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ROLE OF AYURVEDA AND THERAPEUTIC YOGA TO PREVENT OBESITY – A REVIEW

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ABSTRACT

Weight gain is a natural process essential for the body's physiological functions, yet when it spirals to excessive levels, it poses a threat to health, paving the way for numerous disorders with high morbidity and mortality rates. According to *Ayurveda*, *Meda* is one of the *Sapta Dhatus* of the body that can be co-related to fat, and the resulting condition is termed *Medoroga* and one among them is *Sthoulya* (Obesity). In ancient texts like *Charaka Samhita*, it's deemed among the *Astaninditiya* (Contemptible) *Purusa*, highlighting its detrimental effects on health. Assisting an underweight individual is often perceived as simpler than aiding someone struggling with obesity. The rise of industrialization and sedentary lifestyles propelled by modern communication technologies exacerbates the prevalence of non-communicable diseases like obesity. The sedentary lifestyle associated with modernization limits opportunities for physical activity, leading to various health issues. Obesity, in particular, is linked with severe and life-threatening complications such as hypertension, diabetes mellitus, atherosclerosis, ischemic heart disease, cardiovascular accidents, and myocardial infarction. Given its role as a risk factor for these ailments, preventing obesity becomes pivotal in reducing the likelihood of such diseases. *Ayurveda* and *Yoga* offer holistic approaches to combat obesity, promoting overall health and well-being by harmonizing the body, mind, and spirit.

KEYWORDS: Yoga for Obesity, Lifestyle disorder in Ayurveda, Weight loss by Yoga, Weight loss by Ayurveda.

INTRODUCTION

Obesity is a global health concern of alarming proportions with at least 2.8 million people dying each year as a result of being overweight or obese. This multifactorial and complex condition is characterized by an excessive accumulation of body fat, posing significant threats to overall health and well-being. The prevalence has surged in recent decades due to sedentary lifestyles, poor dietary choices, and changes in environmental factors. The adverse effects of obesity on human life are profound and wide-ranging. Physiologically, excess body weight causes strain on vital organs and systems, leading to an increased risk of cardiovascular diseases, hypertension, and dyslipidemia. It is also intricately linked to insulin resistance and type 2 diabetes, further exacerbating the global diabetes epidemic. Psychologically, individuals grappling with obesity often face societal stigma and discrimination, negatively impacting mental health. Depression, anxiety, and diminished quality of life are common among those affected, creating a vicious cycle that can perpetuate unhealthy behaviors.

The positive impact of *Yoga* therapy on obesity has been highlighted by several research findings, revealing significant enhancements. Regular *Yoga* practices contribute to the prevention and reduction of body weight, stress levels, blood sugar, and blood pressure. A crucial aspect of lifestyle modification involves *Yogic* modalities such as *Pathya Ahara*, *Asanas*, *Pranayamas*, *Dhyana*, *Kriyas*, and relaxation.

In this context, insights regarding *Ayurveda and Yoga Asanas* for obesity have been reviewed in this article highlighting their role in the effective prevention of obesity.

MATERIALS AND METHODS: The literature search was done from the database like PubMed and MEDLINE and classical texts of Ayurveda and Yoga were reviewed. Review of peer reviewed original research articles were also done.

HISTORY OF OBESITY: The word 'Obesity' is derived from the Latin term 'obesus' from 'ob' – by

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reason of and 'edo' – eat which means having eaten. The initial recorded usage of the term dates back to 1611, as documented by Randle Cotgrave in the Oxford English Dictionary.^[1] Numerous early representations of human figures in art and sculpture portrayed individuals with noticeable obesity. Nevertheless, it wasn't until the 20th century that obesity became widespread to the extent that the World Health Organization (WHO) officially acknowledged it as a global epidemic in 1997, estimating a threefold increase in global obesity prevalence since 1975.^[1] In the 21st century, India also witnessed a surge in obesity rates, reaching epidemic levels, and impacting approximately 5% of the country's population with morbid obesity. Consequently, organizations like the Indian Heart Association have been actively promoting awareness regarding the cardiovascular risks associated with obesity.^[2]

DEFINITION OF OBESITY: In the general populace, Body Mass Index (BMI), a metric that gauges the average body weight relative to the average body height of an individual is commonly used to define obesity. The WHO has defined obesity as a BMI $> 30 \text{ kg/m}^2$, as this is the point where the risk of several obesity-related diseases start to rise exponentially (BMI ≥ 25 signifies overweight, while BMI ≥ 30 denotes obesity). An alternative method for evaluating obesity involves assessing waist circumference. A higher amount of body fat around the waist is statistically associated with an increased risk of obesity-related diseases (Inches > 35 = 0) Obese female; Inches > 40 = 0 Obese male). It is also defined as a type of nutritional disorder, due to

imbalance between energy intake and energy expenditure resulting in positive energy balance, characterized by the abnormal growth of adipose tissue, resulting in an increase in the body weight to the extent of 20 percent or more of the standard weight for the person's age, sex and height.^[5]

According to Ayurveda, excess weight or obesity can be co-related with 'Medoroga' or 'Sthoulya.' Acharya Charaka has defined it as Medo mamsa ati vrudhatvat chala sphik udara stanaayathopachayautsaho naro atisthula uchyate^[6] i.e, an augmentation in the Meda & Mamsa tissues results in sagging and a drooping appearance, affecting the mobility of the abdomen, buttocks, and breasts. When the Medodhatu is inadequately developed, it leads to a condition known as Utsahahani, and such an individual is referred to as 'Atisthula.'

According to Yoga Shastra, there are three main reasons for the development of diseases: Purva Janama Vriti, Manasika karma, and Sharirika karma. Raga, Dwesha, and Abhinivesha Kleshas cause Chitta Vikshepas and lead to Manasika Vikaras like Kama, Krodha, Lobha, Moha, and Ahankara. These further lead to Sharirika Vyadhi. Obesity is one such disease that is brought on by Mithya Ahara, Jeevana Charya, and Vegadharana.

CLASSIFICATION OF OBESITY^[7]: Obesity is typically classified based on many factors such as disease onset, severity, histology, and fat distribution as described in the table below:

Table 1: Classification of Obesity Based on Various Factors as Explained.

Sl No.	BASED ON:	TYPE
		Insidious
1	Onset	Gradual
		Rapid
		Mild
2	Severity	Moderate
		Severe
		Class – $I = Overweight (25 – 29.9)$
3	ВМІ	Class - II = Obesity (30 - 34.9)
3		Class - III = Obesity (35 - 39.9)
		Obesity (> 40)
		Generalized
		Central or Trunk-type
		Superior or Buffalo-type
4	Fat Distribution	Inferior or lipodystrophy
		Girdle-type or fatty apron
		Breeches or trochanteric type
		Lipomatous or multiple lipomatous
5	Etiological Factors	Physiological
	Enological Factors	Pathological: Exogenous, Endogenous, and Idiopathic
		Enviable
6	Clinical Condition	Regal
		Pitiable
7	Histopathology	Hyperplastic obesity
,	Instoputiology	Hypertrophic obesity

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CAUSES OF OBESITY: The causes of obesity can be multifaceted, involving a combination of genetic, environmental, and lifestyle factors such as:

- Genetics: Genetic influences may affect metabolism, fat storage, and the body's response to hunger and satiety.
- Unhealthy Diet: Diets high in calories, saturated fats, and sugars, and low in nutritional value contribute to weight gain. Consuming processed and fast foods, sugary beverages, and excessive portion sizes can lead to an energy imbalance.
- Lack of Physical Activity: Sedentary lifestyles, characterized by insufficient physical activity, contribute to weight gain. Modern conveniences, such as desk jobs, reliance on transportation, and increased screen time, can contribute to a lack of exercise.
- Environmental Factors: Factors like limited access to fresh and healthy foods, the prevalence of fast-food outlets, and neighbourhood safety can impact lifestyle choices.
- Psychological Factors: Emotional and psychological factors, such as stress, depression, or a history of trauma, can contribute to overeating or unhealthy eating patterns as a coping mechanism.
- Medical Conditions: Certain medical conditions, such as hypothyroidism, polycystic ovary syndrome (PCOS), and hormonal imbalances, can contribute to weight gain.
- Medications: Certain medications, such as certain antidepressants, corticosteroids, and antipsychotics, may be associated with weight gain as a side effect.
- Lack of Sleep: Inadequate or poor sleep quality can disrupt hormones that regulate hunger and satiety, leading to overeating.

• Social and Economic Factors: Socioeconomic status can influence access to healthy food options, recreational facilities, and educational resources, potentially contributing to obesity disparities.

In *Ayurveda*, *Nidana* (causes) of *Sthoulya* can be broadly classified into four groups namely:

- Aharaja nidana Atisampoorna, Santarpana, Adyashana, Nava anna and Madya, Gramyarasa, Sarpi, Ikshu rasa, Guda, Shali, Godhuma, Masha sevana, Bhojanantara jala pana, Ati maatra sevana of Guru, Madhura, Sheeta, Snigdha, Sleshma, Mamsa, Payasa and Dadhi. Sheeta and Snigdha guna, Madhura rasa ahara.
- Viharaja nidana Avyayama, Avyavaya, Divaswapna, Asanasukha, Svapnaprasanga, Gandhamalanusevanam, Bhojanantara Snana, Nidra and Aushadha sevana.
- Manasika nidana Harshanityatvam, Acinatanam, Manasonivrtti, Priyasarshana and Saukhyam.
- Anya nidana Beeja Dosha^[8] (can be taken as hereditary)

Hence, addressing obesity typically involves a comprehensive approach that includes dietary changes, increased physical activity, and behavioral interventions.

COMPLICATIONS OF OBESITY^[9]: Obesity, especially central obesity, raises the risk of several diseases such as dyslipidemia, diabetes type 1, high blood pressure, and atherosclerotic plaques in the coronary arteries causing coronary artery disease. The health implications of obesity are included in the table below:

Table 2: Risk factors and the probable health implications of obesity.

RISK FACTORS	HEALTH IMPLICATIONS	
Metabolic syndrome:	Coronary heart disease	
Type 2 diabetes	Stroke	
Hypertension	Diabetes complications	
Hyperlipidaemia	*	
Mechanical effects of Overweight	Urinary incontinence, Osteoarthritis, Varicose vein etc	
Accumulation of the Liver Fat	Non-alcoholic Fatty liver, Liver Cirrhosis etc.	
Restricted Ventilation	Exertional dyspnoea, Sleep apnoea, Snoring, Respiratory failure, etc.	
Increased peripheral steroid interconversion in	Hormone-dependent cancers such as breast and uterus, Polycystic	
adipose tissue	ovary syndrome such as infertility and hirsutism, etc.	
Others	Psychological morbidities such as low self-esteem and depression,	
Others	Socioeconomic disadvantage, Gallstones, and Skin infections.	

Due to the severity and complications associated with obesity, the medical community is exploring alternative therapy options, such as *Ayurveda and Yoga*. This

exploration is driven by the limitations of contemporary medicine, which is hindered by adverse pharmacological effects and challenges in effectively managing obesity.

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YOGA FOR PREVENTION OF OBESITY: Modern science recognizes the applicability of primordial, primary, and secondary preventions in addressing obesity. Primordial and primary prevention focuses on public education about the disease, its causes, complications, and prevention. Childhood interventions targeting lifestyle factors such as diet and physical activity are crucial. Those with a positive family history benefit from primary prevention through a balanced diet

and regular physical activity. Secondary prevention involves measures to halt obesity progression, employing strategies like exercise, diet control, and various *Yogic* modalities. Regular practice of *Yoga* as mentioned below yields positive results that extend beyond the physical aspect, addressing the emotional and mental aspects of obesity.

Table 3: Yoga Protocol for Prevention of Obesity.

Categories	Asanas	Benefits	Contraindications
Loosening Exercises: 2 rounds	Bending: Forward, Backward, and Side. Jogging: Front, Back and Side. Twisting and <i>Dhanurasana</i> Swing	Reduces Weight, reduces Abdominal Fat, Strengthens Abdominal muscles and Increases flexibility of the Spine	
Breathing Exercises: 2 rounds	Tadasana (Hand Stretch) Hands in and out Ankle stretch Shashankasana (Rabbit) Straight Leg breathing	Improves Internal Awareness, Synchronises body movements with breathing, Slows down the mind, and Prepares for further practices	
Surya Namaskara: 2 rounds	Pranamansana Hastha Uttanasana Padahastasana Ashwasanchalasana Dandasana Shashankasana Ashtanga Namaskara Bhujangasana Parvatasana Shashankasana Ashwasanchalasana Padahastasana Hastha Uttanasana	Balances and harmonizes the <i>Prana</i> throughout the body, Revitalizes the whole body, Stimulates and balances all systems of the body, Increases Metabolism, and decreases body weight.	
	Ardakati Chakrasana	Reduces fat in the waist region and stimulates the flanks, gives lateral bends to the spine, improves liver function, and Reduces waist circumferences.	
Standing Aganage	Padahastasana	Makes the spine flexible, strengthens the thighs, prevents constipation and menstrual problems, and enhances blood flow to the head.	Vertigo, Severe HTN, Cervical Spondylitis and disc prolapse
Standing Asanas: 2 rounds each	Parivrutta Trikonasana	It gives deep pressure on one side and releases pressure in its complimentary posture and it provides a strong stimulation and relaxation effect on the Pancreas.	Severe Hypertension, Spinal Problem
	Arda Chakrasana	Makes the spine flexible and stimulates spinal nerves, renders strong stretch, Strengthens neck muscles, and improves breathing by expanding the chest and shoulder region.	Vertigo
Sitting Asanas: 2 rounds each	Vakrasana or Ardha Matsyendrasana	It gives deep pressure on one side and releases pressure in the complementary posture gives rotational movement to the spine, and improves the functioning of the kidney.	Recent abdominal surgery for 3 months
	Ushtrasana	Makes the spine flexible and reduces fat in the gluteal region	Recent abdominal surgery, Hernia, and HTN

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Prone Asanas: 2 rounds each	Bhujangasana	It brings flexibility to the dorsal spine, strengthens spinal muscles, and reduces abdominal fat.	Abdominal surgery Cervical Spondylosis
	Dhanurasana	Deep compression on the abdominal organs reduces Gastro-intestinal disorders, gives flexibility to the back, and slims the whole body	Practice with proper guidance Avoid in case of heart disease, severe HTN, and Slip disc.
	Hamsasana	Deep compression and relaxation on the abdomen, balances <i>Pranic</i> blockages, makes the wrist flexible and arms stronger, improves digestion, and clears constipation	Abdominal surgery, Menstrual problems, hernia, hyperacidity, and gastric ulcer.
Supine Asanas: 2 rounds each	Vipareetakarni with wall support	Increases blood flow toward abdominal organs, removes GI disorders, and gives flexibility to the back.	General debility Severe HTN
	Sarvangasana	Balances <i>Prana</i> flow, improves Thyroid gland functioning and varicose veins and Menstrual disorder.	Cervical spondylosis Low back pain
	Matsyasana	Improves Thyroid functioning, expands the chest region and flexibility to the spine	Abdominal and Thoracic surgery Cervical spondylosis
	Shavasana	Final relaxation and the most important part, reduces fatigue, decreases stress, and calms all parts of the body.	
	Vibhagiya	Improves awareness of three different components of respiration (Abdominal, thoracic, and clavicular), improves power and vitality, and improves calmness in daily activities Clarity of thoughts improve	
Pranayama 2 rounds each	Nadishuddi	Promotes balance between Ida and <i>Pingala Nadi's</i> , cleanses nostrils, increases vitality, digestive fire, and appetite, and brings balance between Sympathetic and Parasympathetic Nervous System.	
	Sitali and Shitkari	Cools down the body, relaxes the mind good for Oral hygiene, especially in Obesity.	
	Bhramari	The vibration of <i>Bhramari</i> calms down the mind which leads to the experience of no thought state of mind.	
Yoga Nidra for 10mins			
<i>Dhyana</i> – Chantin	g Om followed by Shanti Mantra		

SATVIKA AHARA ALONG WITH YOGA: The most common diet for people who are obese is the yogic diet, also referred to as the Satvika diet. It includes more naturally grown fresh fruits and vegetables, soup, etc. Rajasika foods, such as fried foods, spicy meals, soft drinks, fast food, etc., should be consumed in moderation. Avoid eating tamasika foods, such as meat and other non-vegetarian meals, alcohol, and other substances. Hatha Yoga Pradipika and Gheranda Samhita place a strong focus on tasty, favorable food as well as the control diet known as Mitha-Ahara, which is pure, soft, and fills only half of the stomach. Such a diet enhances both physical and mental functions. Yoga suggests eating foods that support the body's basic constituents (Sapta dhatu).

AYURVEDA FOR PREVENTION OF OBESITY:

Preventive measures in Ayurveda focus on restoring this balance and promoting overall well-being. It primarily includes *Nidaana Parivarjana and Guru–Apatarpana Ahara–Vihara*.

Nidana Parivarjana^[10]: The primary strategy for treating all diseases involves avoiding the causative factors. Hence, it's essential to refrain from the etiological factors mentioned in *Medoroga*, such as dietary and lifestyle factors as follows:

• Refrain from overeating, consuming food during indigestion, or immediately after a previous meal.

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- Avoid daytime napping and opt for sleeping at night, ideally an hour after dinner.
- Engage in regular physical activities such as brisk walking, running, or swimming.
- Cut down on excessive consumption of sweets, opting instead for low-fat or skim dairy products. Avoid indulging in items like chocolates, ice creams, and cheese.
- Consume non-vegetarian foods like chicken, fish, eggs, and meats in moderation.
- Reduce the use of excessive oil and ghee in cooking; steer clear of hydrogenated vegetable oils. Opt for healthier cooking methods such as grilling, baking, steaming, or boiling vegetables without added fat.
- Limit the intake of alcoholic beverages.
- Avoid carbonated drinks and excessive water consumption immediately after meals.
- Control the intake of fats and carbohydrates.

Ahara^[11]: Guru-Apatarpana Acharya Charaka recommended Guru-Apatarpana Ahara for the treatment of *Medoroga*. The diet which possesses the qualities of Guru but also induces a cleansing effect *Apatarpana*, is advocated. An example of such a food is *Madhu* (honey). The heaviness of honey counteracts the effects of Tikshnagni, while its cleansing property aids in reducing fat through Lekhana Karma. This diet needs to be nutritionally balanced. A helpful approach to achieving and sustaining weight loss involves educating obese individuals about the calorie content of foods. The diet should consist of less than 30% of the total calories from food. There should be an emphasis on consuming more fruits, vegetables, and high-fiber foods.

Shamana Chikitsa: includes the following components:

- Pachana and Dipana aid in the digestion of Ama and Apakwa Meda by enhancing Jatharagni, Bhutagni, and Dhatwagni.
- Kshudanigrahana involves controlling eating habits.
- Trisnanigrahana suggests drinking lukewarm water before lunch rather than after.
- Vyayama, or exercise, aids in the dissolution and removal of excess fat deposits.
- Various medicinal formulas outlined in Ayurvedic texts, such as Amrita Guggulu, Dasanga Guggulu, Tryusanadi Guggulu, Loha Rasayana, Loharista, Vyosadi Saktu, Lvana taila, Brhat Saindavadi Taila, Triphaladi Taila, and Maha Sugandhi Taila, are also recommended.[12]

Shodhana Chikitsa: also known as Samsodhana therapy, involves the elimination of *Doshas* through both upward and downward pathways. It consists of two main categories:

Bahva Samsodhana (external purification) Abhyantara Samsodhana (internal purification)

External purification techniques include Ruksha (dry powder massage) Avagaha Udvartana (immersion baths), Pariseka, and Lepana (external

- applications). Among these, Udwartana stands out due to its ability to pacify Vata dosha, Kapha, and Medo hara, improve body firmness, and cleanse the skin. [13] Udvartana specifically targets the vitiated Vata-Kapha-Meda, stabilizing the body and enhancing skin texture and complexion. [14]
- Internal purification involves processes like Vamana (therapeutic emesis), Virechana (purgation), Niruha Basti (medicated enemas), (nasal therapy), and Raktamoksana Nasya (bloodletting). However, due to its tendency to increase body mass, Anuvasana Vasti is not recommended for conditions related to excessive fat accumulation.

DISCUSSION

The current review article sheds light on the potential synergy between Ayurveda and Yoga in combating the global health crisis of obesity. One of the key findings is the emphasis placed by Ayurveda on individualized approaches to health and wellness. Integrating this personalized approach with the holistic practices of *Yoga* offers a promising avenue for obesity prevention tailored to individual needs. The holistic nature of Yoga, which encompasses Asanas, Pranayama, and Dhyana aligns well with the multifaceted approach advocated by Ayurveda.

The Surya Namaskara, known as the salutation to the sun, holds significant importance in addressing obesity. It encompasses various elements such as asana, pranayama, mantra, and meditation, making it a holistic practice. This integrated approach has a profound impact on both the endocrine and nervous systems, effectively rectifying metabolic imbalances associated with obesity. Its dynamic nature also renders it akin to activities like cycling, jogging, or swimming, making it an excellent exercise option. Regarding pranayama practices recommended for obesity, emphasis is placed on more dynamic forms that stimulate metabolism. These include bhastrika, kapalabhati, and suryabhedi, complemented by balancing practices such as nadi shodhana, ujjayi, sheetali, and sheetkari. These calming and cooling practices influence various hypothalamic centers, regulating thirst and promoting a sense of satisfaction with healthy quantities and qualities of food. Regular practice, not only promotes physical fitness but also enhances mental well-being and emotional balance. This comprehensive approach addresses the root causes of obesity, including stress, emotional eating, and a sedentary lifestyle, thereby offering a sustainable solution to weight management. Moreover, Ayurveda and Yoga both emphasize the importance of mindful eating and conscious living. By cultivating awareness of food choices and eating habits, individuals can develop a healthier relationship with food and prevent overeating. Yoga also improves metabolic health thus promoting weight loss.

Holistic Approach and Individualized Care: The nature of Ayurveda emphasizes interconnectedness of the Satwa, Atma, and Manas. This approach recognizes that each person is unique and may require personalized strategies based on their Dosha, Prakriti, Satwa, Satmya, and Vaya. Future research should delve deeper into refining personalized interventions for obesity prevention tailored to specific constitutional types.

Mind-Body Connection and Stress Reduction: Ayurveda and Yoga both acknowledge the intricate connection between the mind and body. Stress, a significant factor in obesity, is addressed through the incorporation of Pranayama and Dhyana (meditation).

Dietary Guidelines and Yoga Practices: Ayurveda offers a deeper understanding of nutritional habits based on individual constitutions. Integrating Ayurvedic dietary guidelines with Yoga practices, such as mindful eating and specific postures targeting metabolic functions, may provide a comprehensive approach to obesity prevention. the impact of Ayurvedic recommendations on metabolic markers and adiposity could be a promising avenue for future research.

Cultural Relevance and Global Applicability: While Ayurveda has its roots in ancient Indian philosophy, its principles resonate with a holistic worldview that transcends cultural boundaries. Understanding the cultural context and adapting interventions to different populations is crucial for widespread applicability and acceptance.

CONCLUSION

Thus, integrating Ayurveda and Yoga holds great promise for obesity prevention and management. By leveraging the holistic principles of Ayurveda and the comprehensive practices of Yoga, individuals can adopt a personalized, sustainable approach to management that addresses the root causes of obesity and promotes overall health and well-being. Future research in this area should focus on elucidating the mechanisms underlying the beneficial effects of Ayurveda and Yoga on obesity, as well as exploring innovative approaches for integrating these ancient traditions into modern healthcare systems.

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