

**AYURVEDIC APPROACH TO MANAGE *STHAULYA* (OBESITY): A REVIEW**

**Dr. Savitri Soni\***

MD Scholar, PG Department of Rog Nidan Evum Vikriti Vigyan, Shri N.P.A.G.A.C Raipur (CG) India.

**\*Corresponding Author: Dr. Savitri Soni**

MD Scholar, PG Department of Rog Nidan Evum Vikriti Vigyan, Shri N.P.A.G.A.C Raipur (CG) India.

Article Received on 03/03/2020

Article Revised on 24/03/2020

Article Accepted on 14/04/2020

**ABSTRACT**

The worldwide percentage of non-communicable diseases is increasing and now becoming the chief cause of the death in all over the world. There are many non-communicable diseases among of them, obesity (*Sthaulya*) are vastly increasing in the world due to the change in the life style (*Ahar, Vihar* and *Manasika*) and working conditions. Sitting habits and lack of exercise are also the main reasons behind the higher prevalence of Obesity. Obesity lead to many diseases like Diabetes, Cardiovascular disease and Arthritis. Obesity also reduces the average life span and decreases the quality of life. Therefore, prevention of Obesity during its starting stage may overcome the risk of Diabetes, Cardiovascular, Arthritis and other serious diseases. In *Ayurveda*, *Sthaulya* (Obesity) belong to *Santarpanajanya Vyadhi* and fully described by *acharyas*. Accordingly, there are a number of drugs, medicinal preparations, *Pathya - Apathya, Dinachrya* and diverse techniques of Yoga and so on, which have wonderful preventive and curative effect on obesity.

**KEYWORDS:** Non-communicable disease, *Sthaulya*, Obesity, *Pathya- Apathya, Ayurveda*.

**INTRODUCTION**

Overweight and obesity are defined as abnormal or excessive fat accumulation that presents a risk to health. A crude population measure of obesity for adults is the body mass index (BMI), a person’s weight (in kilograms) divided by the square of his/her height (in meters) hence its unit is (kg/m<sup>2</sup>). A person with a BMI of 30 or more is generally considered obese. A person with a BMI equal to or more than 25 is considered overweight.<sup>[1]</sup> (Table No.1) As per WHO (World Health Organization) overweight and obesity are major risk factors for a number of chronic diseases, including diabetes, cardiovascular diseases and cancer. Earlier it was considered a problem only in high-income countries, overweight and obesity are now dramatically on the rise in low- and middle-income countries, particularly in urban setting also.<sup>[2]</sup>

**Table 1: BMI as recommended by WHO.**

| BMI (kg/m <sup>2</sup> ) | Classification | Comorbidity      |
|--------------------------|----------------|------------------|
| <18.5                    | Underweight    | -                |
| 18.5-24.9                | Normal range   | Negligible       |
| 25.0-29.9                | Overweight     | Mildly increased |
| >30.0                    | Obese          |                  |
| 30.0-34.9                | Class-I        | Moderate         |
| 35.0-39.9                | Class-II       | Severe           |
| >40                      | Class-III      | Very severe      |

*Sthaulya* is a disease in *ayurveda* which may be compared to obesity in modern medicine, wherein the lipid metabolism is chiefly altered. Obesity (*Sthaulya*) is one among the major diseases of modern era. In modern era with continuous changing lifestyles, environment and changed diet habits, man has become the victim of many diseases caused by unwholesome dietary habits; the “obesity” is one of them. A recent world health study reported that raised BMI is a major risk factor for noncommunicable diseases such as:

- Cardiovascular diseases (mainly heart disease and stroke), which were the leading cause of death in 2012;
- Diabetes;
- Musculoskeletal disorders (especially osteoarthritis – a highly disabling degenerative disease of the joints);
- Some cancers (including endometrial, breast, ovarian, prostate, liver, gallbladder, kidney, and colon).

The risk for these noncommunicable diseases increases, with increases in BMI. Childhood obesity is associated with a higher chance of obesity, premature death and disability in adulthood. But in addition to increased future risks, obese children experience breathing difficulties, increased risk of fractures, hypertension, early markers of cardiovascular disease, insulin resistance and psychological effects.

In *ayurveda* also "*Sthaulya*" is considered as a condition wherein there is an *ayatopachaya* of *sharira* associated with abnormal increase in *medodhatu*. Charaka samhita gives one of the best definitions of *Sthaulya* as

"*Medomamsa ativrudhatvat chalasphik udara stana Ayathopachaya utsahonaro atisthulauchyate*"<sup>[3]</sup>

*Sthaulya* the commonest nutritional disorder in prosperous societies and mostly prevalent in developed countries. *Sthaulya vyadhi* is explained in *Santarpanajanya Vyadhi in Ayurveda*. Aacharya Charak has mentioned it under

"*Asthaunindit Purusha*". (Ch. Su. 21/3). In *Sthaulya* there is obstructive pathology. The excessive increase of *meda* cause obstruction of *strotasas* and nutrition of further *dhatu*s is hampered.

In 2018, an estimated 40 million children under the age of 5 years were overweight or obese. In Africa, the number of overweight children under 5 has increased by nearly 50 percent since 2000. Nearly half of the children under 5 who were overweight or obese in 2018 lived in Asia.

#### Aims and Objective

1. To explore the importance of *ayurveda* to manage obesity.
2. To study the causes of *Sthaulya* (Obesity).
3. To study the various *Ayurvedic* approaches in the management of *Sthaulya*.

#### Prevalence<sup>[4]</sup>

As per the latest statistics of WHO (3<sup>rd</sup> March 2020)

- Worldwide obesity has nearly tripled since 1975.
- In 2016, more than 1.9 billion adults, 18 years and older, were overweight. Of these over 650 million were obese.
- 39% of adults aged 18 years and over were overweight in 2016, and 13% were obese.
- Most of the world's population live in countries where overweight and obesity kills more people than underweight.
- 40 million children under the age of 5 were overweight or obese in 2018.
- Over 340 million children and adolescents aged 5-19 were overweight or obese in 2016.
- Obesity is preventable.

#### MATERIAL AND METHOD

Different *Ayurveda* texts, journals, research papers, articles, authentic websites are referred to study the concept of *ayurvedic* approach to *Sthaulya* (Obesity) and its usefulness in manifestation and sequelae of the *Sthaulya*.

#### Symptoms of Obesity (*sthaulya*)<sup>[5]</sup>

Being a little overweight may not cause many noticeable problems. However, once you carry a few extra kilograms, that may generate symptoms which reflect in excessive accumulation of fat in the region of breast, hip, belly etc. of the body leading to various complications is identified as *medovraddhi* or *medo-roga* which affect one's daily life.

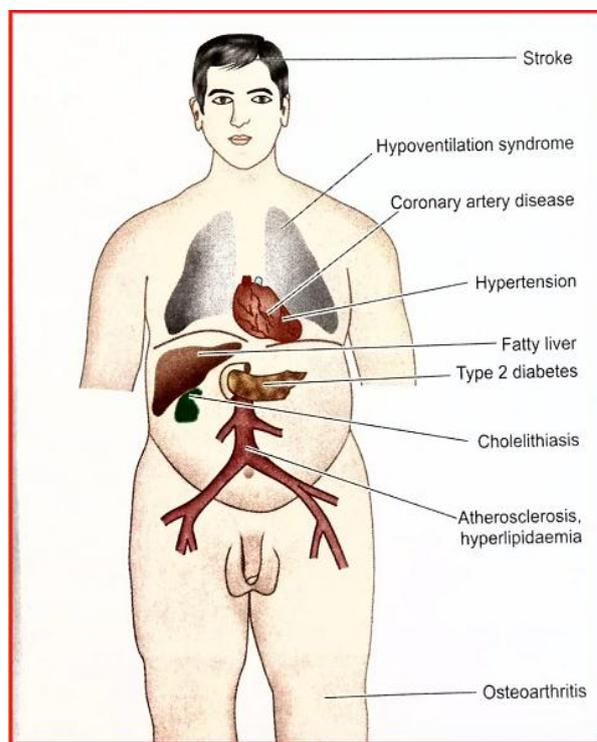


Fig. 1: Major sequelae of obesity (*Sthaulya*).

The patient of *sthaulya* faces such indispositions as excessive sweating, hunger and thirst. Such person emits bad smell, feels weakness and difficulty in sexual intercourse and in movement. The indisposition may lead to many complications and problems.

1. Short-term problems
  - a. Breathlessness
  - b. Increased sweating
  - c. Snoring
  - d. Difficulty sleeping
  - e. Inability to cope with sudden physical activity
  - f. Feeling very tired every day
  - g. Back pain and joints pain.
2. Long-term problems (Fig.No.1)
  - a. Obesity can also cause changes that one may not notice that can seriously harm health, such as
    1. Hypertension
    2. High cholesterol level

Both conditions significantly increase risk of developing a cardiovascular disease, such as

- ✓ Coronary heart disease, which may lead to a heart attack
- ✓ Stroke, which can cause significant disability and can be fatal<sup>[6]</sup>

**NIDANA**

*Nidana* of *Sthaulya* is basically classified into two categories

1. *Bahyanidana* which include
  - a. *Aharaj nidana*

b. *Viharaj nidana*

c. *Manasika nidana*

2. *Abhyantara nidana* which includes *beejadusti*.

The detailed *nidana* is exposed in Table No.2

**Table 2: *Nidana* of *Sthaulya*.**

| <b>NIDANA OF STHAULYA</b>   |   |  | <b>Abyantara-nidana</b>                               |
|---|---|--|---|
| <b>Bahyanidana</b>  |   |  |   |
| <b>Aharaj nidana</b>  | <b>Viharaj nidana</b>   | <b>Manasika nidana</b>                         |   |
| <i>adhyashana</i> (eating when the previous food is not digested) | <i>avyayama</i> (lack of physical exercise)                           | <i>manasonivritti</i> (relaxation of the mind) | intake of sweet substances by mother during pregnancy |
| <i>atisampurana</i> (over eating)                                 |   |  |   |
| <i>atibrumhana</i> (eating foods high in calories)                | <i>avyavaya</i> (lack of sexual intercourse)                          |  |   |
| <i>guru ahara</i> (foods which are heavy to digest)               |   |  |   |
| <i>madhura ahara</i> (foods having sweet taste)                   | <i>divaswapna</i> (sleeping during the day time)                      |  |   |
| <i>snigdha ahara</i> (oily foods)                                 |   |  |   |
| <i>sheeta ahara</i> (cold foods)                                  |   |  |   |
| <i>navanna</i> (freshly harvested grains)                         | <i>asana sukha</i> (remaining seated for a long time)                 |  |   |
| excessive use of <i>navamadya</i> (freshly prepared alcohol)      |   |  |   |
| <i>gramya rasa</i> (domestic animal's meat and soups)             | <i>swapnaprasangat</i> (excessive sleep)                              |  |   |
| <i>payavikara</i> (milk and it's preparations like curd, ghee)    | <i>Harshanitya</i> (always being cheerful)                            |  |   |
| <i>ikshuvikara</i> (sugarcane and its products)                   | <i>achintana</i> (lack of proper mental activities)                   |  |   |
| <i>guda</i> (jaggery)   |   |  |   |
| <i>godhuma</i> (wheat)  |   |  |   |
| <i>mashasevana mashasevana</i> (black gram)                       | <i>priyadarshana</i> (constantly seeing those things which are liked) |  |   |

Charaka Samhita also include the cardinal symptoms of *Sthaulya* and besides the *lakshana*, explained eight-fold *dosa* of *Sthula* person in Table No.3

**Table 3: The cardinal symptoms of *Sthoulya* and eight-fold *dosa*.**

| <b>Cardinal symptoms of <i>Sthaulya</i></b>  | <b>Eight-fold <i>dosa</i> of <i>Sthula</i> person</b>                            |
|--|--|
| 1. <i>medomamsaativriddhi</i> (excessive accumulation of <i>meda</i> and <i>mamsa</i> )                          | 1. <i>ayushohrasa</i> (diminution of lifespan)                                   |
| 2. <i>chalasphik, udara, stana</i> (flabby buttocks, abdomen, breasts due to excessive fat deposition)           | 2. <i>javoparodha</i> (lack of interest in physical activity /sluggish movement) |
| 3. <i>ayathopachaya-anutsaha</i> (improperly formed <i>medodhatu</i> causes <i>utsahahani</i> in the individual) | 3. <i>kricchrayavaya</i> (difficulty in sexual intercourse)                      |
|  | 4. <i>dourbalya</i> (weakness)   |
|  | 5. <i>dourgandhya</i> (unpleasant odour from the body /foul smell from the body) |
|  | 6. <i>sweda atipravriti</i> (excessive sweating)                                 |
|  | 7. <i>Kshudhatimatra</i> (excessive appetite)                                    |
|  | 8. <i>pipasatiyoga</i> (excessive thirst)  |

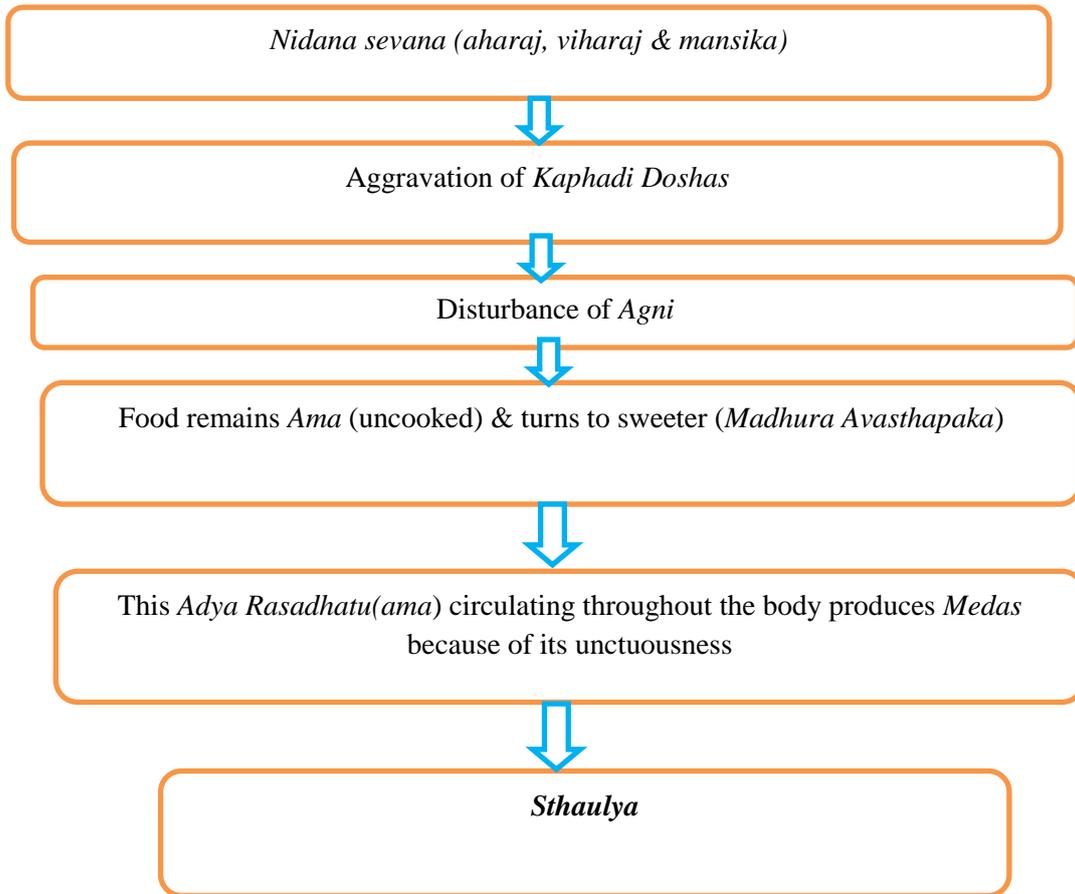
Some of health hazards mentioned for obesity are hypertension, diabetes mellitus, coronary artery diseases, stroke, hyperlipidemia, varicose veins, abdominal hernia, lowered fertility, gall stones. Charaka Samhita has mentioned the bad prognosis of *Sthaulya* as an obese

person if not duly managed, will die soon due to excessive hunger, thirst and other complications.<sup>[7]</sup>

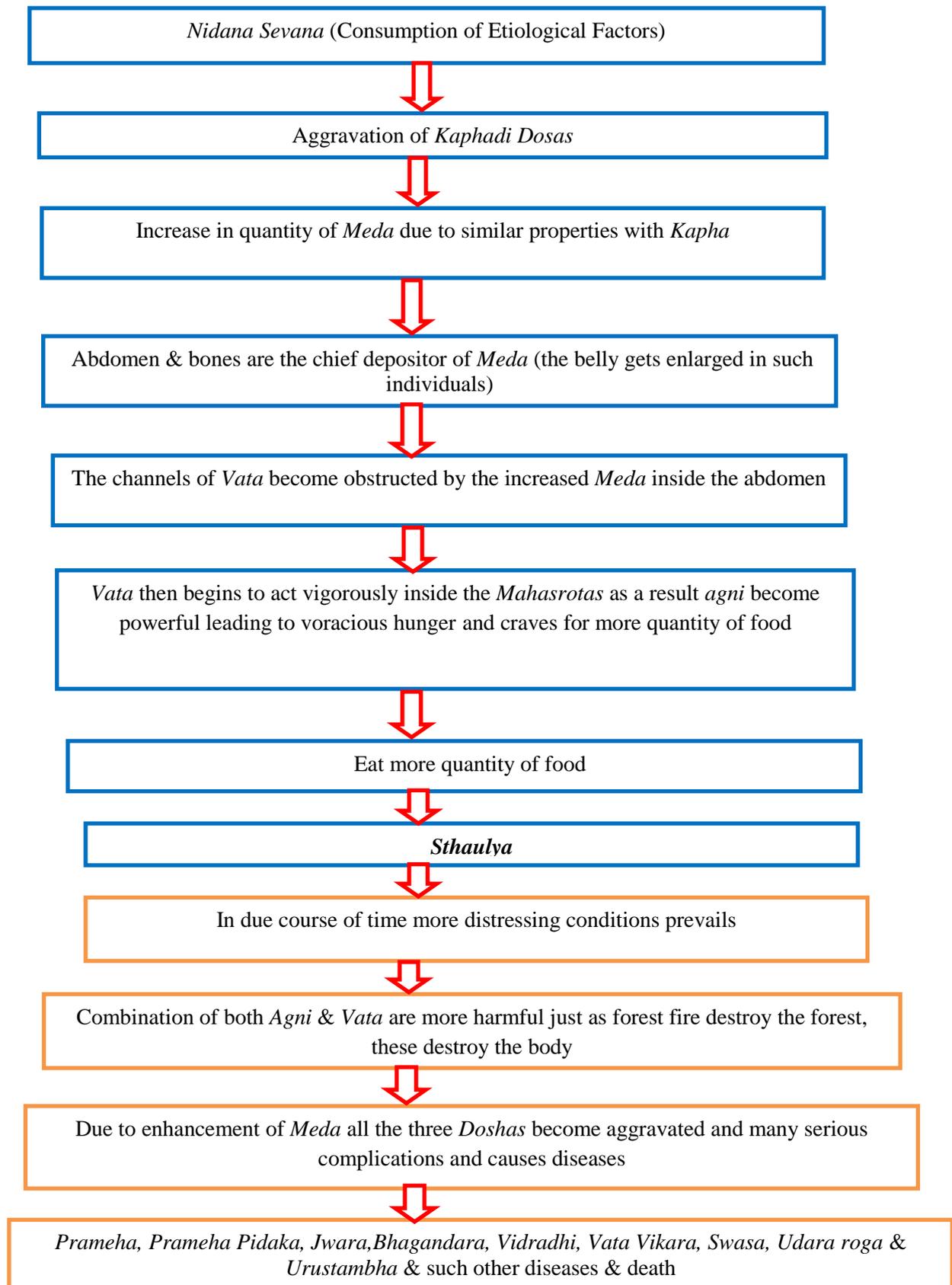
**SAMPRAPTI**

*Sthaulya* (Obesity) is documented as a disease in *Ayurveda*. The *acharyas* mentioned the disease with detail in their *Samhita*. *Acharya* Susruta and *Acharya*

*Charaka* has mentioned the *samprapti* of the *sthaulya* and its further complications. The *samprapti chakra* as per *Acharya* Susruta and *Acharya* *Charaka* are shown systematically by flow chart method in Fig No.2 &3.



**Fig. 2: Samprapti chakra of sthaulya according to Acharya Susruta.**



**Fig. 3: Samprapti chakra of sthauilya according to Acharya Charaka.**

#### ***Pathya and Apathya***

*Pathya* and *Apathya* for *sthula* patients are mentioned in Table No.4

Table 4: Pathya and Apathya for *sthaulya*.

| Pathya  | Apathya  |
|---|--|
| <ol style="list-style-type: none"> <li>1. Rasa – Katu, Tikta, Kashaaya</li> <li>2. Guna – Rooksha</li> <li>3. Shooka – Yava, Puraana, Shaalee, Venu Yava, Koradoosha, Shyaamaaka, Neevaara</li> <li>4. Shaaka – Dagdha Vaartaaka Phala, Patrottha Shaaka</li> <li>5. Shimbee – Kulattha, Chanaka, Masoora, Mudga, Aadhakee,</li> <li>6. Maamsa – Chingata Matsya Dugdha – Takra</li> <li>7. Drava – Madya, Sarshapa Taila, Bibheetaka Taila</li> <li>8. Kritaanna – Bharitraka, Pippalyaadi Kashaaya Siddha Aahaara.</li> <li>9. Other – Triphalaa, Trikatu, Elaa, Madhu, Laaja, Guggulu, Loha Bhasma, Priyangu Choorna, Kshaara, Shilaajathu, Agaroo Lepa, Koshna Jala, Chinta, Shrama, Jaagarana, Maithuna, Udvartana, Langhana, Rechana, Vamana</li> </ol> | <ol style="list-style-type: none"> <li>1. Rasa – Madhura</li> <li>2. Guna – Sugandha</li> <li>3. Dhaanya – Godhuma, Nava Shaalee</li> <li>4. Shimbee – Maasha</li> <li>5. Maamsa – Matsya,</li> <li>6. Dugdha – Dugdha, Dugdhjanya Padaartha</li> <li>7. Phala – Ikshu</li> <li>8. Bath with cold water</li> <li>9. Sleeping and sitting with the help of cushioned</li> <li>10. Aaramtalab</li> </ol> |

***Sthaulya Chikitsa (Management of Obesity)***<sup>[8-10]</sup>

The first step of treatment of obesity is to avoid the causative factors. *Nitya langhana* therapy (Reducing Therapy) and *Langhana* specially in *Shishira Ritu* (Winter Season) is advised for obesity by Vagbhata.

Amongst *Shadvidha Upakrama* (Six fold Therapy), *Langhana* and *Rukshana* (Drying) therapies are more appropriate for the management of Obesity. *Langhana*, the line of treatment for Obesity has been further divided into *Samshodhana* (Biopurification therapies) and *Samshamana* (Alleviating Therapies).

**Types of *Langhana* therapy****1. *Samshodhana***

All Obese patients with *Adhika Dosha* (Increased Bio humors) and *Adhika Bala* (More strength) should be treated with *Samshodhana* therapy including *Vamana* (Medicated Emesis), *Virechana* (Medicated Purgation), etc. Being a syndromic condition, *Samshodhana* therapy is highly recommended for obese patients possessing stamina and strength.

**2. *Shamana***

Among the *Shat Upakramas*, *Langhana* and *Rukshana* can be managed in them. Alleviation of *Vata*, *Pitta* and *Kapha* especially *Samana Vayu*, *Pachaka Pitta* and *Kledaka Kapha* (Biohumors) along with reduction of *Medodhatu* by conditioning *Medodhatvagni* is the main goal of treatment of Obesity.

***Chikitsa sutra / management of sthaulya***<sup>[11]</sup>

“*Guru chapatarpanam chestam sthulanam.*” *Charaka sutra* 21/20

- ***Guru + Apatarpana Dravya Upayoga:*** – The medicines as well as food should possess the properties *Guru* and *Apatarpana*. *Guru Dravya*

helps in treating *Agni* while at the same time due to *Apatarpana* property it reduces excessive *Meda*.

- The medicines, diet and all the measures which are *Vataghna*, *Kaphaghna* and *Medohara* should be used. *Basti* with drugs having *Teekshna*, *ushna* and *Rooksha* properties, *Lekhana Basti* and *Rooksha Udvartana* should be administered. (*Charak sutra* 21/21)
- Following *Viharas* should be adopted for *Sthaulya* treatment *Prajaagarana*, *Vyaamaama*, *Vyavaya*, *chintaa*. All these *Vihara* should be adopted and their intensity should be increased gradually <sup>[12]</sup>. (*Charaka sutra* 21/28)
- The drugs having *Virookshana* and *chedana* properties are indicated in *Sthaulya* treatment <sup>[13]</sup>.

**DISCUSSION**

*Ahara* and *viharatmaka nidanas* mentioned for *Sthoulya* causes aggravation of *kapha* and are responsible for *medovridhi*. These factors are contributing to get obesity in persons who have tendency to gain weight due to genetic predisposition (*beejadusti*).<sup>[14]</sup> The concept of *santarpaka*<sup>[15-17]</sup> (over nourishment) *ahara* and *vihara*, when viewed with contemporary medical science, then it can be interpreted that the components of the *nidanas* are nothing but, the high caloric foods and sedentary life styles. The life span of an obese person decreases proportionally with increase of BMI. As a result, there will be increased chances of developing complications like stroke, IHD. Hence prevention of *Sthaulya* is very much essential. Among the different levels of prevention mentioned nowadays in science, are all applicable in obesity. The primordial prevention of obesity aims at general education about the different aspects of the disease like causes, complications and prevention to the public. Since obesity is having its early origin from childhood, modifications in lifestyle like alterations in eating patterns, adopting physical exercises and

prevention of addictions can be undertaken. Primary prevention is most useful in people having positive family history. This level of prevention can be adopted through controlled diet, regular physical exercises, avoiding sedentary lifestyle. The secondary prevention can be implemented to prevent the progressive stages of obesity after its manifestation. Regular exercise, diet control along with various treatment modalities are adopted which help in controlling, reducing the complications. Following purificatory therapies limit the impairments and minimize the disabilities. Thus these act as effective tertiary preventive methods.

## CONCLUSION

Obesity is a serious and highly prevalent disease associated with increased morbidity and mortality. A thorough medical assessment is required to identify patients who are obese or at risk for obesity or obesity-related complications. Treatment should be based on good clinical care and evidence-based interventions and it should be individualized and multidisciplinary, focus on realistic goals, weight maintenance and prevention of weight regain. All patients should be provided lifestyle therapy with consideration for pharmacotherapy and bariatric surgery when indicated. Physicians have a responsibility to recognize obesity as a gateway to disease and help patients with appropriate prevention and treatment schemes for obesity and its co-morbidities.

Hence the non-treating the disease obesity (*sthaulya*) or ignoring it may create blunder and invite further complication in later stages and the adverse effect of *sthaulya* (Obesity) cannot be ruled out to an appropriate period of time. Therefore, treating the disease at its initial stages are recommendable and prudent decision. Moreover, *Ayurveda* managements are safe, effective and economic for this disease without any side effect.<sup>[18-21]</sup>

It looks that we need to reassess entire lifestyle if we want to prevent and manage obesity. In *Ayurveda Ahara, Vihara, Dincharya, Ritucharya, Yoga, Rasayana* are described which have good role in prevention & cure of the obesity. The prevention and management of obesity can be done successfully in *Ayurveda*. Moreover, *Ayurvedic* treatments are risk-free & affordable by everyone.

## REFERENCE

1. Website WHO obesity <https://www.who.int>.
2. Website WHO obesity <https://www.who.int/topics/obesity>.
3. Charaka Samhita by Agnivesha, revised by Charaka and Dridhabala with Ayurveda- Dipika commentary of Chakrapanidatta edited by Vaidya Jadavji Trikamji Acharya Sutrasthana 21st Chp Sl.no4 Pp116. Edited by Jadavaji Trikamji, Fifth Edition, Published by Chaukhambha Sanskrit Sansthana, Varanasi, 2001.
4. <https://www.who.int/health-topics>.
5. Minal P. Mawale et al "Prevention and Management of Obesity"/ Int.J.Res.Ayurveda Pharm. 5(1), Jan-Feb 2014
6. Doon, Nicholas Aeditor. Davidson's, principles and practice of medicine, Sir Stanley- 20<sup>th</sup> ed. Philadelphia, Churchill livingstone Elsevier, 2006; 111-117.
7. *Charaka Samhita by Agnivesha, revised by Charaka and Dridhabala with Ayurveda- Dipika commentary of Chakrapanidatta edited by Vaidya Jadavji Trikamji Acharya Sutrasthana 21st Chp Sl.no3 Pp116. Edited by Jadavaji Trikamji, Fifth Edition, Published by Chaukhambha Sanskrit Sansthana, Varanasi, 2001.*
8. Ashtang Sangraham (4) Sutrasthana Adhyaya 24/9, 292, Vahataor Vriddha Vagbhata 19 with the Sasilekha Sanskrit Commentary by Indhu, Edited by Dr. Shiv Prasad Sharma.
9. Charaka Samhita by Agnivesha, revised by Charaka and Dridhabala with Ayurveda- Dipika commentary of Chakrapanidatta edited by Vaidya Jadavji Trikamji acharya a Sutrasthana 22nd Chp Sl.no18 Pp-121. Edited by Jadavaji Trikamji, Fifth Edition, Published by Chaukhambha Sanskrit Sansthana, Varanasi, 2001.
10. Charaka Samhita by Agnivesha, revised by Charaka and Dridhabala with Ayurveda- Dipika commentary of Chakrapanidatta edited by Vaidya Jadavji Trikamji Acharya Sutrasthana 21st Chp Sl.no21 Pp-117. Edited by Jadavaji Trikamji, Fifth Edition, Published by Chaukhambha Sanskrit Sansthana, Varanasi, 2001.
11. Charaka Samhita of Agnivesha, elaborated by Charaka & Dridhabala edited with Charaka-Chandrika Hindi Commentary by Dr. Brahmanand Tripathi, Chaukhambha Surbharati Prakashan Varanasi, 2001; 404.
12. Charaka Samhita of Agnivesha, elaborated by Charaka & Dridhabala edited with Charaka-Chandrika Hindi Commentary by Dr. Brahmanand Tripathi, Chaukhambha Surbharati Prakashan Varanasi, 2001; 405.
13. Ashtang Sangraham (4) Sutrasthana Adhyaya 24/5, 291, Vahataor Vriddha Vagbhata 19 with the Sasilekha Sanskrit Commentary by Indhu, Edited by Dr. Shiv Prasad Sharma.
14. Vagbhat, Ashtanga Hridayam Sutrasthana Adhyaya 14/14, edited by Hari Shankar Shastri, Ninth Edition, Chaukhamba Orientalia, Varanasi, 2002; 224.
15. Charaka Samhita by Agnivesha, revised by Charaka and Dridhabala with Ayurveda- Dipika commentary of Chakrapanidatta edited by Vaidya Jadavji Trikamji Acharya Sutrasthana 16th Chp Sl.no13 Pp-97. Edited by Jadavaji Trikamji, Fifth Edition, Published by Chaukhambha Sanskrit Sansthana, Varanasi, 2001.
16. Charaka Samhita (1) Sutrasthana Adhyaya 22/4, 120..... Charaka Samhita by Agnivesha,

- revised by Charaka and Dridhabala with Ayurveda- Dipika commentary of Chakrapanidatta edited by Vaidya Jadavji Trikamji Acharya Sutrasthana 22nd Chp Sl.no4 Pp-120. Edited by Jadavaji Trikamji, Fifth Edition, Published by Chaukhambha Sanskrit Sansthana, Varanasi, 2001.
17. Charaka Samhita by Agnivesha, revised by Charaka and Dridhabala with Ayurveda- Dipika commentary of Chakrapanidatta edited by Vaidya Jadavji Trikamji Acharya Sutrasthana 21st Chp Sl.no17 Pp-117. Edited by Jadavaji Trikamji, Fifth Edition, Published by Chaukhambha Sanskrit Sansthana, Varanasi, 2001.
  18. Ashtang Sangraham (4) Sutrasthana Adhyaya 1/17, 6, Vahataor Vriddha Vagbhata 19 with the Sasilekha Sanskrit Commentary by Indhu, Edited by Dr. Shiv Prasad Sharma.
  19. Ashtang Sangraham (4) Sutrasthana Adhyaya 24/5, 291, Vahataor Vriddha Vagbhata 19 with the Sasilekha Sanskrit Commentary by Indhu, Edited by Dr. Shiv Prasad Sharma.
  20. Vagbhat, Ashtanga Hridayam Sutrasthana Adhyaya 14/14, edited by Hari Shankar Shastri, Ninth Edition, Chaukhamba Orientalia, Varanasi, 2002, 224.
  21. Charaka Samhita by Agnivesha, revised by Charaka and Dridhabala with Ayurveda- Dipika commentary of Chakrapanidatta edited by Vaidya Jadavji Trikamji Acharya Sutrasthana 16th Chp Sl.no13 Pp-97. Edited by Jadavaji Trikamji, Fifth Edition, Published by Chaukhambha Sanskrit Sansthana, Varanasi, 2001.