Integrated approach of yoga therapy towards morbid obesity: A case report
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KEY WORDS
Obesity grade 3
Yoga therapy
Naturopathy
Lifestyle

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The present case study is of evaluation of Grade 3 obesity who visited the Arogyadhama (SVYASA University, Bangalore). Conversations with the patient uncovered that the patient was being treated for obesity and patient portrayed his capacity to deal with the mental pressure related with overweight. He credited it to the inspirational demeanor created by his Yoga practice for 48 days. The patient was additionally ready to decrease body weight. The present narrative is an endeavor to give IAYT Practices, detoxification through Naturopathy.

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INTRODUCTION
Overweight and obesity are characterized as unreasonable fat accumulation that is hazardous to wellbeing. An unrefined proportion of obesity is the weight record of BMI, an individual’s weight (in kilograms) separated by the square of their stature (in meters). An individual with a BMI of at least 30 is commonly viewed as Obesity grade 3. An individual with a BMI equivalent to or more than 25 is regarded as overweight.

Overweight and obesity are significant risk factors for various disorders, including diabetes, cardiovascular ailments and malignant growth.

Yoga reasoning and practice was first codified by Patanjali to the great content, Yoga Sutras are broadly recognized as the legitimate content on Yoga. Yoga is a type of mind-body wellness that includes a blend of strong action and a coordinated attention to oneself, the breath, and vitality. Yoga is perceived as a type of mind-body practice that coordinates a person’s physical, mental and profound segments to improve parts of wellbeing, especially stress related ailments.

In 2016, more than 1.9 billion grown-ups matured to 18 years while the more seasoned were found to overweight. Of these more than 650 million grown-ups were large. In 2016, 39% of grown-ups matured 18 years and over (39% of male and 40% of female) were overweight. Overall, about 13% of the world’s grown-up population (11% of male and 15% of female) were fat in 2016. The overall predominance of heftiness almost significantly increased somewhere in the range of 1975 and 2016.

In 2016, an expected 41 million kids younger than 5 years were overweight or fat. Overweight and heftiness are presently on the increase in low-and middle income nations, especially in urban settings. In Africa, the degree of overweight youth, under 5, has expanded by almost 50 percent since 2000. More than 340 million kids and young people matured to 5–19 were overweight or in 2016.

The predominance of overweight and weight among youngsters and teenagers matured in the age group of 5–19 has risen drastically from only 4% in 1975 to simply over 18% in 2016. The increase has happened comparably among the two young men and young ladies: in 2016, 18% of young ladies and 19% of young men were overweight. While under 1% of children and adolescents aged 5–19 were obese in 1975, more than 124 million children and adolescents (6% of girls and 8% of boys) were reported obese in 2016.

Overweight and obesity are known to be the primary contributing factors for deaths worldwide than underweight. Globally, there are more people who are obese than underweight – this occurs worldwide except parts of sub-Saharan Africa and Asia.

The etiology of obesity is unquestionably more unpredictable than just an uneveness between vitality admission and vitality yield. In spite of the fact that this view permits simple conceptualization of the different instruments engaged with the advancement of obesity, factor is undeniably more than just the consequence of eating excessively as well as practicing pretty much nothing (sedentary lifestyle). Potential factors in the advancement of obesity are the following:
Developing information suggests that a striking incendiary, and potentially infective, etiology may exist for obesity. Fat tissue is known to be a vault of different cytokines, particularly interleukin 6 and tumor putrefaction factor alpha. One investigation indicated a relationship among obesity and a high-typical degree of plasma procalcitonin, a needy variable that mirrors a condition of pain or irritation. Data has demonstrated that adenovirus-36 is related with obesity in chickens and mice. In human examinations, the pervasiveness of adenovirus-36 disease is 20–30% in individuals who are obese, versus 5% in individuals who are not over weight (4).

**Case presentation**

**Recruitment of patient**

A 28 year old male participant from New Delhi, enrolled himself at Prashanthi Kutiram on the 15th of June 2018 and was put in section ‘H’, which deals with Obesity. He resided in campus from 15.06.2018 to 02.08.2018 (48 days). He underwent Yoga therapy with some detoxification treatments like sauna bath, steam bath, hip bath and underwater massage as well as for more relaxation and aids more benefits Mud pack to abdomen and eyes for a week in between.

**IAYT protocol: Treatment regimen**

**Loosening practice (5), (6)**

| S. No. | Loosening practice          | Duration of procedure | Frequency | Duration of intervention |
|--------|-----------------------------|-----------------------|-----------|-------------------------|
| 1      | Butterfly                   | 10                    | 2 times a day | 6 weeks                |
| 2      | Loosening of Fingers & wrist| 10                    | 2 times a day | 6 weeks                |
| 3      | Padasancalana               | 10                    | 2 times a day | 6 weeks                |
| 4      | Loosening of elbow          | 10                    | 2 times a day | 6 weeks                |
| 5      | Side bending                | 10                    | 2 times a day | 6 weeks                |
| 6      | Shoulder Rotation           | 10                    | 2 times a day | 6 weeks                |
| 7      | Twirling                    | 10                    | 2 times a day | 6 weeks                |
| 8      | Spinal Twisting             | 10                    | 2 times a day | 6 weeks                |
| 9      | Neck movement               | 10                    | 2 times a day | 6 weeks                |
| 10     | Rotation                    | 10                    | 2 times a day | 6 weeks                |
| 11     | Ardhakati Chakrasana        | 10                    | 2 times a day | 6 weeks                |
| 12     | Sideward bending            | 10                    | 2 times a day | 6 weeks                |
| 13     | Spinal twist                | 10                    | 2 times a day | 6 weeks                |
| 14     | Hip stretch with alternate leg | 10            | 2 times a day | 6 weeks                |
| 15     | Back stretch                | 10                    | 2 times a day | 6 weeks                |
| 16     | Full butterfly              | 10                    | 2 times a day | 6 weeks                |
| 17     | Alternate & both leg raising| 10                    | 2 times a day | 6 weeks                |
| 18     | Side leg raising            | 10                    | 2 times a day | 6 weeks                |
| 19     | Cycling                     | 10                    | 2 times a day | 6 weeks                |
| 20     | Pavanamuktasana-kriya       | 10                    | 2 times a day | 6 weeks                |
| 21     | Lumber stretch              | 10                    | 2 times a day | 6 weeks                |

**Suryanamaskara (7)**

| S. No. | Suryanamaskara | Duration of procedure | Frequency | Duration of intervention |
|--------|----------------|-----------------------|-----------|-------------------------|
| 1      | Hastauttanasana | 12                    | 24 times a day | 6 weeks                |
|        | Pādahastāsana  |                        |           |                         |
|        | Aswasancalanasana |                |           |                         |
|        | Tulasana        |                        |           |                         |
|        | Sasankasana     |                        |           |                         |
|        | Sastanganamaskar|                      |           |                         |
|        | Bhujangasana    |                        |           |                         |
|        | Parvatasana     |                        |           |                         |
|        | Sasankasana     |                        |           |                         |
|        | Aswasancalanasana |                |           |                         |
|        | Pādahastāsana  |                        |           |                         |
|        | Hastauttanasana |                        |           |                         |
**Pranayama (8) (9)**

| S.No | Pranayama                      | Duration of procedure | Frequency | Duration of intervention |
|------|--------------------------------|-----------------------|-----------|-------------------------|
| 1.   | Nadishuddhi Pranayama:         | 9 Rounds for each nostril | 2 times a day | 8 weeks                |
|      | Nādiśuddhi pranayama balances both the lobes equally which restores the balance between the sympathetic and parasympathetic nervous system. | | | |
| 2.   | Brahmari: Brahmari gives soothing effect to the entire brain. | 9 Rounds | 2 times a day | 8 weeks                |
| 3    | Naadaanusandhana: Breathing exercises, sectional breathing strengthens and soothes the entire nervous system restoring balance to a depleted and imbalanced autonomic nervous system | 5 Rounds | 2 times a day | 8 weeks                |

**Mind Sound Resonance Technique (MSRT) (10)**

Advanced Yoga technique MSRT which is developed by SVYA-SA to specifically strengthen the immune defence, to develop will power and there by promote health and happiness was done once a day.

**Deep Relaxation Technique (DRT) (11)**

Each session of passive exercise, pranayama was completed with DRT:

DRT is a deeper and more intense form of relaxation. The entire body and the mind move together; connecting with each other while the breathing plays a crucial role to bring this connection. The main features of this form of relaxation technique are:

DRT is done in Savasana (Corpse Pose) and is best done at the end of the Yoga practice to release all the tensions while retaining the muscle strength. It is done longer and is generally for a minimum of 15 minutes. It is always done with the instructions given by a Yoga teacher. DRT can also be done anytime during the day provided the time gap between meals is minimum 2+hours. It can also be done by anyone even without the practice of Yoga poses.

DRT is considered a base pose as deep relaxation technique variations can be derived from this pose.

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**Breathing practices**

| S.No | Breathing practices | Duration of procedure | Frequency | Duration of intervention |
|------|---------------------|-----------------------|-----------|-------------------------|
| 1    | Hand Stretch       | 2 minutes             | 2 times a day | 8 weeks                |
| 2    | Hands In and Out   | 2 minutes             | 2 times a day | 8 weeks                |
| 3    | Ankle stretch      | 2 minutes             | 2 times a day | 8 weeks                |
| 4    | Tiger              | 2 minutes             | 2 times a day | 8 weeks                |

**Yogasana (12)**

| S.No | Yogasanas | Duration of procedure | Frequency | Duration of intervention |
|------|-----------|-----------------------|-----------|-------------------------|
|      | Standing position | | | |
| 1    | Ardhakati Chakravasana: Reduces fat in waist region, stimulates the sides of the body. Gives lateral bending to the spine. | 2 minutes | 2 times a day | 8 weeks |
| 2    | Ardha Chakravasana: Makes the spine flexible, stimulates the spinal nerves, promotes circulation of blood into head. Strengthens the neck muscles. Expands chest and shoulders. Improves breathing. | 2 minutes | 2 times a day | 8 weeks |
|      | Sitting position | | | |
| 3    | Vakrasana: Lateral twist gives flexibility to the spine, tones up the spinal nerves. Helps to cure constipation. Improves lung capacity. | 2 minutes | 2 times a day | 8 weeks |
|      | Prone position | | | |
| 4    | Bhujangasana: Brings flexibility to the dorsal spine. Strengthens the spinal muscles. Reduces the abdominal fat. | 2 minutes | 2 times a day | 8 weeks |

(Continued)
Supine position

Sethubandhasana: The extensor muscles of the back grow powerful and the hips are con-
ttracted and hardened. The asana strengthens the neck and tones the cervical, dorsal, lumbar and sacral regions of the spine.

2 minutes 2 times a day 8 weeks

Diet Protocol

Participant completely underwent a Naturopathic diet includes raw diet (fruits, Salad, Sprouts and buttermilk), Boiled diet (Boiled vegetables, Chapati, Rice, Dal and Buttermilk) as well as planned frequent juice therapy and fruit diet and also underwent a Naturopathy treatment for detoxification for a week in starting (6 days).

Naturopathy diet:

| Time         | 8:00 am | 10:00 am | 12:00 pm | 2:00 pm | 5:00 pm | 7:30 pm | 8:30 pm |
|--------------|---------|----------|----------|---------|---------|---------|---------|
| 1st day      | Juice   | Juice    | Boiled   | Juice   | Juice   | Boiled  | Kashayam |
| 2nd day      | Juice   | Juice    | Raw      | Juice   | Juice   | Raw     | Kashayam |
| 3rd day      | Juice   | Juice    | Juice    | Juice   | Juice   | Juice   | Juice   |
| 4th–6th day  | Lemon honey juice fasting |
| 7th day      | Juice   | Juice    | Raw      | Juice   | Juice   | Raw     | Kashayam |
| 8th day      | Juice   | Juice    | Raw      | Juice   | Juice   | Raw     | Kashayam |
| 9th–13th day | Lemon honey juice fasting |
| 14th day     | Juice   | Juice    | Raw      | Juice   | Juice   | Raw     | Kashayam |
| 15th day     | Juice   | Juice    | 1 apple  | Juice   | Juice   | 1 apple | Kashayam |
| 16th–22nd day| Lemon honey juice fasting |
| 23rd day     | Juice   | Juice    | 1 apple  | Juice   | Juice   | 1 apple | Kashayam |
| 24th day     | Juice   | Juice    | Raw      | Juice   | Juice   | Raw     | Kashayam |
| 25th day     | Juice   | Juice    | 1 apple  | Juice   | Juice   | 1 apple | Kashayam |
| 26th–30th day| Lemon honey juice fasting |
| 31st–32nd day| Juice   | Juice    | 1 apple  | Juice   | Juice   | 1 apple | Kashayam |
| 33rd day     | Juice   | Juice    | Raw      | Juice   | Juice   | Raw     | Kashayam |
| 34th day     | Juice   | Juice    | Boiled   | Juice   | Juice   | Boiled  | Kashayam |
| 35th day     | Juice   | Juice    | Raw      | Juice   | Juice   | Raw     | Kashayam |
| 36th day     | Juice   | Juice    | 1 apple  | Juice   | Juice   | 1 apple | Kashayam |
| 37th–44th day| Lemon honey juice fasting |
| 45th day     | Juice   | Juice    | 1 apple  | Juice   | Juice   | 1 apple | Kashayam |
| 46th day     | Juice   | Juice    | Raw      | Juice   | Juice   | Raw     | Kashayam |
| 47th day     | Juice   | Juice    | Raw      | Juice   | Juice   | Raw     | Kashayam |
| 48th day     | Juice   | Juice    | Boiled   | Juice   | Juice   | Boiled  | Kashayam |

| Time         | 8:00 am | 10:00 am | 12:00 pm | 2:00 pm | 5:00 pm | 7:30 pm | 8:30 pm |
|--------------|---------|----------|----------|---------|---------|---------|---------|
| Saturday     | Ashguard juice | Bitterguard juice | Lunch | Lemon honey juice | Papaya juice | Dinner | Kashayam |
| Sunday       | Carrot juice | Watermelon | Lunch | Lemon honey | Musk melon Juice | Dinner | Kashayam |
| Monday       | Bottleguard juice | Musk melon | Lunch | Buttermilk | Papaya Juice | Dinner | Kashayam |
| Tuesday      | Methi water | Pineapple juice | Lunch | Lemon honey | Carrot juice | Dinner | Kashayam |
**Diagnosis**

Progression of Obesity was detected by his Anthropometric measurements, whose reports were provided by the patient.

| Parameters             | DOA       | DOD       | Parameters             | DOA       | DOD       |
|------------------------|-----------|-----------|------------------------|-----------|-----------|
| Pulse Beats/min        | 86 bpm    | 70 bpm    | Weight in kg           | 142 kg    | 121.6 kg  |
| BP in mmHg             | 150/100 mmHg | 130/90 mmHg | Height in mt            | 172 cm    | ***       |
| Respiratory Cycles/min | 16 cpm    | 16 cpm    | BMI [Kg/m²]            | 47.99     | 42.2      |
| Bhramari Time (Sec)    | 9 sec     | 9 sec     | Mid arm circumference  | 42 cm     | 37 cm     |
| Symptoms score         | 0         | 0         | Waist circumference    | 144 cm    | 136 cm    |
| Medication score       | 0         | 0         | Hip circumference      | 136 cm    | 129 cm    |

Vital data and Anthropometric measurements:
The patient was able to lose 20.4 Kgs of weight after following the above treatment regimen as well as regulation of Pulse rate and respiratory rate take place. Blood pressure got marked in range that is 130/90 mm/hg compare to before treatment. Respiratory rate remain regular and same after the treatment. There will be drastic reduction in weight and anthropometric measurements that includes mid arm circumference from 42 cm to 37 cm, Hip circumference 136 cm to 129 cm and Waist circumference from 144 cm to 136 cm as well as marked reduction in overall Body mass index from 47.99-42.2 Kg/[Mj]2.

Discussion
The weight of patients has been accounted to increase since a long time. Aggravating factor is the absence of physical movement and life style. Anthropometric parameters have indicated that a patient belongs to grade 3 obesity. It is anticipated that the patient had the option to keep up a consistent body weight by receiving IAYT (Integrated methodology of Yoga treatment) which may have forestalled weight gain. During his stay, he experienced Integrated approach of Yoga treatment just as Naturopathy for Detoxification and Diet treatment moreover. Naturopathy helps to keep up balance between medicines and diet. Naturopathy enables improvement in fat digestion just as perspiration by follow up on waste frame medicines and diet. Naturopathy for Detoxification and Diet treatment. Patient used to practice Pranayama (daily once), Yoga special technique day by day two sessions, (Weight decrease) just as Kriya (weekly twice). Overall, Yoga helped him to keep up physical wellbeing just as emotional well-being.

Conclusion
A case of a 28 year old male of Grade 3 Obesity was conservatively managed using principles of Yoga therapy with Naturopathy as proposed by the SSVASA. By following the Obesity based protocol, the patient was successful to lose 20.4 Kgs and attain the desirable target set at the beginning of the month. It is, therefore, proposed that further prospective studies be carried out using Yoga therapy so that an evidence-based model of obesity protocol can be formulated for all patients in this age group.

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Authorship contribution
RPJ: has written article.
RN: guided to write article
AS: has contributed in a treatment planning.