



**A STUDY FOR ASSESSMENT OF *MEDA DHATU* IN OBESITY W.S.R. SKIN FOLD THICKNESS**

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**ABSTRACT**

In present Era Obesity (*Sthaulya*) has become a big problem in the world. According to WHO 1.9 billion adults were overweight in 2016, with 650 million obese. Maximum world's population lives in countries are overweight. Obesity have high mortality rate as compare to underweight. The 21<sup>st</sup> century, continuously changing life styles, environment, dietary habit and modernization has made man the victim of various lifestyle disorders. In our classics Obesity is correlated with *Sthaulya* also known as *Medo Roga* in *Ayurveda*. According to *Acharya Caraka*, *Sthaulya* is considered under *Aṣṭanaindita Puruṣa*. Excessive deposition of *Meda* and *Mamsa* at various body parts is considered as *Sthaulya*. This is an era for *Ayurveda*, so an effort is made to go hand in hand with modern science to cope up with various diagnostic difficulties and also to prove methods and *Lakṣaṇa* described in *Ayurveda* as per modern science with evidence. Therefore a study was conducted in PG hospital, Rishikul Campus UAU Haridwar to assess *Meda Dhatu Vriddhi* and *Dushti Lakshana* with the increasing Skin fold thickness in 50 obese patients with inclusion criteria of Skinfold thickness (sum of measurement of all 4 sites)  $\geq 40\text{mm}$  in male and  $\geq 50\text{mm}$  in female. The studies revealed that Skin fold thickness have direct relation with *Meda Dhatu vriddhi lakṣaṇ* but no relation with *Meda Dhatu Duṣṭi Lakṣaṇ*

**Keywords:** *dusti, purusa, meda mamsa*

**INTRODUCTION:** *Ayurveda*, the ancient science of life explains all the concepts to obtain a healthy life. Ideal characteristics and desirable measurements of various parts of body are mentioned thereby considering those people as Ideal man. The variations in these characteristics are not considered as ideal and eight such features are explained as *nindta*(undesirable conditions) . *Atisthool*(very obese) is one among *Ashtanindhya Purusha*<sup>1</sup>, which further causes multiple systemic disorders and finally *Aayuhra*<sup>2</sup> In present era *Sthaulya* has become a very common lifestyle disorder due to irregular dietary habits, sedentary life style and change in

sleep pattern. The *Dhatwagni* is disturbed during the pathogenesis of *Sthaulya*<sup>3</sup> as result of which mainly *Meda Dhatu* is formed. *Acharya Caraka* had defined *Sthaulya* as: Excessive deposition of *Meda* and *Mamsa* at various body parts such as *Sphika*(Hip), *Udara*(Abdomen) and *Stana* (Chest) and also having unequal abnormal distribution of *Meda* with lack of enthusiasm is called as "*Atisthūla*"<sup>4</sup>.

The relation with vitiation of *Meda Dhatu* and *Sthaulya* was defined by *Acharya Caraka* in its *Samhita* under the heading *Sthaulya* and mentioned by *Acharya Sushruta* in *Samprapti* of *Sthaulya*.

According to WHO Obesity and overweight is defined as abnormal or excessive weight accumulation that may impair health<sup>5</sup>. In modern science various parameters such as BMI, Skin fold thickness, Waist hip ratio (WHR) are described to assess Obesity<sup>6</sup>. So in this study *Meda Dhatu* is assessed with the increasing Skin fold thickness in obese patients with BMI greater than and equal to 30.

This is an era for *Ayurveda*, so an effort is made to go hand in hand with modern science to cope up with various diagnostic difficulties and also to prove methods and *Laksana* described in *Ayurveda* as per modern science with evidence.

Due to the pathogenesis of *sthaulya* excessive deposition of Meda dhatu occurs at different sites. In *Ayurveda* Meda is classified into *Baddha Meda* and *Abaddha Meda*<sup>7</sup>. *Badha Meda* can be correlated with adipose tissue mentioned in allied science<sup>8</sup>. So, the study is conducted to assess the status of *Meda Dhatu* wsr to Skin fold thickness..

### AIM AND OBJECTIVE:

1. To assess status of *Meda Dhatu Vriddhi* on the basis of Skin fold thickness
2. To assess status of *Meda Dhatu Dushti* on the basis of Skin fold thickness

**MATERIAL AND METHODS:** After the approval of IEC ref. no UAU/RC/IEC/2021/ 1-53 dated on 2/07/2021. Total 50 patients were selected from the OPD of *Roga Nidan Avum Vikriti Vigyan* Department, Rishikul Campus, UAU, Haridwar between the age group of 16-70 years of age. The weight and height of patient was assessed to calculate the BMI and with help of Skin fold Caliper four consecutive measurement was taken and the mean was calculated for accurate result from the four site (subscapular, suprailiac, triceps and biceps) to measure Skin fold thickness of the patients<sup>9</sup>. All registered cases were evaluated as per the questions based on features of *Meda Dhatu Vriddhi* (Table no. 1) and *Meda Dhatu Dushti* (Table no 2) mentioned in *Ayurvedic* classics and Skin fold thickness

**Table no 1:- Features of Meda Vridhi<sup>10</sup>:**

S.No.	<i>Meda vridhi</i>	Assessment via	
1	<i>Alpe Cheshtite Shwasam</i>	dyspnea on mild exertion	Asking question and observation
2	<i>Sphik Udar Lambanam</i>	increase circumference of butt, & abdomen	Waist hip ratio
3	<i>Snigdha Angata</i>	unctuousness of body	Observation(via touch)
4	<i>Kasa</i>	cough	Question/Auscultation
5	<i>Shwasa</i>	Breathlessness	Observation/Question
6	<i>Daurgandhya</i> (foul smell body)	foul smell	Question and Observation

**Table no 2:- Features of Meda Dusti<sup>11</sup>**

S.No.	Meda Dusti	Assessment via	
1	<i>Javaprodha</i>	lack of enthusiasm	Question (history taking)
2	<i>Krichvyavayta</i>	lack of sexual activity	Question (history taking)
3	<i>Daurbalya</i>	Weakness	Question (history taking)
4	<i>Daugandhya</i>	foul smell	Question & Observation (by smell)
5	<i>Swedabadha</i>	uncomfortable due to sweating	Question & Observation
6	<i>Kshuda Atimatra</i>	Polyphagia	Question
7	<i>Pipasatimatra</i>	Polydipsia	Question
8	<i>Jatilibhava Keshesu</i>	complex hair	Question & observation (appearance )
9	<i>Madhurasyata</i>	sweet taste of mouth	Question
10	<i>Karapada Supta Daha</i>	numbness and burning sensation in hand and feet	Question & inspection (via touch)
11	<i>Mukhtalukantha Shosh</i>	dryness of mouth	Question
12	<i>Aalasya</i>	feeling of laziness	Question
13	<i>Malinkaya Chidra Updeha</i>	ugly appearance due to excess secretions of mucous from orifices of body	Inspection / question
14	<i>Angaparidha Suptata</i>	feeling of burning sensation and numbness of body parts	Question / inspection (via touch)
15	<i>Shatpadpiplikasch Sharira Abhisarnam</i>	roaming or attracting of fly , ant, butterflies etc toward the patient body	Question
16	<i>Mutre Ch Mutrdoshan</i> (abnormality in the urine)	change in normal physical appearance of urine	Routine and microscopic examination of urine

**I. Inclusion criteria:-**

- Individual having BMI  $\geq 30$
- Individual between the age group 16-70 years are included.
- Individual having Skin fold thickness (sum of measurement of all 4 sites)  $\geq 40$ mm in male and  $\geq 50$ mm in female.

**II. Exclusive criteria:-**

- Individual of less than 16 years & more than 70 years of age.
- Individual having BMI  $< 30$
- Individual having diabetes, renal disease, cardiovascular disease, abnormal

thyroid hormone, HIV, Hepatitis B, carcinoma etc.

**III. Investigation:-**

- Biochemical test- FBS**
- Urine examination (R/M)**

**OBSERVATION:**

Total 50 patients fulfilling the inclusion criteria were registered and their observations that:

- *Meda Dhatu Vrddhi Lakṣaṇa* wise, maximum number of patients were having *Alpaceṣṭāhiśvāsan* (76%), *Snigdhamgatā* (78%), *Sphikudaralambanam* (100%),

*Daurgandhya*(64%) and maximum patient were not having *Kāsa* (66%) and *Śvasavṛddhi* (62%)

- *Meda Dhatu Duṣṭi Lakṣaṇa* wise, number patients were having *Javoprodha*(66%), *Kṛcchavyavāyātā*(54%), *Daurbalya* (66%), *Svedābādha*(52%), *Daurgandhya*(64%), *Kṣudātīmātrā*(24%), *Pipāsātīmātrā*(42%), *Jaṭilībhāvakeśae*(34%), *Mādhuryāsya*(4%), *Karapāda suptadāha*(40%), *Ālasya*(52%), *Mukhatālu* *Kaṇṭhaśoṣa*(38%), *Malinakāyacchidrupdaiḥ* (8%), *Śatapadapipīlikābhiśca* *Śarīra Abhisāranama* (0%), *Aṅgaparidāh aur sūptatā*(16%), *Mūtre C Mūtrdoṣān*(11%), *Viśtra Śarīragandhā*(16%).

- Skin fold thickness wise that maximum 68% patients were having Skin fold thickness in the range of 70-140mm, while 32% patients were having Skin fold thickness in the range of 140-210mm.

## DISCUSSION:

Most of the patients in this study belongs to the age group of 34-52years increased prevalence in this age group might be that, as per *Acharya Caraka* in *Madhyam Kala* all *Dhatu*s reach to it *Paripurṇa Avastha*. So, *Sthaulya* found more in *Madhyam Kala*. As per allied sciences some textbooks of Davidson principle and practice of Medicine also supports the same observations i.e. excess weight gain usually starts when individuals are aged between 30 – 60 years with maximum body weight being achieved in middle age. *Adhyasana* was found in maximum number of patients. The *Adhyasana* type of dietetic habit produce *Ama* in the body and makes *Medodhatvagnimandya* leads to Obesity.

*Alpaeṣṭahishvsaṇ* (dyspnea on mild excretion) were found in maximum

number of patients. This is due to the reason that The increased work of the inspiratory muscles to expand the lungs and chest wall against the fat load as well as the reduced lung and chest wall compliance, may contribute to the increased oxygen cost of breathing during exercise and the characteristic shallow and rapid breathing pattern of obese individuals.

*Snigdhamgata* (unctuousness of body) was found in maximum patients, the reason might be the *Sneha* as one of *Guna* of *Meda* and as per *Sarvadhanasamāmya vṛddhi karnam*, *Snigdhanṣ* in body increases leads to unctuousness of body. In Obesity BMI above 30 leads to increase secretion of sebum from sebaceous glands result in oily skin texture<sup>12</sup>

*Sphikudaralambanam* was found in all registered patients. This is due to the reason that central Obesity which is most common in India. This is considered with help of increased waist hip ratio.

Maximum patients were having *Daurgandhya*. The reason might be the sweating increase as mentioned in *Ayurveda* that *Sveda* is the waste product of *Meda Dhatu*. As result of which increase production of vitiated *Meda Dhatu* increases *Sveda*. *Sveda* along with *Kleda* released leads to bacterial growth result in foul smell. Body odor occurs when bacteria on your skin break down acid in sweat. Apocrine sweat released is colorless and odorless. When bacteria on the body start to break down dried sweat, an offensive smell can result in people with bromhidrosis and as adipocytes increases result on more secretion of sebaceous glands.

*Javoprodha* (lack of enthusiasm) was found in maximum patients, this is due to production of *Āma* and *Dhatvagni*

*Mandata* in pathogenesis of *Sthaulya*<sup>13</sup>. It leads to the formation of under nourished *Dhatu* resulting in lack of energy.

Maximum patients were having *Kṛcchvyavayta* the reason might be the *Sukra Dhatu* which is responsible for sexual activity and it is not formed properly in Obesity which results in reduction of sexual activity. Obese patients are more prone towards erectile dysfunctioning.

Maximum 66% patients have *Daurbalya* (weakness). This might be due to undernourished *Dhatu*s as result of obstruction in *Srotas* and *Dhatwagni mandata*.

Maximum patients were having *Svedabadha* (uncomfortable due to sweat). The reason might be the climate conditions of the city. The obese patient body temperature slightly high as compare to other so, the heat generated by their body alone can make it possible to sweat excessive. As per *Ayurveda*, *Sveda* is the byproduct of *Meda Dhatu*. As vitiation of *Meda Dhatu* increases, the byproduct of the *Dhatu* also increases leads to excessive sweating which causes discomfort to the patients in *Sthaulya*.

Most of patients were having the symptom of *Kṣaudatimatra* because increasing *Vāta* in *Koṣṭha* results in increase of *Agni* leads excessive hunger.

40% patients were having *Karapada supta daha*. *Suptabhi* is one of *Updhatu Pradoshaja Vikara*<sup>14</sup>. The reason behind this *Lakṣaṇa* might be the formation of vitiated *Updhatu* which is due to *Dhatvagnimandata* and obstruction in channels.

In this study most of the patients were having *Alasya*. The reason might be lack of energy as result of under nourishing *Dhatu*s due to obstruction in the channel of

*Meda Dhatu*. It was evident that junk food beget laziness, according to the lifestyle of obese patients had lots of junk food.

Very few patients i.e.38% were having *Mukhatalu kaṅṭhashosa*. As it is a symptom of *Meda Dhatu Dushti* (*Purvarupa* of *Prameha*) the presence of this *Lakṣaṇa* in 38% of patients might be due to the prediabetic conditions or may be because of other factors such as open mouth breathing, dehydration, dry and hot wheather etc.

Few patients were having *Mut্রে Ch Mutrdoshan*. But incontinence of urine was found in maximum number of patients associated with Obesity as excessive weight on abdomen put pressure on bladder and results in leaking of urine.

The reason of excessive sleep might be the predominance of *Kapha*, as *Kapha* and *tamo guna* leads to *Nidra*. But in my study maximum patients i.e. 56% were found of disturb sleep, because the patients registered were having small babies and day/ night shifting job. Sleep loss result in metabolic and endocrine alterations, decrease level of leptin results in increases appetite. This evidence shows that lack of sleep or loss of sleep also increases risk of Obesity.

Maximum patient were having *Tandra*. The reason might be lack of sleep, fatigue mind and body due to work load and stress in current scenario results in drowsiness.

#### CONCLUSION:

It was found from the present study that the *Lakṣaṇa* mentioned in *Ayurveda* for *Meda Dhatu Vriddhi* and *Meda Dhatu Dushti* have a relation with Modern Parameters. *Lakshana of Meda Dhatu vriddhi* have direct relation with skin fold thickness whereas no relation was found between of *Meda Dhatu Dushti* and Skin fold thickness. This shows that *Meda*

*Dhatu Vriddhi* is related with quantity of *Meda* whereas *Meda Dhatu Dushti* is related to the quality. This will help in appropriate treatment whether to improve the quality or decrease the quantity of *Meda Dhatu* to attain and maintain the health of individual.

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