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Management of obesity through naturopathy and yoga interventios

S.N.Murthy: N.D., B.A., F.I.I.M., Dip. Ac*

N.S.N.Rao: M.Sc., Ph.D., F.A.M.S., F.I.P.H.A.**

Babina Nandakumar***

Avinash Kadam: BAMS, M.Sc(Pharmaceutical Medicine)***

ABSTRACT

Research study was conducted in 56 overweight or obese subjects to assess the effect of naturopathy and yoga in obesity. Nature-cure treatments and Yoga therapy was administered for 21 days. All the parameters of assessment of obesity except fat percentage and HDL reduced significantly after treatment. Mean reduction in weight was from 74.2(±11.32) kg to 69.2(±9.94) kg (6.75%), body mass index reduced from 30.52(±4.4 8) to 28.31(±4.2) (7.2%), total cholesterol reduced from 198.72(±45)mgs/dl to 175.39(±33.7)mgs/dl (11.7 %), where as triglycerides reduced from 181.4(±62) mgs/dl to 133.79(±34.7)mgs/dl (26.3%) and reduction was from 119.31(±41.7)mgs/dl to 105.5 (±34.4)mgs/dl (11.6%) for LDL.

Key words: Nature cures therapy, Diet therapy, Yoga therapy, obesity, Complimentary and Alternative Medicine (CAM).

INTRODUCTION

There is an alarming increase in the incidence and prevalence of obesity and its adverse health affects Worldwide. WHO has recognized this problem as 'Global Epidemic' [1] According to WHO estimate about one billion people around the world are overweight and over 300 million of them are obese (> 30 BMI). Although no definite statistics are available from India, data from different sources indicate a definite increasing trend in the problem[2]. There is a consensus opinion that genetic and environmental factors play an important role in causation of obesity[3]. Overweight and obesity are related to morbidity, mortality, poor quality of life, and many other problems [4.] . The important cause of increasing weight of most population is an appropriate biological response to an abnormal environment, characterized by easy availability of cheap, energy dense food, coupled with a decline in physical activity. The possible solution seems to reverse these trends, and help those already obese to adopt a lifestyle that encourages weight loss, including a healthy diet and greater physical activity[3]. Independent studies have shown effect of complementary and alternative therapies like naturopathy and yoga on reduction of weight[5] and improvement in quality of life[6]. Dietary interventions advocated in Naturopathy aims towards balancing the energy intake and expenditure. Present study aims to assess the effect of Naturopathy interventions coupled with dietary modifications and Yoga exercises in the improvement of various parameters related to obesity and to demonstrate the role of Naturopathy in the management of obesity.

Author's Affiliation: *Chief Medical Officer **Research Consultant, ***Joint Chief Medical Officer, ****Senior Research Associate , INYS-Medical Research Society , Jindal Nagar, Bangalore 560073.India

Reprint's request: S.N.Murthy, Chief Medical Officer, INYS-Medical Research Society, Jindal Nagar, Tumkur Road, Bangalore 560073., India., Tel. : 91-80-23717777, E mail-inysmrs@jindalnaturecure.org.

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MATERIALS AND METHODS

Patient's population

The study was carried out by INYS Medical Research Society, Bangalore. Approval from

institutional ethics committee was taken before initiating the study. A total of 107 subjects with overweight and obesity were enrolled in the study. Cases with BMI more than 25 were included into the study. Some Patients admitted for study had other cardiovascular risk factors like diabetes or hypertension. Patients were assessed under admission and discharge

Therapeutic interventions

Comprehensive healthy life style changes were introduced by following Naturopathy interventions, Diet therapy and Yoga therapy.

Naturopathy interventions

It consisted of steam therapy, sauna bath, I.R. Sauna, graduated immersion bath, hot stone therapy, various types of massages, Mecano therapy and Mud & Cold packs on stomach.

Dietary therapy

In cooked diet more emphasis was laid on baked, steamed items and less oil was used. Keeping in view of the patients' individual needs the caloric value of food varied from 1000 calories to 1800 calories per day.

Total calories were restricted to reduce the weight to the expected normal range according to the height, age and sex. The total ingestion of fats was restricted to less than 28 per cent of the total calories. Fats were consumed partly as unsaturated vegetable oils such as cotton-seed, groundnut and olive oil. Saturated fats, hydrogenated vegetable oil (vanaspati), margarine and animal fats, like butter, ghee and the fat of animal meat, were avoided. Green vegetables, fruits, cereals, skimmed milk were the main items of diet. Three or four smaller meals were given instead of two big meals. The evening meal was provided about 2 hours before retiring to bed.

YOGA INTERVENTIONS

Yogic Kriyas

Vamandhauti was advised twice a week, where as Laghu shanka prakshalana was advised once a week.

Yogasana

Subjects participated in yogasana session daily for a period of 30 minutes.Asana consisted of Suryanamaskar, Sarvangasana, Matsyasana, Pavanmukthasana, Tadagimudra, Utthitapadasana, Bhujangasana, Shalabhasana Dhanurasana, Ardha matsyendra, Janusirasana, Mandukasan, Katichakrasana, Udar abhyas and Shavasana.

Pranayama

Subjects performed Sukh Pranayama, Kapalbhati, Bhastrika, Suryabhedana & Anuloma- Viloma for 20 minutes daily.

Yoganidra

Subjects used to perform Yoga nidra in the evening and before going to sleep for 30 minutes.

All these interventions were administered for a period of three weeks.

ASSESSMENT

Body composition

Improvement in the obesity status was assessed by improvement in parameters of body composition at the end of three weeks .These parameters were -Weight, Body Mass Index, Fat Mass, fat free mass, fat percentage, Waist and hip circumference and Impedance. Body composition analysis was done by using *Tanita Body Composition Analyzers*

Body mass index

Body mass index was calculated as body weight in light clothing and without shoes divided by height in mt (sq).

Anthropometric measurement

For measuring waist circumference subjects were asked to wear light clothing and to stand upright with feet 25 to 30 cm apart, and weight evenly distributed. A measuring tape was used for measuring, which was fitted around the abdominal girth without compressing soft tissue. Waist circumference was measured in a horizontal plane mid- way between the inferior costal margin and the

iliac crest. Hip circumference was measured around the pelvis at the point of maximal protrusion of the buttocks

Lipid profile

Blood samples were collected after an overnight fast and values of different parameters in lipid profile were estimated by spectrophotometer. Lipid profiles consisting of total cholesterol, LDL, HDL and triglycerides was also done.

Patients were classified as over weight (BMI between 25 to 29) and obese (BMI: 30 or more) [7]. Systolic and diastolic blood pressure was measured on admission as well as on discharge. Subjects whose systolic blood pressure was below 140 and diastolic blood pressure below 85 were considered to be having blood pressure in normal ranges. Rests of the subjects were termed to be having high blood pressure. All the parameters were measured during admission and discharge (days- 21).

Statistical analysis

Statistical significance of mean changes from admission to discharge; in the above parameters have been assessed by using paired t- tests. Repeated measures analysis of variance was also carried out in which interaction of other confounding factors like sex, overweight and obesity status, Statistical analysis was done using SPSS Version *18.*

RESULTS

Demographic profile

There were 107 cases of which 52 were overweight (BMI between 25 to 29) and the rest 55 were obese (BMI: 30 or more). Mean age of subjects was 52.4 years. Among the entire study population 29 were males and 78 were females. Besides being overweight / obese 47 subjects were having high blood pressure, 52 were having high cholesterol levels and 52 were diabetic.

Outcome measures

After 21 days of naturopathy and yoga treatment Parameters of assessment of obesity like Body Mass Index, fat mass ,fat free mass reduced significantly ($P<0.05$ comparing values at start of treatment and discharge using paired t test).No significant reduction was seen in fat percentage . Reduction of 6.75% in mean weight was seen in subjects Body mass index decreased by a mean of 2.21. Of the overweight cases 46 %(24 of 52 cases) came down to normal BMI and of the obese cases 52.7% (29 of 55) came down to overweight group although none became normal in this group. Significant reduction was also seen in total body water and impedance. Reduction was also seen in basal metabolic rate but it was not statistically significant (P=0.1). Significant reduction was also seen in cholesterol and triglycerides. There was no significant change in values of HDL (P=0.25). (Table1). Significant change was also seen in anthropometric parameters of waist and hip circumference., Improvements were not statistically different between overweight and obese groups for different parameters other than HDL. (Table 2)

Significant reduction was seen in both systolic and diastolic blood pressure. From the total 47 subjects who were having high blood pressure at the time of admission, 33 subjects showed blood pressure in normal ranges at the time of discharge.

DISCUSSION

In present single group study most of the parameters of obesity assessment came down considerably after interventions Studies have shown correlation between lipid profile levels and BMI [9,10], especially cholesterol, triglyceride and LDL. It is reported that energy stored as triglyceride can maintain supplies to vital organs on long term basis. Studies have established that control of triglyceride may have considerable influence on regulation of obesity [8]. A study conducted by Jenkins et al [11] reaffirmed the recommendations of the medical community related to the power of nutrition to lower cholesterol, independent of cholesterol-lowering medications. Studies conducted at Duke University Medical Center

Table1: Comparison of mean changes in parameters of assessment At admission and after treatment

parameter	Admission	Discharge	difference	P value
Weight	74.2±11.32	69.2±9.94	5.0	0.00
Fat mass	29.28±9.29	27.61±9	1.6	0.00
Fat free mass	44.92±9.7	41.66±9.03	3.2	0.00
Fat %	38.94±10	38.69±10	0.24	0.66
Total body water	33.11±7.11	30.67±6.4	2.44	0.00
waist	36.96±3.43	35.26±3.56	1.69	0.00
hip	41.76±4.1	40.37±4.18	1.39	0.00
BMI	30.52±4.48	28.31±4.2	2.21	0.00
Impedance	501.42±82.4	566.46±85.2	-65.04	0.00
BMR	5825.68±981	5702±712	122.97	0.15
Cholesterol	198.72±45	175.39±33.7	23.3	0.00
triglycerides	181.41±62	133.79±34.7	47.62	0.00
HDL	43.62±4.99	44.09±4.6	-0.47	0.25
LDL	119.31±41.7	105.5±34.4	47.62	0.00
B.P (Systolic)	143.45±15.8	122.9±10	20.54	0.00
BP(diastolic)	91.58±10.2	81.74±14.7	9.84	0.00

have demonstrated that exercise even without accompanying weight loss, has a positive impact on improving cholesterol levels. Also, they report that it is the amount of activity, and not necessarily any changes in fitness or intensity of exercise, that is important for

Table 2: Interaction of changes in parameters of assessment from admission to Discharge with reference to BMI, age and sex

Parameter	classification based on sex		between overweight and obese	
	F	P	F	P
Cholesterol	0.03	0.85	2.1	0.14
Triglycerides	3.42	0.06	0.00	0.95
LDL	0.21	0.64	0.37	0.54
HDL	0.03	0.85	1.6	0.2
BMI	3.3	0.06		
Fat mass	2.9	0.08	3.4	0.06
Fat free mass	5.5	0.02	2.8	0.09
Fat percentage	2.9	0.08	3.4	0.06
Basal Metabolic Rate	1.9	0.66	3.2	0.7

cholesterol reduction [12]. In present study the total cholesterol, triglyceride and LDL levels were brought down considerably with Naturopathy intervention along with reduction of weight and consequently BMI.

Earlier study by Weintruab et al [13] has shown that appetite suppressant medication combined with diet and behavior modification can lower body weight by as much as 10 kg and maintain this weight loss for as long as 4 years. But this drug therapy has its own side effects. our study demonstrated a weight loss of about 6.7%, and it is believed that a weight loss of as less as 5-7 % can prevent or delay the onset of complications of obesity[14].Visceral fat plays an important role in causing insulin resistance and increasing the risk of cardiovascular diseases [15, 16]. Present study had

shown that there was about 1.69 and 1.3 inch reduction in waist and hip circumference respectively, in study duration of 21days.

Obesity is associated with increased activity of the renin-angiotensin-aldosterone and sympathetic nervous systems, possibly other mineral corticoid activity, insulin resistance, and a cause for hypertension [17.] Naturopathy and yoga interventions used in this study showed a favorable response in reducing blood pressure.

Slight increase in HDL was seen in present study, which was not statistically significant. A previous studies evaluating effect of yoga on obesity has shown a reduction in HDL of about 3.9 mg/dl which was statistically significant [18]. Another similar study did not shown reduction in HDL[19]. Some studies on yoga have even demonstrated increase in HDL levels [20, 21].altough significant changes were seen in cholesterol, triglycerides and LDL in present study HDL did not show any significant change .This may be possible, because intake of fat was restricted in the study. The main limitation of the study was the single aim and object. Difficulty in conducting a randomized controlled trial occurs in case of trials on some therapeutic procedures like those of naturopathy and yoga which were used in present study. The main reason is that people opting for such therapies are desirous to undergo naturopathy and yoga therapies and it becomes practically difficult and unethical to allot them to some other therapies. A well controlled randomized controlled clinical study comparing the effect of this study interventions with that of other therapies like aerobic exercise of drug therapy would have given the data more reliability .

Present study put light on the effect of naturopathy and yoga conducted for a short span of 21 days in an inpatient setting. Studies can be undertaken to see the sustainability of effect in follow-up period.

CONCLUSIONS

Extensive Naturopathy and yoga interventions for a period of 21 days helped to reduce body weight, BMI and associated parameters of obesity especially cholesterol, triglycerides , LDL and high blood pressure. As such naturopathy which is a drugless system of medicine can be of use to tackle the problem of obesity besides providing relief in co-morbid cases like Dyslipidemia and Hypertension.

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