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Effect of Sivananda model of Surya namaskar and Chakkichalanasana on weight management among middle aged overweight women

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Abstract

Introduction

Overweight is a major sign for unhealthy lifestyle or to a number of medical conditions, where this condition as a sign for many diseases or this condition itself as a reason for having illness or it leads to a sick condition. For women this condition deepens with every stage from hormonal to life stage transition. Non-pharmacological approaches involving the regular practice of Sivananda model of Surya namaskar may impact on the weight management focusing on women. The current study aimed to find the effect of Sivananda model Suryanamaskaar with Chakkichalanasana with loosening exercises on weight management in women who are experiencing overweight aged 40 – 55 years old.

Methods

Forty middle aged women from 40 to 55 years were canvased and divided into 2 groups, study and control group each having 20 subjects each. The study group underwent 30 days of intervention of Warm up exercises, Chakkichalanasana and Sivananda model Surya namaskar, where control group remain same as their normal lifestyle without any intervention. Weight, Body Mass Index (BMI), arm circumference and hip circumference were taken on the 0^{th} day and the 30^{th} day for both study and control group. Variations in the variables were analyzed within the group as well as the both groups.

Results

The 30-day intervention, does shows variation in the weight, BMI, Arm circumference and Hip circumferences in the study group in a positive way. The observed changes in the study group were subjected to comparison with the control group, to determine the impact of the Sivananda model Surya namaskar with Chakkichalanasana and Warm up exercises and Statistical analysis was performed to find the significance of the changes in the selected variables.

Conclusion

The findings from the current study suggests that a 30 day of intervention of yoga practices which includes, loosening exercises, Chakkichalanasana, Sivananda Model of Surya namaskar does have impact to the selected variables in a positive way by reducing it to an extent to the adult women aging from 40 to 55 years old. The yoga training represents as a simple, accessible, non-pharma approach that may contribute to improved management of the body composure with the weight and overall well-being.

Keywords: Yoga, Surya namaskar, Sivananda model, Chakkichalanasana, Weight, Bmi, Arm and hip circumference.

1. Introduction

Overweight is a condition which is medically classified by having excess accumulation of the body fat that leads to the risks to the health, according to WHO the Asian populations carry a higher percentage of body fat and visceral adiposity at lower BMI than the population of Caucasian [25]. The Body mass index is the standard global document that universally standardized the categorization of adult BMI into 4 types,

1. Underweight: < 18.5 kg/m²
2. Normal Weight: 18.5 to 24.9 kg/m²
3. Overweight: 25.0 to 29.9 kg/m²
4. Obesity: ≥ 30.0 kg/m² (further delineated into Classes I, II, and III

Which shows that the Bmi index between 25 to 29.9kg/m^2 is considered as the overweight [18].

Generally, this overweight is not only considered by the BMI also the measurement of hip waist ratio and arm circumferences of adult person. Overweight also leads to disease like cardiovascular disease as well as diabetes to elevated cholesterol level which slowly gives the basic disease called elevated higher blood pressure, which is also known as the silent killer. Overweight in women are due to number of reasons which include hormonal and life stage transition where, women go through from menarche, pregnancy, postpartum and menopause which impacts on the whole body which results in the altering of metabolism. The imbalance of metabolism causes increase in the fat deposition which is focused at the abdominal region and particularly during menopause [11,14]. Conditions related to reproductive health of women like PCOS, fertility challenges and oncological condition like endometrial and postmenopausal breast cancer were also evidently arising which is also a reason for gaining weight and localized accumulation fat at the region of hip, waist, thigh and arm [21]. Meanwhile social economic factors also effecting the psychological well-being of the women to induce the stress hormone called cortisol which results in the weight gain even without having high calories of food. Lack of sleep and other responsibilities from care giving to socioeconomic disparities also plays a major role in the overweight syndrome in women [12,22].

Yoga presents as the easily accessible, non -pharmaceutical treatment which relive the condition as well as prevent the condition to be activated in our body as well. Sivananda Model Surya Namaskar was introduced this type of Suryanamaskaar which comprises of 12 asanas which comes in a combination which has Dandasana (the plank pose), which gives a standing out reason from other models [8]. The word Surya namaskar was mentioned and described in the Taittriya Aranyaka which consist of 132 chapters and comes under the Krishna Yajur Veda and the ritual of sun salutation as well [2]. The combination of the 12 asana gives an ideal effect to activate all the muscles in the body which results it as an optimum practice to lead a physical fitness by improving the muscle strength and reducing the body fat evidently with reducing the BMI [3,17]. In female candidate's regular practice of the surya namaskar showed a significant reduction in mean body weight, body fat, improvement in muscle mass, and upper limb muscle endurance post Surynamaskar practice. These parameters point to Suryanamaskaar as an effective way to manage weight and physical fitness [15]. The plank posture gives a sense of balanced asanas where it balances the whole body on the both palms and the toes which strengthening the core and have an positive impact on the arm, shoulder, chest and the abdomen as well by reducing the fat and as well as act as a preventive method which helps in the preventive workout to regaining the fat to be deposited at the hip, waist and arm region [13]. Presence of Bhujangasana the cobra posture also makes sure to stretch the abdominal muscles as well as the gluteus to tone the region to improves the metabolic rate and controlled breathing also avail the chances to induce the parasympathetic nervous system by reducing the sympathetic nervous system which also indirectly reduce the activation of the stress hormone cortisol [7,10]. In this study Chakkichalanasana also included to maximize the effect of the surynamaskar, studies suggest that combining the Chakkichalanasana with SN can enhance effect of burning of fats and reducing fat deposition at the belly region. It is taken from the Pawanamuktasana series 2, which itself says the benefit is to alleviate the menstrual pain, fat deposition and improved mobility around the hip region with it also act as hip opening asana [1,20].

1.1 Objectives

1. To assess the baseline level of the selected variable among women aged 40-55 years in the study and control groups.
2. To determine the effect of the 30-day intervention on BMI in the study group.
3. To determine the effect of the 30-day intervention on Weight difference in the study group.

4. To assess changes in the range of Arm and hip circumferences by the following 30-day intervention.
5. To compare changes in the measurements of the outcome variables between the study and control groups.

1.2 Hypothesis

Null Hypothesis: There will be no significant difference in the measurements of the BMI, weight, Arm circumference and Hip circumferences between the women who underwent the practice of the yoga protocol including Loosening exercise (warm up), Chakkichalanasana, Sivananda model of Surya namaskar.

Alternative Hypothesis: There will be a significant difference in the range of BMI, weight, Arm circumference and Hip circumferences between the women who undergo yogic intervention such as Loosening exercise (warm up), Chakkichalanasana, Sivananda model of Surya namaskar.

2. Methodology

The present study employs to assess the impact of Sivananda model of Surya namaskar and Chakkichalanasana on the Body Mass Index /(BMI), Weight range, Arm Circumference and hip circumference values by treating it with a pre-test and post-test design. 40 female samples aged between 40 to 55 years, were canvased through a free screening for the need of the research. The subjects were collected based the criteria and divided into 2 groups; experimental & Control groups each consists of 20 participants. experimental group underwent 30 days of the training session (SN), while the control group followed their normal lifestyle without any interventions for the same duration. One hour of yoga practices were given to the experimental team by the researcher herself.

2.1 Participants

40 female candidates were selected at the age range of 40 to 55 years, who were showing over weight on the basis of bmi value. Selected participants were divided into two groups, Study and Control group each having 20 subjects. Study group underwent 40 minutes of yoga practice at evening 5pm to 6am – community center, murukkumpuzha, 7 days a week for 30 days, like a one-month trail. While the study group underwent training for the purpose of assessing the variables, the control group didn't undergo any interventions and leaded same as usual lifestyle without any changes.

2.2 Variables

Independent variable: Loosening exercise (warm up), Chakkichalanasana, Sivananda model of Surya namaskar

Dependent variable: BMI, weight, Arm circumference and Hip circumferences

2.3 Inclusion criteria

- Women who are the age of 40 to 55 years old.
- Participants who are willing to take part in this study for 30 days.
- Participants who are willing to perform the training protocol and giving the requirement measurements for the study.
- BMI within the overweight range (25.0 – 29.9 kg/m2)
- Non-smokers and non-alcoholics.
- Not on any medication during the research period.
- Participants who provide written consent form before participating in the study

2.4 Exclusive criteria

- Pregnancy
- Severe cardiovascular condition and psychiatry issue.
- Taking medication for blood pressure, diabetes, thyroid or use of steroid medicines.
- Current participants in another study.

- Participants who are unable to follow the training protocol.
- People who are suffering from recent injuries (musculoskeletal), surgery, Uterine surgery, hysterectomy delivery are excluded.

3. Procedure

3.1 Interventions

In the study, yogic practices were given as in the form of intervention to the study group and advised to follow the prescribed yoga protocol and training model to ensure a proper outcome. For 7 days a week for 30 days the subjects of the study group practiced the scheduled training with guidance of the researcher herself for 40 minutes per day. Basic loosening exercises were given as the warm up, Chakkichalanasana with a medial pace and Suryanamaskaar were given to the participants. Savasana was given as final one as in the form relaxation not as an intervention, so, Savasana isn't considered as an intervention or related to the assessment of variables. A total of 21 rounds of surya namaskar was given with a 5 minutes break between the sets of surya namaskar. The current study had used the simple warm up loosening exercise, which is useful for loosening the joints as well as relieving the tension by the gentle movements and it shows a significant effect on the hip circumference in a reducing way which will indirectly help in weight management purpose [1]. The structured loosening exercise, impacts on the overall body make sure for further body moments without any soreness which act as a perfect practice before Suryanamaskaar.

3.1.1 Loosening exercises

Table:1

Sl No.	Name	Procedure
1.	Neck up & down	Stand straight on the mat, where both palms firmly on the ground and feet together transmitting equal weight of the body. While inhaling, slowly stretch your neck back with eyes open and while exhaling bend your neck forward touching the chin with the jugular point.
2.	Neck rotation	Stand erect on the mat, where both palms firmly on the ground and feet together transmitting equal weight of the body. Eyes wide opened. Slowly rotate the neck to 360degree making a circle in a clockwise rotation and same repetition to the anticlockwise direction.
3.	Shoulder rotation	Sit straight on the mat, where both palms firmly on the ground and feet together transmitting equal weight of the body. Place both hands on the respective shoulder and rotate both shoulders at same time in clockwise direction and same repetition to anticlockwise direction.
4.	Elbow bend	Stand straight on the mat, where both feet firmly on the ground transmitting equal weight of the body. Bend both your elbows and place both palms on the respective shoulders. Inhale, stretch both elbows forward and exhale, bend it towards the shoulder as well.
5.	Wrist up & down	Sit straight on the mat, where both palms firmly on the ground and feet together transmitting equal weight of the body. Stretch both arms forward, where both palms facing downward or to the floor. Up your both palms while stretching the wrist up. And slowly lower the palm downwards, where both palms face the individual herself.
6.	Wrist rotation	Sit straight on the mat, where both palms firmly on the ground and feet together transmitting equal weight of the body. Stretch both arms forward, where both palms facing downward or to the floor. Make a fist in both palms. Rotate both palms in clockwise direction and rotate anticlockwise direction as well.

7.	Fingers tightening and stretching	Sit straight on the mat, where both palms firmly on the ground and feet together transmitting equal weight of the body. Stretch both arms forward, where both palms facing downward or to the floor. Make a fist in both palms tight your fingers, where your thumb is enclosing the other 4 fingers
8.	Knee bend	Sit straight on the mat, where both palms firmly on the ground and feet together transmitting equal weight of the body. With the help of both your palms bent and hold your right feet close enough to your right chest. Release. Do the same to the left feet and of the same repetition.
9.	Half butterfly	Sit straight on the mat, where both palms firmly on the ground and feet together transmitting equal weight of the body. Bend your right feet towards the left inner thigh. Raise the right knee with right palm and slowly raise up and down. Do this with the left leg too.
10.	Ankle stretch	Sit straight on the mat, where both palms firmly on the ground and feet together transmitting equal weight of the body. Now slowly stretch your ankles upward and downwards.
11.	Rotation	Sit straight on the mat, where both palms firmly on the ground and feet together transmitting equal weight of the body. Rotate the ankles in clockwise and anti-clockwise direction in the same repetition.
12.	Toe tightening	Sit straight on the mat, where both palms firmly on the ground and feet together transmitting equal weight of the body. Tight your toes and release.

3.1.2 Chakkichalnasana

Procedure: Sit straight, where both legs are stretched forward and placed apart in a wide angle. Interlock the fingers and stretch your arm forward, till touching the toes. Now rotate in the form where the interlocked palms are touching both toes of the respective legs in a rotation. Like a grinding of rice. Perform it for clockwise and anticlockwise direction.

Benefits: Core Strength and Tone, Spinal Mobility, Digestive Health, Fat Mobilization, Balance and Coordination toning the nerves and Organs of the pelvis and abdomen. It is very useful for Regulating the menstrual cycle [1,20].

3.1.3 Sivananda Model of Surya namaskar [8]

Table:2

Sl No.	Name	Procedure
1.	Pranamasana	Stand straight head straight. Breath normally. Stretch both your arms up and make a Namaskar mudra (both palms are touching each other). Place it in the sternum region. Shoulder down.
2.	Hasta uttanasana	Stretch both your hands up and stretch a little back while looking at the fingernails.
3.	Padahastasana	Bend forward with the arms glued with the either side of the ears. Touch the respective feet.
4.	Ashwasanchalasana	After bending forward to touch the feet. Place the right foot and place both palms on the floor align with the left foot, where the left side serves in the middle of both palms. Right feet should be flat. Look up and arch your back a little.
5.	Dandasana	Place your left foot with the right foot to the back and sole of the feet on the ground. Both palms are placed on the front and bring the body into a straight, rigid push-up/plank line.
6.	Ashtanga namaskar	Place your toes, knees, chest, palms and chin on the ground, where the hip is elevated up

7.	Bhujangasana	Rest your whole body down on the floor in prone and slowly place your respective arms between the shoulder and chest, feet together. Raise your upper body up to the navel and gaze up.
8.	Adho Mukha Svanasana	Elevate your hip into an inverted V-shape from the cobra pose where the head down and whole body are balanced on both palms and feet.
9.	Ashwasanchalasana	Place your right feet forward in between both palms, where left knee is on the ground and feet are flat. Look up.
10.	Padahastasana	Place the left leg with the right leg and raise your hip to a standing motion and knees are straight, and palms are touching the feet.
11.	Hasta uttanasana	Raise both your palms and the upper body up and look at the fingernails.
12.	Pranamasana & Sthithi	Perform namaskar mudra in hands and place it near the sternum. Release the namaskar mudra and stand straight.

3.1.4 Savasana

Procedure: Lie on your back, while relaxing the whole-body. Head resting straight, hands are little apart from the body and both legs are placed little apart from each other. Both palms facing upward and eyes closed. Focus on your own slow breathing. Benefits: Relaxes the whole body by reducing the sympathetic nervous system, which makes the body in the state of rest [23].

3.1.5 Training Protocol

Table:3

Sl No.	Yogic practice	Rounds	Time
1.	Loosening exercises,	4 rounds each	15 minutes
2.	Chakkichalnasana (clockwise & anticlockwise).	20 + 20 rounds.	5 minutes
3.	Relaxation – simple free seating mode	5 minutes	5 minutes
4.	Sivananda model Surya namaskar	10 rounds + 11 rounds.	4 + 4 minutes of break of 2 minutes between these two sets.
5	Savasana	5 minutes	5 minutes

Dependent variables were documented on the 0^{th} and 31^{st} day from both groups, which later used as data to find the impact of SN by comparing the pretest & posttest of experimental & control groups. Prior to data collection, an awareness session was conducted, and informational pamphlets were distributed to explain the purpose, benefits and procedures of the experimental. Written informed consent was obtained from all participants before enrollment.

4. Data Extraction

4.1 Outcome Measurements

Data extraction is done with proper tools and compiled in Excel (Microsoft). The data were taken from studies are further went for the analysis purpose. Outcome measurement was measured as pre and posttest method;

Weight: The measurement of weight is taken by a digital weight machine, on the 0^{th} and 30^{th} day as soon as the subject came for the practice of yoga for the study group and without intervention to the control group.

Body Mass Index (BMI): The calculation of the BMI is a standard procedure [26]. It is taken in such a way, where the height and 0^{th} day weight was calculated to find the 0^{th} day bmi and

the height of the subject and their 30th day weight is calculated to find the bmi of the 30th day for both the groups.

Arm circumference: The value is taken by a measuring tape where mid arm is the region for measuring. Procedure: Find the midpoint of the Arm, by bending the arm at 90 degrees, so that that we can measure from the tip of the shoulder to the tip of the elbow**,** and mark the exact middle point**.** Wrap the tape measure horizontally around the mark and mark it in centimeters [5,9].

Hip circumference: The measurement value is taken by a measuring tape. Procedure: Assume the subject in a standing straight, Identify the widest part of the buttocks. Adjust the tape if needed until the largest circumference is found. Wrap the tap around the identified part and mark the measurement. Hip girth is identified as the circumference around the widest part of the hips and buttocks [4,16]. For the study group and the control group 0th day and 30th day measurements were taken and further subjected to the data analysis.

5. Data Analysis

Extracted data are analyzed with Jamovi 2.6.44 to analysis data. Data were concluded to have equally distributed normality. Thus, the data were analyzed with Paired T test and comparative study is given into Independent T test to find whether it supports the hypothesis.

6. Results

A total of 40 women aged between 40 – 55 years, where divided into 2 groups, study and control respectively. The data were set in one tailed test, 0.05 level of significance, where is p,0.05, critical value is at 60 due to the N is 20. Tables and graphical representations such as bar diagrams were used to illustrate the changes in the measured variables to show the impact of the Suryanamaskaar (yoga practice). The data were normally distributed which results in the Paired T test for the within the group analysis and Independent T test for comparing the data of the study and control group.

Table:4, shows the data analysis of within group comparison of the variables in the study group, which is calculated by Paired T test between 0th day to 30th day. The mean body weight decreased from 61.3 to 59.6kg by reducing nearly 1.7kg. The reduction of Bmi from 0th to 30th day shows a reduction of 0.7 value with 1.02 and 0.98 in Standard deviation respectively. While the Hip circumference reduces 4 cm from 113 cm to 109cm with 3.95 and 3.86 values of Standard deviation respectively. And the Arm circumference shows a reduction 0.7cm in measurement from 0th to 30th day with the intervention. All four variables showed statistically significant differences with p- values <0.001. These results indicates that there is a significant reduction in the measured values from baseline to the end of the 30 days of yoga practices in the study group.

Table:4 Within the group comparison – Study group

Sl No.	Variables	Day	Mean	Standard Deviation	P - value
1	Weight (kg)	0	61.3	5.09	<0.001
		30	59.6	4.84	
2	Body Mass Index (BMI)	0	27	1.02	<0.001
		30	26.3	0.98	
3	Hip circumference (cm)	0	113	3.95	<0.001
		30	109	3.86	
4	Arm circumference (cm)	0	30.6	2.24	<0.001
		30	28.9	2.07	

Table:5, shows the data analysis of within group comparison of the variables in the control group, which is calculated by Paired T test between 0th day to 30th day. The control group wasn't got any intervention during this 30day study period. The given table presents that the

mean value of the Weight and Bmi got increased from the 0th day to the 30th day, 1.4kg and 0.5 respectively. Meanwhile the Hip circumference increased from 113cm to 114cm showing 1cm in increase in mean level. Arm circumference also shows increasing measurement from 30.5cm to 31.1cm, increasing in the mean value 0.6cm. Thus, it can conclude with the within group test that study group with intervention shows overall reduction in their mean value and the control group without any practices shows increase in their mean value, concluding that the yoga program does have a significant role in reducing the selected variables.

Table:5 Within the group comparison – Control group

Sl No.	Variables	Day	Mean	Standard Deviation	P - value
1	Weight (kg)	0	60.5	4.11	<0.001
		30	61.9	3.93	
2	Body Mass Index (BMI	0	25.9	0.50	<0.001
		30	26.4	0.49	
3	Hip circumference (cm)	0	113	2.85	<0.001
		30	114	2.83	
4	Arm circumference (cm)	0	30.5	0.91	<0.001
		30	31.1	0.84	

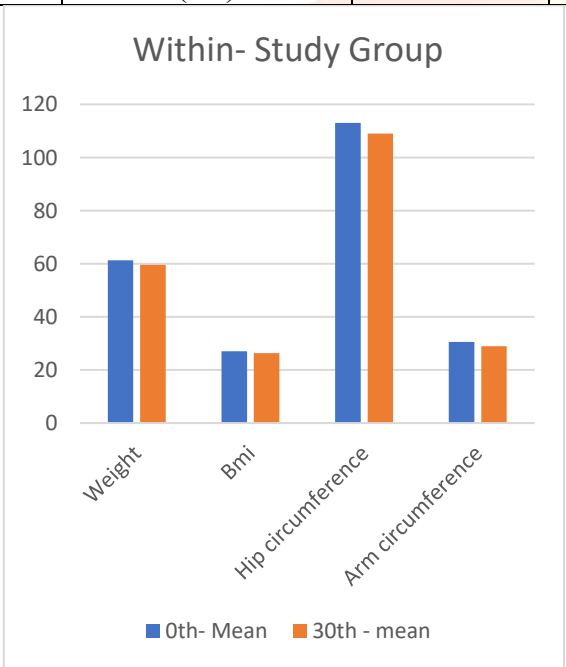


Chart-a

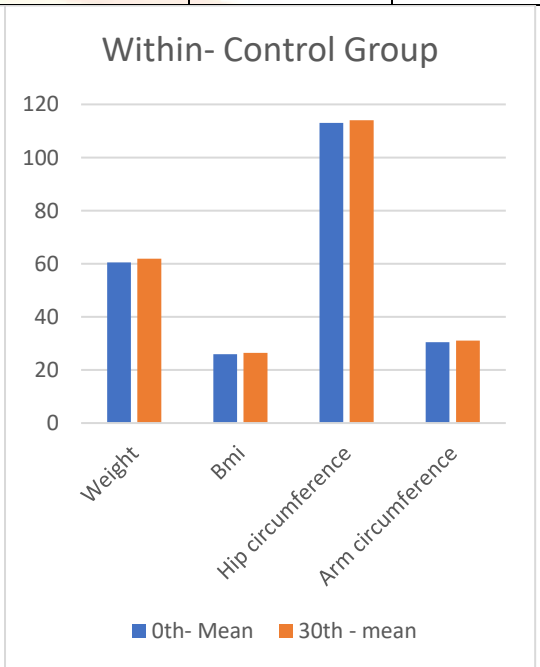


Chart-b

Table:6, represents the comparison of the mean changes of the selected anthropometric values between the study and control group from 0th day to 30th day. In the Study group, the mean weight decreased by 1.77kg while the control group shows increase in 1.37kg. Similarly, Bmi decreased by 0.730 value in the mean level, while the control group shows a increased value of mean 0.585. Hip circumferences and Arm circumferences of the study group reduced by 3.41cm and 1.64cm, meanwhile in the control group the mean value increased by 1.36cm and 0.555cm respectively. The interpretation shows that the mean differences are calculated as day 30 minus by the 0th day value. The comparison of 2 groups shows t value ranging from _11.4 to _15.4, df = 38 and the p value for all the 4 variables are founded as <0.001. These results indicates that the study experienced reductions in all measurement in overall value of the selected variables, while the control group without intervention showed increases over the same period of the study.

Table:6 Comparison of 2 Groups – Study and Group

Sl No.	Variables	Group	Mean difference (30^{th} -0^{th})	Standard Deviation	t	df	P - value
1	Weight (kg)	Study	-1.77	0.844	-12.5	38.0	<0.001
		Control	1.37	0.732			
2	Body Mass Index (BMI	Study	-0.730	0.408	-11.4	38.0	<0.001
		Control	0.585	0.317			
3	Hip circumference (cm)	Study	-3.41	1.230	-15.4	38.0	<0.001
		Control	1.36	0.640			
4	Arm circumference (cm)	Study	-1.64	0.771	-11.3	38.0	<0.001
		Control	0.555	0.395			

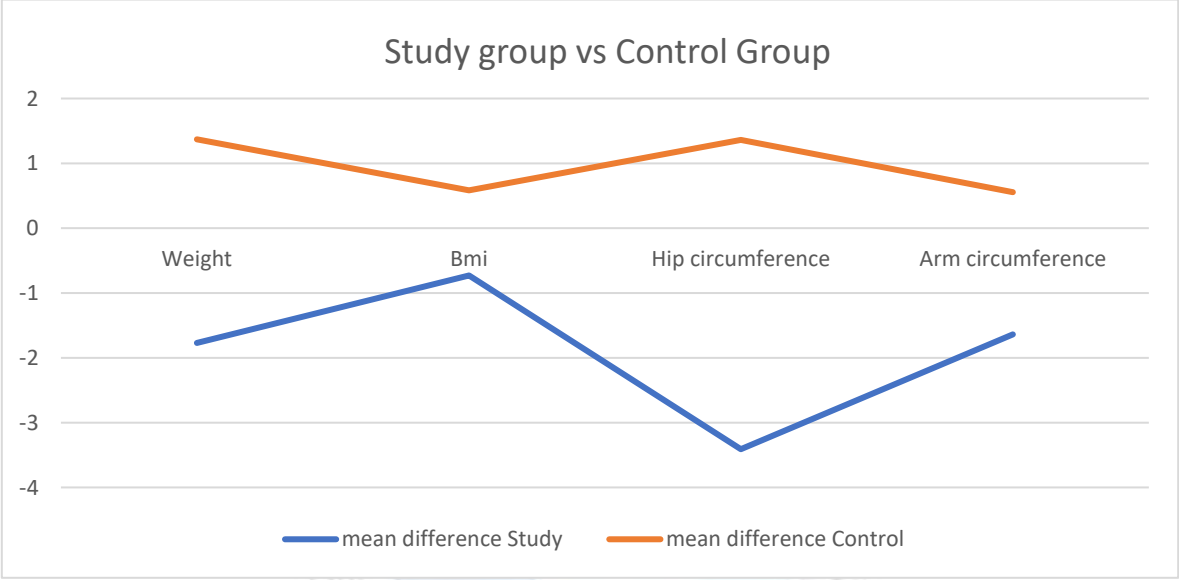


Chart-c

7. Discuss

The present study was conducted to assess the effects of a structured 30days of intervention of yogic practices which includes Loosening exercises, Sivananda Model Surya namaskar, Chakkichalanasana and Savasana on weight, body mass index, hip circumferences and arm circumferences on adult women who were experiencing overweight. The current study suggests that the structured yogic interventions does have an impact over the significant changes happening in the measurement of the selected dependent variables among the study group. The study group shows a baseline overall reduction in the mean value of the selected variables meanwhile the control group shows elevation in the overall mean value respectively. Within the study group shows significant change which supports the reduction while conducting Paired T test. Meanwhile conducting Independent T test for the assessing the comparison of the 2 groups with the mean differences of the 0^{th} day to 30^{th} day, which shows a significant change in the value in both the study and control group. Sivananda Model of surya namaskar consists of 12 postures, which consists of Dandasana (Plank posture) is the main difference, which makes this model to stand out from other models [8]. Prevention of fat in the localized region is much needed for weight management, the plank posture impacts on preventing the regain of visceral fat by providing resistance and isometric training. The whole body balanced on the palms and the toes which leads to the upper entire upper body to work as a one unit, which leads to the increase in the metabolic rate, which leads to the body to burn

more calories around the region as arm, shoulder, chest and reduce the systemic fat stores [6,13]. It is said to be the ideal exercise which can give an optimum physical fitness by activating all the muscles in a specific way, where stretching, contracting, balancing was performed by the practitioner. The regular practice of SN does have an effect on the significant increase in the muscle strength, Endurance, mobility, flexibility and significant reduction in the body fat and BMI [3,17]. Management of the weight also have an effect, which is back up by the hormone named cortisol. The hormone itself is a product of stress induced factor, which triggers the deposit of the deep visceral fat storage, which is focused around the midsection and hips. Thus, the reduction of fats in the waist and hip is driven by deep muscular engagement of the related muscles. Bhujangasana is one among the 12 asanas in the surya namaskar series. The name itself says as cobra posture the snake pose, where the upper body is balanced from the navel to head by the both hands placed by the chest level. By holding a controlled backbend with regulated breathing results in down regulate of the sympathetic nervous system. It leads to the insulation of the biochemical signaling that forces the body to deposit excess calories at the belly and hip region. It also activates the gluteus maximus, adductor magnus and the tensor fasciae latae which are the stabilizing muscles surrounding the hip. Studies also suggests that it stretches and tightens the transversus abdominis which is known as the deep core belt and results in the waistline inward and structurally narrowing the hips and abdomen [7,10]. Chakkichalanasana is one among the asana in the Pawanamuktasana series 2, which gives the fat to reduce from the hip and waist region by toning up the abdomen and the vigorous moment leads to the body to burn more fat on localized regions [1,20].

8. Conclusion

The findings from the current study suggests that a 30 day of intervention of yoga practices which includes, loosening exercises, Chakkichalanasana, Sivananda Model of Surya namaskar does have impact to the selected variables in a positive way by reducing it to an extent. Thus, it can conclude with the within group test that study group with intervention shows overall reduction in their mean value and the control group without any practices shows increase in their mean value, concluding that the yoga program does have a significant role in reducing the selected variables and showing the study is positive towards the Alternative Hypothesis. The study also represents that Daily practice of yoga can give a good impact on the overall wellness as well as very positive results towards the weight management including the reduction of hip and arm circumferences.

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Appendix



Figure-1 Surya namaskar – Sivananda Model (49)