

# **Effects of Yoga therapy on Obesity and Quality of life In Women: A Longitudinal study**

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## **Abstract**

The aim of this study is to evaluate the effects of yoga therapy on obesity in females. Objectives are, to bring about reduction of body weight, reduction of waist line, and improvement in their quality of life by decreasing stress levels.

Twenty five obese females, aged 20 to 50 years, who were willing to participate in the program, were recruited. Those suffering from medical and psychiatric disorders were excluded. Their Body Mass Index, Waist-Hip ratios, blood pressure, pulse rate were measured. Dietary habits, exercise details recorded. As part of the program they were taught yoga practices for 45 minutes. They were instructed to practice twice a day followed by Shavasana for five minutes with balanced dietary intake and other life change modifications. Baseline assessment in the various parameters was taken. Reassessment was done after three months. Yoga training for 3 months resulted in a significant reductions in all body weight measures such as decrease in Body Mass Index (0.001) , Waist hip ratio (0.001), and in physiological measures such as Systolic Blood Pressure (0.01), Diastolic Blood Pressure (0.038), Pulse Rate (0.001)( P values < 0.05) all of which were statistically significant.

Thus from the significant changes observed using different parameters in this study found that yoga therapy has several beneficial effects, in the form of improvement in quality of life and reduction in body weight in women.

**Key words:** Obesity, Yoga therapy, Pranayama, Waist hip ratio, Quality of life.

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## **Introduction**

In many third world countries women are gradually becoming obese than men. Irregular food habits, stress, sleeplessness, hormonal imbalance and sedentary lifestyle are some of the factors which affect directly to the obesity in women. Rise in the prevalence of obesity is one of the alarming public health issues facing the world. It is the main underlying cause of life threatening disorders like coronary heart disease, diabetes mellitus, atherosclerosis, hypertension, asthma, stroke, arthritis, cancer and also menstrual disorders. Obesity affects the women's overall physical, psychological health and diminishes quality of life.

Obesity is the most hazardous factor found in modern sedentary society. Man's quest for happiness has continued from time immemorial. The modern era of science and technology featured by increased standards of living with large number of luxuries, lack of physical activity, sedentary life style coupled with stressful living has created psychosomatic disorders in women. Though these disorders have been in existence for centuries throughout the world, the incidence in the highly civilized societies of the present era is higher than it has ever been in the past.

Obese women suffer emotionally and show withdrawal symptoms such as, they are usually shy to show themselves up. They also suffer abnormal hunger pangs

and seem to be consumed with thoughts of food. Laziness and indolence becomes their second nature. In most cases, it is easy to ignore obesity in its early stage, especially when one is asymptomatic. Strengthening the immune system is also vital since some illnesses can cause overweight. Research findings reveal remarkable improvements of effect of yoga therapy on obesity. Regular practices of yoga prevent and reduce body weight, stress levels, blood sugar level, blood pressure, rate of progression of complications and severity as well.

Yogic diet, asanas, pranayamas, dhya, kriyas and relaxation are an important aspect of lifestyle modification. Yoga can help a person to learn the right attitude towards food as well as understand concepts based on the trigunas and tridoshas for better health. The practice of yoga leads to the efficient functioning of the body with homeostasis through improved functioning of the psycho-immuno-neuro-endocrine system. A balanced equilibrium between the sympathetic and parasympathetic wings of the autonomic nervous system leads to a dynamic state of health. (1)

Yoga produces many physical and mental changes through its beneficial effects on endocrine, metabolic and neurohumoral processes. A review of index medicus, covering the last few years does show significant literature on the effects of yoga on obesity. There are reports of lowering of the fasting blood sugar levels in normal young voluntaries by hatha yoga practice. (2) Yoga therapy was found to bring about correction of body weight, reduction of abdominal girth, improvement in functions of pancreas. Much work has to be done in this field with the considerable research that is going on. (3)

Those who practice yoga have claimed to have controlled body mass index by yoga

therapy. A study of 32 women participants showed the following results after the 6 months of regular yoga practice. There was significant reduction in body weight, reduction in waistline, reduction in hipline among the participants.(4)

Researchers from Hampton University in Virginia presented findings on the benefits of yoga and pranayama for teenagers at the American Heart Association's annual conference on Cardiovascular Disease Epidemiology and Prevention. Their study compared weight loss/gain in two groups of overweight high school students: 30 students who were taught 40 minutes of yoga and pranayama four times a week for 12 weeks, and 30 students who received no instruction. Neither group was instructed to diet or change food intake. Students in the yoga group showed a 5.7 percent decrease in average body mass index and weight loss of six pounds, whereas students in the control showed a non-significant increase in average body mass index . (5)

A study (6) reported significant beneficial effect of six month yoga therapy in diabetic patients. Body mass index decreased from 24.02 to 23.05 kg/m<sup>2</sup>; p<0.001, Fasting blood glucose decreased from 148.19±43.13 to 108.19±21.05 mg/dl; p<0.001, There was also a significant reduction in systolic blood pressure from 143.5 to 130.7 mmHg; p < 0.05 and diastolic blood pressure from 93.7 to 86.9 mmHg p < 0.05.

In a study (7) observed statistically significant improvement in lipid profile along with weight reduction 6.8±8.2% (p=0.0019) after yogic life style intervention in coronary atherosclerotic patients. In a study yoga participants showed the following changes after the 40-day program, reduced waist to hip ratio as high waist to hip ratio is considered a risk factor for cardiovascular and metabolic disease, and a decrease in fasting blood

glucose. Among obese participants serum levels of insulin decreased.

Dr. Gharote from Lonavala studied the therapeutic effect of yoga on cases of obesity and the results were assessed through measurements of skin fold at various points. Results showed significant decrease in skin fold measurement both in males and females (8). However, we have studied in the present work the effects of yogic practices on fat accumulating parameters by measuring body weight, waist line, and hip measurement and also on stress level parameters by measuring blood pressure, pulse rate in a group of women. The present study pointed out to the efficacy of yoga therapy as has been established in earlier studies.

Thus the aim of this study was to evaluate effect of yoga practice on obesity and stress levels and quality of life in women. The practice of yoga in this study intends - To bring about correction of body weight, Reduction of waist hip ratio and To bring down the stress levels and to improve quality of life.

#### **Methods:**

In the present study twenty five obese female subjects (assessed measuring Body Mass Index more than 23 is obesity) who have also reported about subjective stress, aged 20 to 50 years, attending the yoga department, willing to participate in the program were recruited. Those suffering from medical and psychiatric disorders were excluded. Those who were practicing any form of yoga technique or any form of physical exercise were also excluded. The random blood sugars and cholesterol values which were estimated at medicine department were recorded, which were found to be at normal levels.

#### **Parameters**

1. To evaluate obesity the following were assessed.

(a) Body weight (b) Body Mass Index – BMI – more than 23 is obesity. (c) Waist line (d) Waist hip ratio – more than 0.95 in males, 0.85 in females is obesity.

2. To evaluate the stress levels the following physiological parameters were assessed. (a). Systolic blood pressure (b). Diastolic blood pressure (c). Pulse Rate

3. Other details such as the following were recorded.

Family history of Obesity, Diabetes, Hypertension, Dietary habits, Exercise details and Occupation and life style details.

Their baseline readings of all parameters were taken. All subjects underwent yoga sessions. At the end of three months yoga practice all parameters were again measured and recorded.

All subjects underwent sessions of kriya, asana, pranayama, dhyana, relaxation training for 45 minutes. The subjects were instructed to practice twice a day followed by Shavasana practice for five minutes for 3 months. The strict balanced dietary intake is also advised. Participants were taught yoga practices and were supervised by the trained and experienced yoga therapist.

The yoga training included the following practices:

Trikonasana  
Parshvottanasana  
Janushirshasana,  
Pschimatanasana  
Marichasana,  
Kapalabhati,  
Nadishodhana pranayama,  
Bhastrika pranayama,  
Dhyana  
Shavasana

These yoga practices give such a profound stretch to whole of the body, relaxes the body and mind.

**Results:**

Table 1 Distribution of Socio demographic characteristics of the sample

Variable	Number(25)
Age(Years)	
20 - 30	7
31 – 40	6
41 – 50	12
Exercise - Mild	
Walking	3
Other	9
No exercise	13
Diet	
Vegetarian	11
Mixed	14
Occupation	
Working	14
Student	5
Housewife	6

Majority were in the age group of 40-50 years; mixed diet and either working or housewife.

Table 2 Distribution of Genetic factors – Heredity

Family history of Disorders	Subject number (25)
Diabetes Mellitus	13
Hypertension	10
Obesity	20
Mental Stress	11
Cardiac disorders	4

All the subjects had strong family history of diabetes mellitus, obesity, mental stress and hypertension.

Table 3 shows the distribution of obesity measures before and after the practice of Yoga

Parameter	Sample size	Before yoga therapy	After yoga therapy	95% confidence interval		t	Significance
		Mean ±SD	Mean ±SD	Lower	Upper		
BMI	25	30.79±4.12	28.03±3.95	1.96	3.54	7.19	0.001*
W-H Ratio	25	1.04±0.08	0.97±0.06	0.05	0.10	5.74	0.001*

BMI –Body Mass Index; W-H Ratio-Waist Hip Ratio

\* < 0.05

Table 4 shows the distribution of Physiological measures before and after the practice of Yoga

Parameter	Sample size	Before yoga therapy	After yoga therapy	95% confidence interval		t	Significance
				Lower	Upper		
		Mean ±SD	Mean ±SD				
SBP	25	136.3±12.18	125.2±11.69	7.98	14.25	7.30	0.01*
DBP	25	86.2±6.39	77.44±6.73	5.83	11.68	6.17	0.038*
PR	25	89.76±10.95	77.72±7.40	8.59	15.48	7.20	0.001*

SBP-Systolic blood pressure; DBP-Diastolic blood pressure; PR-Pulse rate

\* < 0.05

Statistical analysis:

All data were analyzed using descriptive statistics. Baseline and final means were compared using Paired t test and underwent p-value analysis. P values < 0.05 were considered statistically significant

Table 3 depicts the physiological parameters of the sample, the baseline and post assessment i.e. prior to starting the practice of yoga and 3 months after the training in yoga. As is evident from the table there was significant reduction in Body mass index 30.79±4.12 to 28.03±3.95 (0.001), Waist Hip ratio 1.04±0.08 to 0.97±0.06 (0.001), Practice of yoga showed reduction in over weight there by controlling obesity.

Table 4 also depicts the physiological parameters of the sample, the baseline and post assessment. There was significant reduction in Systolic blood pressure 136.3±12.18 to 125.2±11.69 (0.01), Diastolic blood pressure 86.2±6.39 to 77.44±6.73 (0.038), and Pulse rate 89.76±10.95 to 77.72±7.40 (0.001). Drop in blood pressure and pulse rate shows

decreased physiological symptoms of stress. Practice of yoga showed reduction in physiological parameters there by indicating decreased sympathetic activity due to control in stress levels.

Also complaints such as anxiety, depression, head ache, sleeplessness, stomach upset were reduced. Also improvement in digestion and sleep were reported. Therefore practice of yoga showed improvement in quality of life of obese female subjects.

### Discussion

The purpose of this study was to determine the role of yoga therapy on obesity in women in terms of reduction in body weight and waistline among volunteers who reported on voluntarily with overweight. Yoga training for 3 months resulted in a significant reductions in all body weight measures such as decrease in Body Mass Index, Waist hip ratio, Waist line, Hip line and in physiological measures such as Systolic Blood Pressure, Diastolic Blood Pressure, Pulse Rate all of which was statistically significant.

Decreased blood pressure can be attributed to yogic relaxation, meditation and pranayama which reduce the sympathetic action. During meditation the respiration becomes slow and shallow (11). Sympathetic over activity can be decreased by yogic relaxation (12). The decrease in pulse rate can be attributed to the direct effect of sympathetic activity. The effects of yoga on general improvement which have been documented including parasympathetic nervous system activation which lowers the pulse rate and the blood pressure thereby reducing the body's demand for oxygen. Other effects of yoga practices which have been documented include improving digestion, elimination and immune function, and reducing anxiety and depression.

In the present study, yoga practices helped in energizing the body, which has been in an inactive mode due to obesity in women. Importantly, yoga helped in cleansing the body off toxins and reduced fatigue. Asanas helped to burn up excess fat, by improving metabolism, toning up muscles. Practice of pranayamas by calming the mind, promoting mental alertness helped to enjoy a healthy life style. When pranayamas are practiced, craving for food stopped and they began to enjoy a normal appetite. Additionally, they developed a positive mental attitude, with ability to face life with renewed hope and confidence. Meditation and relaxation techniques helped in achieving inner balance and tranquility in women by reducing stress levels.

## References

1. Ananda Balayogi, Yoga and Modern Medicine, possible meeting points. ICYER.Pondichery. (2001)
2. Udupa KN Stress disorders their management by yoga-Yoga for health. Mangalore University; (1986) 7-13.
3. Nagendra, H.R. Nagaratna, R. New perspectives in stress management 2nd ed. Vivekananda Kendra Prakashana, Bangalore (2003)
4. Sunder M, & Bhanupriya T. Therapeutic effects of yoga on cases of obesity in women. Indian J of yoga. exercise & sport science and phy. edu, (2008) vol; 2 Nov. 9-13.

## Conclusion

Of the treatment modalities for overweight females yoga therapy may be a preferable alternative therapy easily incorporated in their day to day life. However this was a study involving a small sample size and a three month follow up only. A larger sample size with a long term follow up is suggested to prove the efficacy of yoga therapy in persons who are at risk for various physical illnesses and in obesity. Yoga therapy may be introduced easily and effectively in the school and college curriculum as childhood and juvenile obesity and has become prevalent even in the developing countries with unhealthy food habits and a sedentary life style.

Yoga Therapy has never been very easy to define, largely owing to the depth and breadth of the subject. And yet, simply stated, yoga therapy could be called a system of health care that helps treat human indispositions as naturally as possible, to alleviate pain and suffering through set of practices, both physical and mental. Ideally, yoga therapy is preventive in nature, as is yoga itself, while being curative in many instances, soothing in others, and restorative in most.

Thus from the significant changes observed using different parameters in this study found that yoga therapy has several beneficial effects, in the form of improvement in quality of life by reducing stress levels and reduction in body weight in women.

5. AHA Yoga & pranayama help overweight teens lose weight. 46<sup>th</sup> annual conference, poenix, CDC. March(2006) 2-5.
6. Sahay BK. Yoga and diabetes. *Novo Nordisk Diabetes Update*(1994).;159-67
7. Manchanda SC, Narang R, Reddy KS, Sachdeva U, Prabhakaran D, Dharmananda S, Rajani M, Bijalani RL. Coronary atherosclerotic reversal potential of Yoga life style intervention. *JAPI*; (2000) 48(7):687-9
8. Gharote, M.L., "Evaluation of effects of yogic treatment on obesity", A paper read at the West Zone Scientific Seminar on Indigenous Systems of Medicine, held on 11th and 12th August, 1973, at the Haffkins Institute, Mumbai.
9. Iyengar BKS *Light on Yoga*. George Allen, Unwin Publishers Ltd, Australia. (1988)
10. Shah, J.T. *Therapeutic yoga*. 1st Edition Vakils Feffer and Simons Pvt. Ltd. Mumbai (1999)
11. Allison, J "Respiratory Changes During Transcendental Meditation", *The Lancet*, (1970) 833- 834.
12. Vempati RP& Telles S Yoga based guided Relaxation reduces Sympathetic Activity judged from Baseline levels. *Psychological reports*, (2002) 90: 487-494.