



IMPACT OF COMPREHENSIVE YOGA BASED LIFESTYLE MODIFICATION PROGRAM ON OBESITY AND LINKED DISORDERS

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ABSTRACT

Obesity is a medical condition in which excess of body fat accumulates producing adverse effect on health, decreases life expectancy and increases health problem as a results of combination of lack of physical activity, high calories intake, endocrinal susceptibility, medication psychiatric illness etc leading to increase mortality by predisposing diseases like Heart Diseases, Type 2 diabetes, Breathing disorder during sleep, Cancer and Osteoarthritis. To prospectively assess the effect of comprehensive yoga based lifestyle modification program on obesity and to evaluate the influence of yoga in relieving symptoms of anxiety and depression. 62 female age group 25 to 45 age group who registered for obesity Yoga camp at Ujjain Yoga bhavan were enrolled in the study. All were evaluated by obesity clinical parameters (Skin fold thickness, Body mass index and Waist/ hip ratio) at the beginning of the study. Then under supervision of yoga experts they were made to follow prescribed Yoga routine and diet program of 4 weeks for 3 months. The obesity parameters were evaluated again at the end of study. In the present study the difference of score before and after interventions of yoga based life style modification showed significant decrease in the parameters of obesity in the study group, skin fold thickness ($P < 0.05$), Body mass index ($P < 0.05$) and Waist/hip ratio ($P < 0.05$). The results of the present study showed that Yoga based life style modification (selected asanas and diet program) helps in decreasing body weight as Yogic life style include physical exercise, balanced diet and mental peace that helps in gaining positive attitude and calm disposition all are ingredients of good health.

KEYWORDS: Yoga, Obesity, BMI (Body mass index) WHR (Waist Hip ratio).



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INTRODUCTION

Obesity is a medical condition in which excess body fat has accumulated to the extent that it has an adverse effect on health leading to increased health problems and decreased life expectancy¹. Besides hereditary factors, a combination of a number of factors involves the occurrence of obesity, lack of physical activity, increase in dietary calories, and improper function of endocrine glands, digestive disorders act as predisposing factors for obesity. Patients suffering from obesity, have an increased risk of heart disease, Type -2 diabetes, breathing disorders and have increased risk for anxiety and depression as it mainly influences mental health. As previous studies pointed out BMI, WHR as indicator of risk factor for coronary heart diseases². Body Mass Index (BMI), Waist circumference (WC) waist /hip ratio W/H ratio

and skin fold thickness are clinical tools enabling the evaluation of obesity. The effects of adolescent overweight and obesity on depression have been examined in some studies and their results showed that there was a significant relationship between obesity and depression^{3,4,5}. The conventional medical approach is diet restriction, psychotherapy, anti-anxiety and anti-obesity drugs bariatric and duodenal switch as procedures. Therefore this study aimed to prospectively assess the link between the two i.e. Stress anxiety depression and obesity. So it seems instead of focusing only on a weight loss program it is important to control the co-morbid factors by effect of comprehensive Yoga Based lifestyle modification program on Obesity and to evaluate the influence of it in relieving symptoms of anxiety and depression.

Selection of Group

Inclusion criteria's

1. BMI > 30 – 34.9 & BMI > 35 -39.9 (Class -1 & II Obesity)
2. History of improper diet
3. Lack of physical activity
4. No alcohol
5. No drugs
6. No active Psychoses
7. Confirmation of anxiety and depression

Exclusive criteria

1. Hereditary obesity
2. Accompanied with medical problems
3. On drug therapy (steroids)
4. Severe psychiatric illness
5. Endocrinal disorder
6. BMI > 40 Kg/m² (morbid obesity)

METHODS

- 60 females enrolled for the study
- Assessed clinically as overweight & class -1 obesity by calculating BMI & Waist Hip Ratio
- Data was obtained using a standardized form. Subjects age, gender, marital status, and educational status were noted

Measurement of Body weight

- Without footwear to the nearest of 0.1 Kg

Measurement Of height

- In Standing position without footwear to the nearest of 0.01m

Measurement of WHR

□ Waist measured at the narrowest part between the ribcage & hips divided by measurement of Hip at the widest part.

The study was approved by the institutional Review Board of R.D. Gardi Medical College Ujjain and Ujjain Yoga life society (M.P). Total 62 subjects were enrolled and they were divided in two groups.

- a. 32 subjects were selected for study (group-I)
- b. 30 subjects were considered as control (Group-II).

The first 32 patients of age group 25 to 45 years who registered for obesity Yoga camp at Ujjain Yoga bhavan were invited to participate in the study. They were given diagnosis of obesity according to the classification⁶. Score were measured at the beginning of the study and after the end of study and the informed consent was obtained from all the patients before entering the study. The clinical parameters for obesity for the study were BMI, WC , W/H ratio and all cases were evaluated for severity of symptoms of anxiety and depression by using Hamilton Anxiety Rating scale (HAM-A) and The Patient Health

Questionnaire (PHQ-9)^{7,8}. Score were measured at the beginning of the study and after the end of study. Participants on their choice were assigned into study and control group

STUDY GROUP

Included 32 subjects under the supervision of Yoga experts they were made to follow prescribed Yoga routine (as per requirement of individual) 6 days a week from 7am-8am for 3 months which comprises of easy asanas ,pranayamas and meditation.

ASANAS

- Talasan, Hastapadasan, uttkatasan ,parvatasana ,yogamudra, shalbhasan&Ushtrasan
- Ujjayi Pranayama, Bhramari, Sheetal and Sheetkari Pranayamana
- Suryanamaskar, Yoga Nidra& Meditation
- Kumbhak was avoided in the anxious subjects.

CONTROL GROUP

Include 30 subjects instructed to carry on with any work such as reading, writing etc for 1 hour during the time the yoga group underwent the yoga practices for 3 months with no yogic interventions.

SYMPTOMS OF ANXIETY AND DEPRESSION

Assessment and severity of anxiety was done by using the Hamilton Anxiety Rating Scale. The scale consist of 14 items, each defined by a series of symptoms, and measures both psychic anxiety (mental agitation and psychological distress) and somatic anxiety (physical complaints related to anxiety). Each item is scored on a scale of 0(not present) to 4 (severe), with a total score range of 0 - 56, where < 17 indicates mild severity, 18 – 24 mild

to moderate severity and 25 – 30 moderate to severe(ref). The Patient Health Questionnaire is a multipurpose instrument for screening, diagnosis, monitoring and measuring the severity of depression. The tool rates the frequency of the symptoms which factors into the scoring severity index. PHQ -9 scores > 10 had a sensitivity of 88% and a specificity of 88 % for major depression. PHQ-9 scores of 5, 10, 15, and 20 represents mild, moderate, severe and very severe depression.

STATISTICAL ANALYSIS

The difference of scores between study and control group was measured before and at the end of the study. Data was analyzed using SPSS 16 version and two groups were compared with the help of paired 't' test. Probability (p) values of 0.05 or less were

considered significant. The difference of scores between study and control group as measured before and at the end of the study were calculated by Mann-Whitney U Test. Probability (p) values of 0.05 or less were

considered significant. The difference within the groups were calculated by the Wilcoxon signed rank test and (p) values of 0.05 or less were considered significant.

OBSERVATION

Table 1
Comparison of BMI

BMI	GROUP	BEFORE Mean+/- SD	AFTER Mean +/-SD	t-Value	P-value
	Group-I	27.74+/-1.08	25.83+/-1.08	6.43	0.00
	Group -II	26.83+/- 1.54	26.17+/- 2.50	1.31	0.194

P < 0.05 = Significant

Table 2
Comparison of WHR

WHR	GROUP	BEFORE Mean+/- SD	AFTER Mean +/-SD	t-Value	P-value
	Group-I	0.888+/-0.78	0.822 +/- 0.74	3.309	0.002
	Group -II	0.891+/-0.78	0.89+/- 0.073	0.24	0.81

P < 0.05 = Significant

Table 3
Comparison of Anxiety score

Anxiety score	GROUP	BEFORE Mean+/- SD	AFTER Mean +/-SD	t-Value	P-value
	Group-I	31.63+/- 0.87	23.82+/- 0.84	35.12	0.00
	Group -II	31.65+/- 1.09	32.19+/- 1.13	-1.85	0.06

P < 0.05 = Significant

Table 4
Comparison of PHQ-9 score

PHQ-score	GROUP	BEFORE Mean+/- SD	AFTER Mean +/-SD	t-Value	P-value
	Group-I	7.16+/- 1.26	5.40 +/- 0.56	6.88	0.00
	Group -II	5.93+/- 0.78	6.10+/- 0.71	-0.96	0.34

P < 0.05 = Significant

RESULTS & DISCUSSION

Present study shows significant improvement in BMI and WHR ($P < 0.05$) and significant changes in Anxiety and PHQ scores. As Stress Anxiety & Depression are predictor of overweight & obesity, Increase stress level, cause of increase in cortisol level that leads to inflammation of gut as a result toxins are formed which enter the blood stream and brain Causes neurological changes leading to depression & anxiety^{9,10}, which increases the

appetite resulting in obesity. As Yogic life style includes physical activity in form of asanas (postural exercise) pranayama (breathing exercise and kriyas (cleansing exercise) along with Balanced diet, that leads to develop positive attitude all of which are the ingredients of good health. All forward bending, twisting, backward bending asana helps in reducing fat near abdomen hips & other areas. That helps to bring body in shape by controlling weight and

thus prevents obesity. Unbalanced ida (left) is thought to make personality introvert, depressed and paranoid in the same manner unhealthy Pingala (right) is related to sedentary life style, also Imbalance or blockage in Chakras or Nadis cause anxiety & depression¹¹. Meditation in yoga plays important role in anxiety and depression⁹, Shavasana useful in taming stress response , Parvatasana helps to balance nervous system & beneficial for co-morbid factors of obesity, Inversion asanas stimulate pituitary gland and increase blood circulation, Pranayama balance Nadis & Chakras, Bhramri pranayama relieves stress and tension, Nadishodhana is found to be beneficial for purifying the pranic system, Bhastrika revitalizes the sympathetic nervous system and Kapalbhathi tones the parasympathetic nervous system¹².

CONCLUSION

Life style modification brings drastic change in mental and physical health at the same time helps in controlling the weight of the individual that results in balanced appetite and thus helps in controlling the weight and thus obesity and also obesity linked disorders. Regular practice of pranayam and meditation with specific asanas that improves immunity relieve stress decrease anxiety and depression thus lifestyle modification has greater impact on health. These findings highlight the importance of obesity as influencing factors in the link between depression and obesity. The findings suggest important directions for future research and interventions in reducing the massive disease burden of both depression, anxiety and obesity.

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