

Original Research Article

Volume 11 Issue 6

Nov-Dec 2022

THE EFFECT OF SELECTED YOGA TECHNIQUES IN CENTRAL OBESITY DUE TO POSTPARTUM WEIGHT RETENTION

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ABSTRACT

The average weight change from preconception to the first year of postpartum and more is referred to as postpartum weight retention. The variability in postpartum weight change in 20% of women is 5kg or above than their preconception weight by 1year postpartum. Pregnancy has been associated with an increase in visceral fat stores and waist circumference with abdominal fat mass increasing. Usually 50% will revert to pre pregnancy weight but more than 25% retain 5kg or more weight in postpartum. The increased abdominal fat mass leads to abdominal obesity with an increased risk of metabolic and cardiovascular diseases. The selected yoga procedures were implemented as a routine for 3 months in a sample of 30 women under the age group 21-35 years with central obesity due to postpartum weight retention. The outcome variables BMI, Waist circumference, the waist-hip ratio were assessed on the 0th, 30th, 60th, and 90th day of the intervention. The data were analyzed using repeated-measures ANOVA. The P-value obtained for BMI was <0.0001 which is considered extremely significant, P-value of waist circumference is <0.0001 considered extremely significant, the P-value for the waist-hip ratio is <0.0001 which is extremely significant proving that null hypothesis is rejected and alternate hypothesis which is being accepted here that is the selected yoga techniques had an effect in central obesity due to postpartum weight retention.

Key Words: Women health, postpartum weight retention., BMI, yoga in obesity

INTRODUCTION

The epidemic of obesity is the most pressing health concern today especially in ladies of reproductive age. Among the obesity, abdominal obesity possesses a greater risk compared to peripheral obesity. Women in their first and second years of post-partum mainly fall under the group of abdominal obesity with increased waist circumference and waist-hip ratio. According to the data from the Centers for Disease control from 2012, 35.1% of women over 20 years of age are obese and another 33.9% are overweight⁴. Central obesity or abdominal obesity occurs when there is excessive abdominal fat deposition around visceral organs which can cause impairment in health of an individual. The adipose tissue has two components an adipocyte fraction and the other one is non- adipocyte fraction. The adipocytes express and secrete several endocrine hormones such as leptin and adiponectin, whereas many secreted proteins are derived from the non-adipocyte fraction of adipose tissue. Regardless, these components function as an integrated unit, making adipose tissue a true endocrine organ. The endocrine functions of adipose tissue fall into two broad categories: 1) secreted proteins – having metabolic effects on distant cells or tissues, and 2) enzymes involved in the metabolism of steroid hormones. Thus abdominal obesity with increased adipose tissue is the main risk factor for coronary heart disease and type 2 diabetes.² Pregnancy results in increased visceral fat and several studies have reported weight retention beyond 1 year postpartum. Apart from the laxity of muscles and organs, the molding factors of central obesity in postpartum include high dietary fat intake, sedentary lifestyle, lack of physical activity, maternal stress, reduced sleeping hours. Yoga as a primary level of prevention aims at bringing the different bodily functions into perfect coordination so that they work for good of the whole body. Regular practice increases the structural and functional integrity of abdominal organs and maintains the muscular tone. Maternal stress, which is the most relevant causative factor for increased BMI can be reversed by the yoga procedures. Overall physical, as well as mental factors involved in weight retention, can be resolved.

METHODOLOGY

The study was to assess the effect of selected yoga procedures in central obesity due to post-partum weight retention. The main diagnostic criteria included for the evaluation of reduction in central obesity was BMI, waist –circumference and waist-hip ratio. The study design was before after trial, a sample of 30 women in post-partum was selected from OPD and IPD of Government Ayurveda College, Tripunithura and the selected yoga was practiced regularly for 3 months.

INCLUSION CRITERIA

Women in the age group 21-35 years

Women 1year -4 years after delivery

Women who have undergone both normal and caesarian section delivery

Subjects whose BMI ranges between >25-39.9

Waist Circumference-80-120 cm

Waist-Hip ratio->0.85

EXCLUSION CRITERIA

Women who have undergone more than 2 deliveries

Women with thyroid disorders, hypertension, diabetes mellitus and other gynecological ailments and who has been subjected to any surgeries other than caesarian section, hernia

Pregnant ladies

Post-High-risk pregnancies including preeclampsia

Subjects with other systemic illnesses or severe musculoskeletal disorders

YOGA PROTOCOL

Loosening and breathing exercise-15 min

Asanas-45 min

Table No: 1 Yoga postures

Standing postures	Sitting postures	Supine postures	Prone postures
Tadasana	Sithila dandasana	Savasana	Makarasana
Ardhachakrasana	Paschimottanasana	Pavanamuktasana	Bhujangasana
Ardhakatichakrasana Padahastasana	Ardha matseyendrasana	Merudandasana	Salabhasana

Kapalabhati and Nadisudhi pranayama

The outcome variables BMI, Waist- circumference, Waist-hip Ratio were assessed on the 0th, 30th, 60th and 90th day of yoga practice using Repeated measures ANOVA

RESULTS

The statistical test repeated-measures ANOVA was employed to analyze the statistical significance within the various assessments taken on A(0th day), B(30th day), C(60th day), D(90th day)..

**Table No: 2 Overall results showing the significant
Changes in BMI**

GROUP	MEAN DIFFERENCE	95% confidence interval	P-VALUE
A Vs B	0.2237	-0.01611-0.4634	P>0.05
A Vs C	0.4433	0.2036-0.6831	P<0.001
AVs D	0.5583	0.3186-0.7981	P<0.001
B Vs C	0.2197	-0.02011-0.4594	P>0.05
B Vs D	0.3347	0.09489-0.5744	P<0.01
C Vs D	0.1150	-0.1248-0.3548	P>0.05

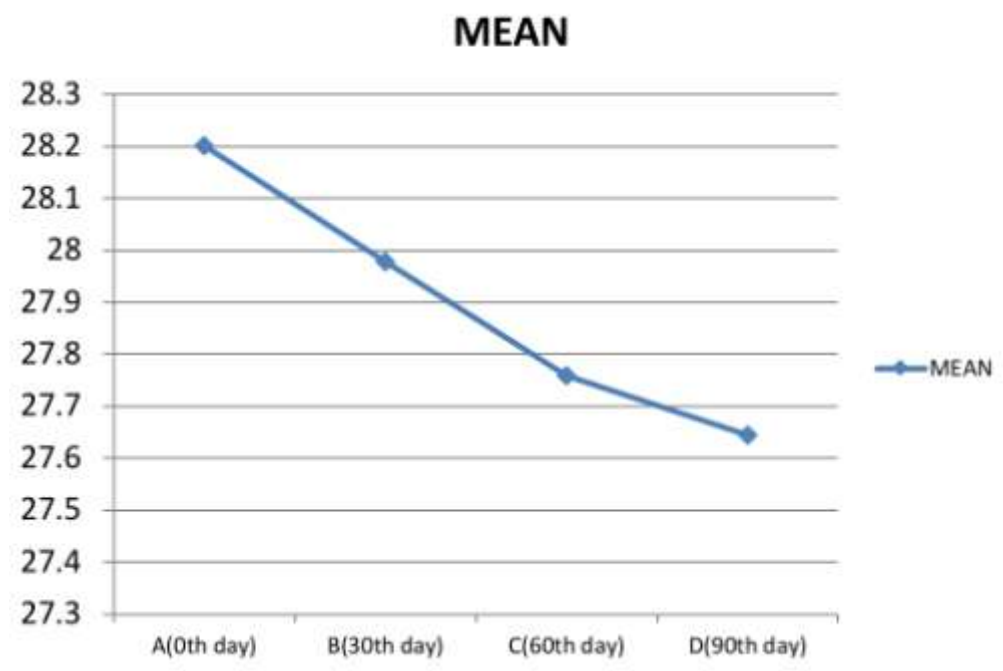


Fig no: 1 Showing results of BMI

Table no: 3 Overall results showing significant changes in waist circumference

GROUP	MEAN DIFFERENCE	95% confidence interval	P-VALUE
A Vs B	4.43	2.94-5.93	P<0.001
A Vs C	5.47	3.97 -6.96	P<0.001
A VsD	6.13	4.64-7.63	P<0.001
B Vs C	1.03	-0.46-2.53	P>0.05
B Vs D	1.70	0.21-3.19	P<0.05
C Vs D	0.67	-0.83-2.16	P>0.05

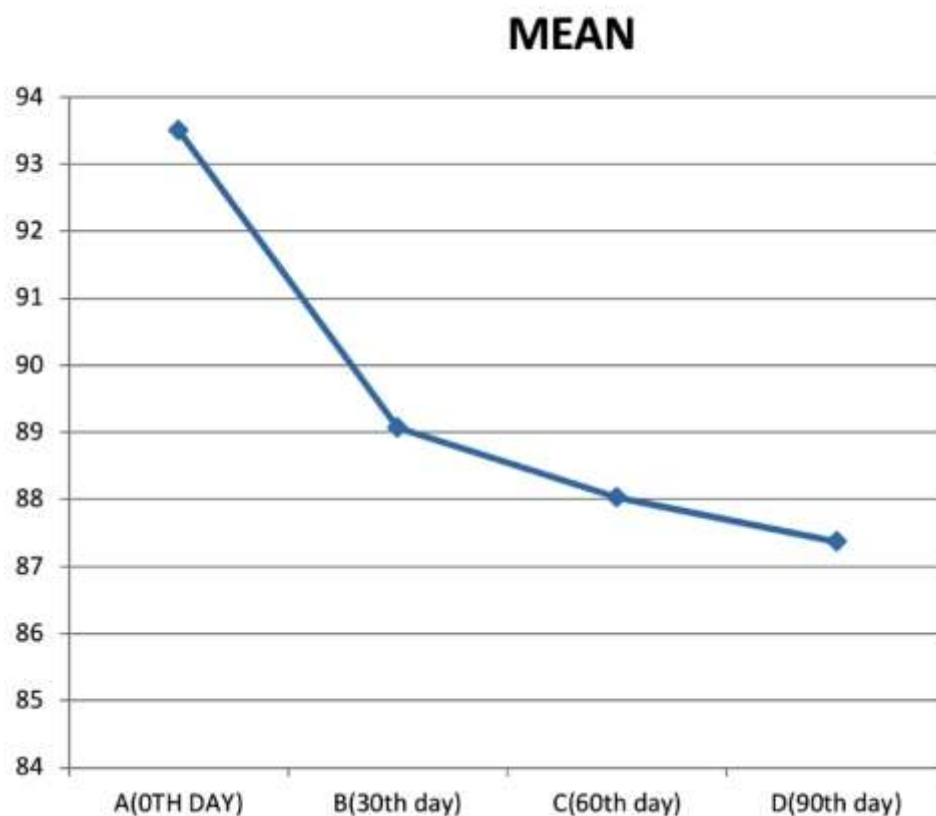


Fig no: 2 Showing results of waist circumference

Table No:4 Overall result showing significant changes in waist -hip ratio

GROUPS	MEAN DIFFERENCE	95% confidence interval	P-VALUE
A Vs B	0.013	0.011-0.035	P<0.05
A Vs C	0.018	0.016-0.0398	P<0.01
A Vs D	0.019	0.0175-0.041	P<0.001
B Vs C	0.0047	-0.0071-0.0166	P>0.05
B Vs D	0.006	-0.0058-0.018	P>0.05
C Vs D	0.0013	-0.011-0.013	P>0.05

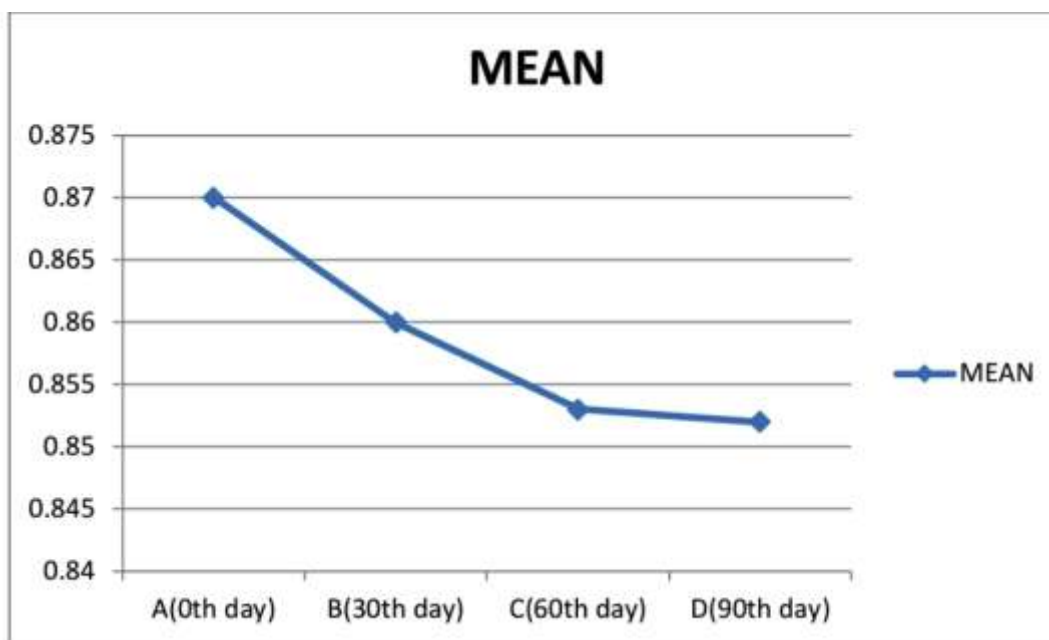


Fig no: 3 Showing results of waist hip ratio

DISCUSSION

The main objective of this study was to determine the effect of selected yoga techniques in central obesity due to post-partum weight retention and also its effect on various parameters such as BMI, waist circumference, waist /hip ratio which are the sensitive markers of central obesity. Yoga has been widely used as a successful measure in controlling obesity. It works both on the physical and mental aspects giving wonderful results. Here from the mere physical practice, the subjects needs more psychological attention as there were nurturing mothers in the group who were agonized with stress. Moreover while practicing yoga the stimulation of the hypothalamus occurs which in turn stimulates the pituitary gland which has a major role in the regulation of female hormones and organs. The *asanas* selected were most probably having action over the abdominal muscles, muscles in the waist and hip region, along with the breathing pattern which helped in improving the microcirculation of organs. Kapalabhati kriya reduces stress, tension and anxiety by improving supply of oxygen in the brain and whole body. This process strengthens the abdominal muscles, improves the function of the intestine and bowel movement. It increases blood circulation in the body rejuvenates cells and slows

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down the process of ageing. Apart from all that it boosts the immune system. Pranayama known for its overall influence Pranayama known for its overall influence on almost all the vital organs helps to maintain homeostasis between sympathetic and parasympathetic system. This effectively reduces the oxidative stress and effectively removes free radicals because of the slow, smooth and prolonged breathing pattern. It is also well known for its beneficial effect on stress and strain both physically and mentally. Nadishudhi pranayama have their impact over the endocrine domains especially hypothalamo-pituitary ovarian axis in women decreasing serum testosterone and luteinizing hormone levels and an increase in cortisol excretion, therefore found to be very effective in certain common gynecological disorders like PCOS, dysmenorrhea ,secondary infertility without any cause. The subjects with irregularity in menstruation got the complete cure with a 28/30day cycle, and subjects with dysmenorrhea got relieved of their pain, among the subjects 2 of them conceived after the study period. These all findings confirm the action of yoga over the hypothalamo-pituitary ovarian axis resulting in good reproductive health of women.

While doing a comparison between the group a relevant change in BMI was noticed from the second month onwards and the change was sustained during the third month with a significance of $p < 0.001$ while comparing with the before treatment status. But when we consider the intermediate group ie comparison between before treatment and end of the first month, comparison between the second month and third month, comparison between the third month and fourth month doesn't show much significance with $p > 0.05$. Therefore we can conclude with a gap of one month a relevant change in BMI is not obtained but the yoga techniques had a significant role in reducing BMI and had a sustained effect on it during the regular course and same was the case with waist circumference and waist hip ratio.

CONCLUSION

The selected yoga procedures had significant results in reducing BMI, Waist circumference, and waist hip ratio in central obesity due to post partum weight retention therefore the null hypothesis is rejected and alternate hypothesis is accepted.

CONFLICT OF INTEREST: Nil

Acknowledgement

This is a contributory effort of many good heads and hearts. It gives me immense pleasure to offer my sincere thanks to all those who have rendered their wholehearted support, guidance and Co-operation in completing my thesis work. On this occasion of successful accomplishment of my thesis work I bow my head to The Almighty, for having bestowed upon me enough strength to complete my thesis.

At this moment, it is my privilege again to express my respect and love towards my co-guide, Dr.T.P.Sarasa, former Superintendent ,Professor & HOD, Department of Swasthavritta, Govt. Ayurveda college, Tripunithura. Her encouragement, affection, accurate and supportive guidance along with meticulous suggestions from her experience has shaped and enlightened my efforts towards leading this tiny work of mine to success and completion.I am sincerely thankful to Dr. T.K. Uma, former Principal Govt. Ayurveda College Tripunithura . I take this opportunity to express my sincere gratitude and love to Dr. Jyothi.R, professor, Dept.of Swasthavritta, Govt.Ayurveda College, Trivandrum for her valuable advices & encouragement in the completion of my thesis. Also I express my sincere gratitude and love to Dr. Sheela. S, professor and HOD , Dept. Of Swasthavritta, Govt. Ayurveda College, Kannur whose persistent support and care have kept me going from the very beginning to the end of the work and to Dr Nafeesath beevi,Associate professor ,Dept. of Swasthavritta,Govt.Ayurveda College Tripunithura for her favourable suggestions and constant support. I am also highly indebted to Dr. S. Vinuraj, Associate Professor, Department of Swasthavritta, Govt. Ayurveda College, Kannur,whose keen-eyed vision on scientific views in Ayurveda has motivated me throughout this venture . I wish to express my sincere regards to Dr.Prassanna, former HOD & Professor, Department of Prasuti tantra and Stri roga, Tripunithura for her guidance, meticulous suggestions and support for the study. I am especially thankful to Dr. Sreekumar, Associate professor Department of Salakya tantra, Trivandrum, and Dr. Abhilash ,Associate Professor

Department of Kriya sareera, Trivandrum for their valuable suggestions for the study regarding the statistical analysis.

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