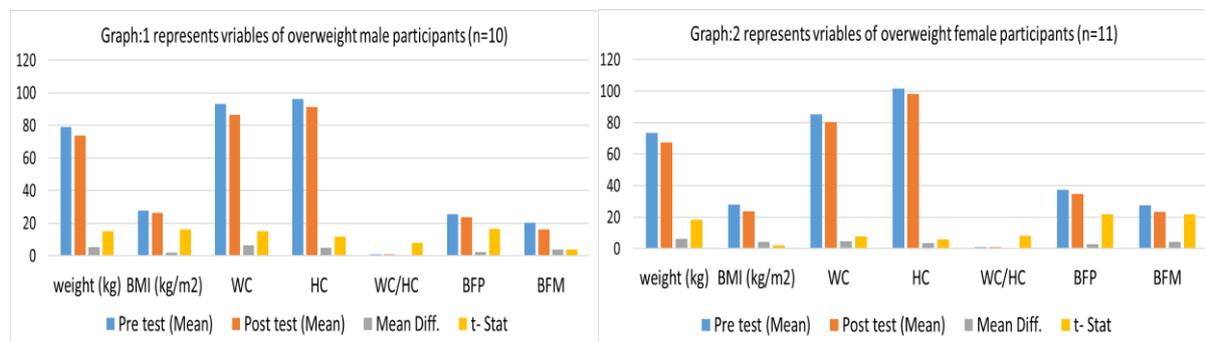
Table:2 shows variables of overweight participants (N=31) Pre and Post yoga intervention

SL. NO.	Variables	male (n=10)					female (n=11)				
		Pre test (Mean±SD)	Post test (Mean±SD)	Mean Diff.	t-Stat	p-value	Pre test (Mean±SD)	Post test (Mean±SD)	Mean Diff.	t-Stat	p-value
1	weight (kg)	78.8 ± 4.97	73.64 ± 4.56	5.16	15.12	<0.05	73.5 ± 3.22	67.40 ± 3.15	6.09	18.48	<0.05
2	BMI (kg/m ²)	27.87 ± 0.75	26.08 ± 0.69	1.79	16.27	<0.05	28 ± 1	25.66 ± 1.03	4.15	2.24	<0.05
3	WC	93.07 ± 5.06	86.63 ± 4.05	6.44	14.84	<0.05	85.26 ± 4.84	80.37 ± 3.59	4.89	7.9	<0.05
4	HC	96.11 ± 5.9	91.26 ± 4.9	4.85	11.79	<0.05	101.55 ± 6.39	98.13 ± 5.16	3.41	5.97	<0.05
5	WC/HC	0.97 ± 0.01	0.95 ± 0.01	0.02	7.74	<0.05	0.83 ± 0.01	0.81 ± 0.01	0.01	8.03	<0.05
6	BFP	25.63 ± 2.05	23.48 ± 2.06	2.15	16.34	<0.05	37.56 ± 1.85	34.57 ± 1.95	2.98	21.77	<0.05
7	BFM	20.19 ± 2.03	16.29 ± 3.57	3.9	3.84	<0.05	27.58 ± 1.51	23.29 ± 1.59	4.29	21.65	<0.05

WC= Waist Circumference, HC= Hip Circumference, BFP= Body Fat Percentage, BFM= Body Fat Mass and SD= Standard Deviation

The mean value of weight in male and female participants was reduced from 78.8 ± 4.9 to 73.64 ± 4.5 (p<0.05) and 73.5 ± 3.2 to 67.40 ± 3.1(p<0.05). The mean value of BMI in male and female were reduced from 27.87 ± 0.7 to 26.08 ± 0.6 (p<0.05) and 28 ± 1 to 25.66 ± 1(p<0.05). The mean value of waist-hip ratio in males reduced from 0.97 ± 0.01 to 0.95 ± 0.01(p<0.05) and in females 0.83 ± 0.01 to 0.81 ± 0.01(p<0.05). The mean value of Body Fat Percent in males reduced from

25.63 ± 2 to 23.48 ± 2 (p<0.05) and in females from 37.56 ± 1.8 to 34.57 ± 1.9 (p<0.05). The mean value of Body Fat Mass in males reduced from 20.19 ± 2 to 16.29 ± 3.5 and in females from 27.58 ± 1.5 to 23.29 ± 1.5 (p<0.05). It is observed that all the mean values from pre-test to post-test have been decreased. The statistical value is greater than the critical value and the p-value is less than the 0.05 which is statistical significance in all the variables of the overweight participants.



Graph-1 and 2 Represent the pre- and post-analysis data of overweight male and female participants. It compares the pre- and post-mean values of the variables

weight, BMI, waist circumference, hip circumference, waist-hip ratio, BFP, and BFM of the overweight participants and it is observed that the post-mean value is

decreased in all the variables when compared to the pre-mean value. It is also observed that the mean difference between the overweight male and female are greater

than the zero and the t-score is more in all the variables so, that the results are repeatable.

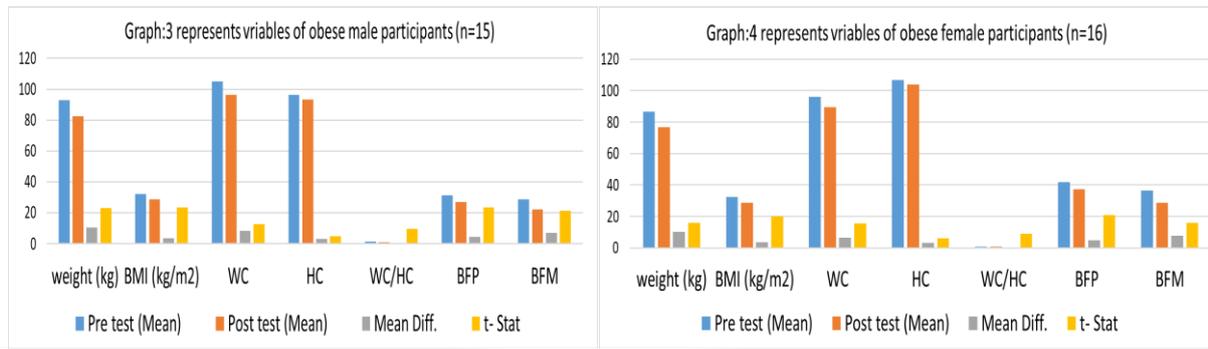
Table:3 shows variables of obesity participants (N=31) Pre and Post yoga intervention

table-3: Pre & Post Yoga values of variables in obesity participants											
SL. NO.	Variables	Male (n=15)					Female (n=16)				
		Pre test (Mean±SD)	Post test (Mean±SD)	Mean Diff.	t-Stat	p-value	Pre test (Mean±SD)	Post test (Mean±SD)	Mean Diff.	t-Stat	p-value
1	weight (kg)	92.71 ± 7.58	82.44 ± 6.65	10.26	23.07	<0.05	86.67 ± 7.73	76.67 ± 6.16	10	15.94	<0.05
2	BMI (kg/m ²)	32.21 ± 1.38	28.64 ± 1.06	3.57	23.41	<0.05	32.32 ± 1.25	28.61 ± 1.31	3.71	20.08	<0.05
3	WC	104.85 ± 8.09	96.42 ± 6.33	8.42	12.44	<0.05	96.07 ± 5.94	89.67 ± 5.14	6.39	15.64	<0.05
4	HC	96.12 ± 7.58	93.23 ± 6.44	2.89	4.93	<0.05	106.9 ± 7.20	103.93 ± 6.55	2.96	6.16	<0.05
5	WC/HC	1.09 ± 0.06	1.03 ± 0.04	0.05	9.67	<0.05	0.89 ± 0.03	0.86 ± 0.03	0.03	9.04	<0.05
6	BFP	31.08 ± 2.10	26.83 ± 1.94	4.26	23.37	<0.05	41.98 ± 2.10	37.33 ± 2.29	4.65	20.91	<0.05
7	BFM	28.82 ± 3.19	22.11 ± 2.48	6.71	21.29	<0.05	36.47 ± 4.52	28.68 ± 3.45	7.78	15.83	<0.05

WC= Waist Circumference, HC= Hip Circumference, BFP= Body Fat Percentage, BFM= Body Fat Mass and SD= Standard Deviation

From table 3, it was observed that the mean values of the obese male and female participants were significantly reduced and the significant findings of the p-value are less than 0.05 (p<0.05) when the pre-data and post-data are analyzed and compared. The mean value of weight in male and female obesity participants was reduced from 92.71 ± 7.5 to 82.44 ± 6.6 (p<0.05) and 86.67 ± 7.7 to 76.67 ± 6.1(p<0.05). The mean value of BMI in male and female were reduced from 32.21 ± 1.3 to 28.64 ± 1 (p<0.05) and 32.32 ± 1.2 to 28.61 ± 1.3 (p<0.05). The mean value of waist-hip ratio in males reduced from 1.09 ± 0.06 to 1.03 ± 0.04 (p<0.05)

and in females 0.89 ± 0.03 to 0.86 ± 0.03 (p<0.05). The mean value of Body Fat Percent in males reduced from 31.08 ± 2.1 to 26.83 ± 1.9 (p<0.05) and in females from 41.98 ± 2.1 to 37.33 ± 2.2 (p<0.05). The mean value of Body Fat Mass in males reduced from 28.82 ± 3.1 to 22.11 ± 2.4 (p<0.05) in females from 36.47 ± 4.52 to 28.68 ± 3.45 (p<0.05). It is observed that all the mean values from pre-test to post-test have been decreased. The statistical value is greater than the critical value and the p-value is less than the 0.05 which is statistical significance in all the variables of the obesity participants.



Graph-3 and 4 Represent the pre- and post-analysis data of obese male and female participants. They show the comparison between pre and post mean values of the variables weight, BMI, waist circumference, hip circumference, waist-hip ratio, BFP, and BFM of the obese participants. And also, the values of mean difference and t-value are shown independently to one another for the above variables. From the above graphs, it is observed that the mean value of the post-intervention in all the variables has been decreased when compared to the pre-intervention. The mean difference and t-value are greater than zero.

Discussions: The results of this study showed a significant decrease in weight, BMI, waist circumference, hip circumference, waist-hip ratio, body fat percentage, and body fat mass of the overweight and obese individuals after the practice of shankhprakashalana, selected yoga asanas, and yogic diet for 8 weeks. After drinking two glasses of saline water

and doing the five asanas, Tadasana opens the pyloric valve and then water enters the intestines. Tiryak Tadasana allows the saltwater into the intestine layer by contacting the sides of the layers. Kati Chakrasana pushes the material stuff downward the intestines along with the water. Tiryaka Bhujangasana opens ileocecal then, water enters into the large intestine and finally, Udarakarshanasana stimulates the Recto Sphincteric reflex. Thus, the sequence of these five asanas removes all types of toxins out of the bloodstream and in the digestive tract and prevents metabolic disorders. [25] After the practice of shankhprakashalana, practicing suryanamaskars and asanas such as arthamatsyendrasana, salabhasana, sarpasana, Bhujang-asana, dhanurasana, uttanapadasana setubandh-asana, chakrasana and paschimottanasana along with the yogic diet reduces abdominal obesity by decreasing anthropometric measurements and lipid profile (total cholesterol, very low-density cholesterol and triglycerides). [26,27]

Strictly following a yogic diet and practicing asanas for one hour daily after practicing this kriya once in 4 months gives more results than the normal practice (without the practice of SP). The practice of SP along with asanas reduces blood sugar levels, weight, the rate of progression, and the severity of the complications. [28] Though practicing asanas daily and not the following diet properly leads to weight gain, it only regulates the blood sugar level and lipid profile. [29] From the above results, it is keenly observed that there is a significant decrease in anthropometric measurements because the regular practicing of asanas and following a strict diet reduces metabolic syndrome which results in the reduction of excessive body fat around the waist and abnormal cholesterol levels in the body. [30] Along with the asanas, Suryanamaskaras were more effective in improving Cardio-Respiratory fitness and metabolic rate and also reducing weight in obese persons. [31] The overweight and obese persons have strictly followed the diet and a minimum of one hour of practice per day for the eight weeks. The obese persons have restricted the non-vegetarian, oil, and bakery food items completely. In the early morning, we are advised to take boiled vegetables and in the mid-day and night rich fibre food. The

practice of only yoga asanas and kriyas without the following diet doesn't give many results and sometimes it leads to weight gain. So, the diet is mandatory along with the practice of asanas. [32]

In this present study only, anthropometric parameters are taken and they are significantly decreased but in the past studies, practicing the LSP along with diet improves the lipid profile and decreases the anthropometric measurements. [20] Practicing the asanas and kriyas can regulate anthropometric measurements. [33] This study suggests that practicing shankhprakashana and asanas along with diet has several limitations. The dietary habits of the overweight and obese participants were not monitored but were completely restricted to the yogic diet. Though it is the COVID-19 pandemic situation, the researcher took certain preventive measures as per the WHO's advice and it is observed that lockdown is one of the reasons to gain the weight as there is a lack of work. From the above results, it is observed that the mean difference is more in all the anthropometric measurements of the obese than compared the overweight participants. This is because the obese participants were restricted to a rich fiber and fruit diet with a low-calorie diet compared to the

overweight. The limitations of this study were the small sample size with the inclusion of male and female adults. Further research should be performed with large sample size and complete monitoring of food habits for long-term intervention and follow-up yogic diet. Along with the anthropometric measurements, we suggest the evaluation of the Lipid profile.

Conclusion

The finding of the study suggests that doing Shankhaprakshalana and regular practice of asanas along with the yogic diet for eight weeks reduces weight, BMI, waist-hip ratio, body fat percentage, and body fat mass of the overweight and obese participants. Hence the Shankhaprakshalana and asanas along with the yogic diet tend to reduce anthropometric measurements. Moreover, it increases the quality of life by increasing energy intake and improvement of metabolic rate.

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Conflicts of Interest:

There are no conflicts of interest.

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