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Effect of selected yogic exercise, diet on the weight and BMI of West Delhi obese females

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Abstract
The science of yoga is an ancient one. It is a rich heritage of our culture. Several older books make a mention of the usefulness of yoga in the treatment of certain diseases and preservation of health in normal individuals. The effect of yogic exercise and diet on the BMI of females has not been investigated well. These studies were both short term and long term. These studies have confirmed the useful role of yoga in the control of BMI.

Keywords: Yogic Exercise, Diet, Female, Body Mass Index, weight

1. Introduction
Obesity is the most hazardous factor found in modern sedentary society and is a complex disorder of the modern world. It is emerged as the most prevalent sedentary lifestyle disorder in urban society. Excessive body weight is associated with various diseases particularly cardiovascular diseases, Type-2 Diabetes Mellitus, Obstructive sleep apsnea, certain types of cancer osteoarthritis etc.

Yoga has been shown to be a simple and economical therapeutic modality that may be considered as a beneficial adjuvant for many of the health problems. Yoga therapy is the two fold therapeutic system that prevents and cures various diseases through practice of yoga system. This system concentrates on purification of body and mind, through this integrated holistic approach one can overcome almost all kinds of afflictions in life. It is a kind of low-impact physical exercise. Yogasanas have been practiced in India from Vedic period and was coordinated and organized in a systematic way, as known today, by Sage Pathanjali. He defined yoga as a systematic practice for purifying one's mind, intellect and body. In the present scenario, human beings are under threat from many chronic diseases, life style disorders and non-communicable diseases etc. A major cause of all these diseases was found to be improper lifestyle and stress.

Excessive stress is known to cause hormonal imbalances and chemical imbalances in human body. It disturbs the metabolic activities and causes improper coordination of the metabolic and bio-chemical functions. One of the major fallouts of stress in the human body is excessive lipid peroxidation, indicating increased production of reactive oxygen species (ROS). Also during an immune response in the body, there is an increase in the production of ROS which will cause an imbalance in the body between ROS production and antioxidant defences against the pathogen. Abnormally high levels of peroxidation and the simultaneous decline of antioxidant defense mechanisms can lead to damage of (4) cellular organelles and oxidative stress.

Hence the natural balance between pro-oxidants and antioxidants will be shifted towards the oxidant side to cause further biological damage. As the oxidative stress increase, cell damage and accumulation of the toxic compounds in the body increases, leading to many pathological conditions. According to tridosha theory in Ayurveda and Naturopathy literature, namely, Vatha, Pitta and Kapha are the structural and functional factors of the body, which govern the biochemical and physiological activities of the body. These three elements must be in a dynamic equilibrium with each other for the maintenance of health. Any imbalance of their relative equilibrium in the body results in disease. In human body Vatha dosha is responsible for all the physiological activities. Since yoga keeps the balance between ROS production and antioxidant defenses to prevent/ reduce oxidative stress, the present study was undertaken to

find out the effect of selected yogic exercise and diet on the BMI of west Delhi females.

Yogic practice

There are too many modalities such as asana, diet, music therapy, exercise therapy, massage therapy etc. are used to maintain the body's function efficiently. Among these yoga and diet took the importance role and contributed a lot for maintaining good health, physical fitness and longevity of the human being. It is needed to mention that yogic system of treatment for hypertension is going popular in the society day to day.

The treatment is comprised of three steps (a) observation to certain principle and advice (b) eating proper diet (c) practicing proper diet.

Yoga is a multifaceted phenomenon. Yogic exercise and diet control is very beneficial on the control of obesity and also use to provide physical and mental relaxations to the body and mind. Yoga is the oldest known science of self-development. It is mental, physical and spiritual control development thousands of years ago in India. (Yoga literally means joining. This joining is achieved through the practice and mastering of specific physical posture called 'asanas')

The life cycle of women is dependent on fitness. It is observed that due to various causes, the life cycle of woman is disturbed. Obesity is one of the major problems, which disturb the life cycle of man. So, to maintain normal BMI and fitness of women yoga practice and diet programme consisting following asanas and diet chart are selected.

S.No	Yogasanas	S.No	Yogasanas
1.	Tadasana	2.	Katichakrasana
3.	pavanamuktasana	4.	Sarvangasana
5.	matasyasanas	6.	Sarvangasanas
7.	Halasana	8.	Bhujangasana
9.	Dharnuranasa	10.	Supta-vajrasana
11.	Paschimotanasans	12.	Ardha-matsyendrasna
13.	Ushtrasana	14.	Shavasana

Diet chart

➢ **Week 1**

7:00 am	(as soon as you wake up) – 2 glasses of methi seeds water (soak 1tsp of methi seeds in 2 glasses of water. Strain out the methi seeds and drink the water. Helps a lot in water retention and bloating) 5 soakedalmonds with the skin. 1 kali mirch u don't have to chew it just swallow it down.
9:00 am	1 toast (brown bread) with amul lite butt / hung curd dressing/ salad and chutney
11:30 am	one fruit of your wish
1:30 pm	A small plate of salad before starting the meal. The fibers in the salad fills u up which in turn prevents false hunger that makes u overeat.1 bran chappati (mix wheat flour and wheat bran in equal proportions.) with 1 bowl (normal sized katori) of dal. Generally at my place dal is cooked at night so I used to store the dal made at night for the other days lunch, u can do the same.
5:30 pm	1cup of milk or tea with 2 biscuits(just marie, no other biscuits)/ 1 small bowl bhuna channa/ 1bowl popcorn (not the buttery act 2 ones but air popped popcorns without the butter)
7:30 pm	A small plate of salad before starting her meal. 1 bran chappati with 1 k vegetable (any vegetable not rajmah, channa or kadhi)
8:30 pm	one fruit of your wish

➢ **Week 2**

7:00 am	(as soon as you wake up) – 2 glasses of tulsi leave water (soak 5 tulsi leaves in 2 glasses of water. Strain out the leaves and drink the water.) 5 soaked almonds with the skin. 1 kali mirch.
9:00 am	1 tost (brown bread) with amul lite butter / hung curd dressing/ salad and chutney
11:30 am	one fruit of your wish
1:30 pm	A small plate of salad before starting the meal. 1 sandwich (2 brown breads with paneer filling, if you are a vegetarian and egg whites, if you are a non vegetarian.)
5:30 pm	1cup of milk or tea with 2 biscuits
7:30 pm	A small plate of salad before starting the meal. 1 bran chappati with 1 k vegetable (this week you can take rajmah, channa or kadhi)
8:30 pm	one fruit of your wish

➢ **Week 3**

7:00 am	2 glasses of methi seeds water. 5 soaked almonds with the skin. 1 kali mirch.
9:00 am	1 glass of milk and a fruit
11:30 am	one fruit of your wish
1:30 pm	bran chappati and any vegetable
5:30 pm	1cup of milk or tea with 2 biscuits/ 1 small bowl bhuna channa/ 1bowl popcorn (not the buttery act 2 ones but air popped popcorns without the butter)
7:30 pm	**Any one of the following for vegetarians:**
	1. 1 bowl dal .+ 1 bowl curd + salad 2. 1 bowl veg + 1 bowl curd + salad
8:30 pm	one fruit of your wish

➢ **Week 4**

8:00 am	2 glasses of methi seeds water. 5 soaked almonds with the skin. 1 kali mirch.
9:00 am	1 glass of cold coffee and a bb toast
11:30 am	one fruit of your wish
1:30 pm	This week you have a lot of options which you can take alternatively.
	1. 1 bowl sprouts + fruits
	2. 2 bowl vegetables + salads
	3. 1 bowl dalia + 1 bb toast
4.	5. 1 bowl vegetables + 1 bb toast
6.	7. 1 bowl kadhi + 1 quarter plate rice
5:30 pm	1cup of milk or tea with 2 biscuits/ 1 small bowl bhuna hanna/ 1bowl popcorn (not the buttery act 2 ones but air popped popcorns without the butter)
7:30 pm	1 bran chappati and 1 bowl vegetable.
8:30 pm	one fruit of your wish

Yoga practice schedule

Week	Exercise description	Duration
1st four	• Light cardio exercise & sukshmavyayama • Yoga practice & cool down	40-45 minute
2nd four	• Light cardio exercise & sukshmavyayama • Yoga practice & cool down	45-50 minute
3rd four	• Light cardio exercise & sukshmavyayama • Yoga practice & cool down	50-55 minute
4th four	• Light cardio exercise & sukshmavyayama • Yoga practice & cool down	1hours

Yogic practices were carried out five days a week for sixteen weeks under careful supervision of the research scholar. Results of the subject on BMI were obtained before and after

completion of the experimental period of the sixteen weeks. The differences in initial and final mean score were tested for significance of difference applying t test. The level of confidence set up for significance was 0.05.

Methodology

16 west Delhi Female participants are selected to measure the effects of yogic exercise to remove obesity and improvement in Body Mass Index. Total 4 week yogic exercises training and diet plan provided to control group participants.

Descriptive Statistical Analysis and Independent T-test are used to conclude the result.

Result of the Study

The significance of the data of obesity on 16 subjects has been presented. The data collected was examined by t-test with regards to pre-test mean and post-test mean of the experimental group to see the significance difference. The level of the significance was set at 0.05 level of confidence.

Result

The mean, std. deviation of weight and BMI of the experiment group is presented in table – 1

Table 1: Descriptive Statistical Analysis of Experimental Group in the Criterion Measures

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	**WEIGHT**	69.69	32	8.03	1.42
	Pre-test	1.50	32	.51	.09
Pair 2	**BMI**	26.42	32	2.98	.53
	Post-test	1.50	32	.51	.09

Table 1 described the Mean & SD values of experimental group. The Mean±SD value of Weight and BMI variable shows the pre-test mean score is higher (69.68±8.02 & 26.41±2.97 respectively) in comparison to post test of selected subjects

Table 2: Paired Sample T- Test between Weight and BMI

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Weight – pre-post test	68.19	8.28	1.46	65.20	71.17	46.61	31	.000
Pair 2	BMI - pre-post test	24.92	3.26	.58	23.75	26.09	43.30	31	.000

Table 2 the paired t-test scores of the experimental groups. Where, significant comparison result obtained at 0.1% level on both groups (Weight & BMI). The researcher also obtained the significant influence of Yogic Exercises on the weight and Body mass index of the 32 female participants.

Table 3: Correlation between Weight and BMI with pre-post test

Variables		N	Correlation	Sig.
Pair 1	Weight & pre-post test	32	-.467	.007
Pair 2	BMI & pre-post test	32	-.482	.005

Table 3 described the correlation between both pairs. The negative significant correlation obtained at 0.01 level where $p < .007$, $r = -.467$ (between weight with pre-post test), and $p < .005$, $r = -.482$ (between BMI with pre-post test).

Discussion & finding

The researcher concluded through experimental research analysis yogic exercises treatment of sixteenth weeks improves the BMI of individual in spite of decreasing significant level of BMI.

The finding of the present study revealed the following things:

- Improvement in physical fitness and conditions are required for an individual.
- Yogic exercises are helpful to decreasing body girth measurements.
- It also helpful to decreasing body weight.
- The overall analysis revealed the positive significant result on the selected group of subjects uses for analysing the experiment of yogic exercises on the participants to decreasing BMI and make happier their life.

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