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# Cross Sectional Study of Assessment of *Ashtadosha* in *Atisthula* with reference to Lipid Profile

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## ABSTRACT

In present era, the complications related to lifestyle disorders like Obesity is the commonest thing to encounter in practice. Hence, even in Ayurvedic clinical practice there has been a surge in *Sthool* patients and the complications related to the same has increased evidently in recent times. However, to treat any disease there should be a thorough understanding of etiopathogenesis of the same, this can be well understood through *Nidanpanchak* of any ailment. The conceptual study about *Sthaulya* has been done earlier and also many treatment protocols have been established based on the above said. As the *Sthool* patients not only deal with the symptoms of it but also the impediments of it, therefore the complications and impediments have to be understood thoroughly. The *Ashtadosha* of *Atisthula* mentioned by *Charaka* explains the impediments of *Sthaulya*. In this study for Ayurvedic approach the parameters are explained through the ayurvedic concepts and assessed with the help of some modern science tools. Also, there are many associations developed between Obesity and dyslipidemia. Hence this study targets on assessment of *Ashtadosha* in *Atisthula Purusha* and correlation with the dyslipidemia in such patients.

**Key Words** *Atisthula, Ashtadosha, Dyslipidemia, Aayu Hras*

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## INTRODUCTION

Classics of Ayurveda defines Health (*Swastha Purusha*) as a healthy body is the way to achieve the ultimate goal among the four object of human pursuit (*Chaturvidha Purushartha*). It also says, that *Madhyam Sharira* leads to health but *Ati Sthool* and *Ati krisha* are always affected with some complaints<sup>1</sup>.

*Sthaulya* (Obesity) is defined as increased body weight beyond desired standard. *Acharya Charaka* has quoted *Sthaulya* (Obesity) under the eight varieties of impediments, which are

designated as *Ashta-Ninditapurusha*<sup>2</sup>. He also included *Sthaulya* under *Santarpanjanita Vyadhi* (disease due to overindulgence in fatty diets)<sup>3</sup>. *Acharya Charak* has stressed on *Ashtadoshas* of *Atisthula* among the *Ashtaunindita Vyadhi*<sup>4</sup>.

There is no direct description of Hyperlipidemia as a disease in any Ayurvedic Samhita. But it can be considered as a *Santarpanjanya Vyadhi* with respect to its causative factors, pathogenesis and complications. Hyperlipidemia is one of the burning problems which will hamper the different systems in the body. It is the term used

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to denote raised serum levels of one or more of total cholesterol and triglycerol (combined hyperlipidemia). Dyslipidemia is a wider term that also includes low levels of high-density lipoprotein cholesterol<sup>5</sup>.

There has been a lot of studies done and going on *Sthaulya* (Obesity) paying special emphasis on learning the intercaries connected with *Sthool*, stressing upon the different complexities of management. This is a humble attempt to probe into the ayurvedic pathophysiological aspects of *Sthaulya*, taking into consideration the classical complications (*Ashtadoshas* of *Atisthula*) mentioned in the *Ayurvedic* texts and also the modern concepts of Obesity and Dyslipidemia. There is an effort to find out whether there is an association between *Ashtadoshas* and Dyslipidemia through a questionnaire dealing with the *Ashtadosha* questions and the lipid profile test of a *Sthool*(Obese) patient.

### AIM

Assessment of *Ashtadosha* in *Atisthula* with special reference to lipid profile.

**Primary objective-** To study the prevalence of *Ashtadosha* in obese patients.

**Secondary objective-** To study correlation between *Ashtadosha* of *Atisthula* and Dyslipidaemia.

### MATERIALS AND METHODS

**MATERIALS:** The materials used in this study are-

**A. Literatures-** the study being fundamental and observational, literatures were used

**1. Brihatrayi with commentaries. –**

***Charaka Samhita-***

According to *Charak Samhita Sthaulya* or *Medoroga* is one of the 20 types of *Kapha Nanatmaja Vikara* in *Maharogadhyaya*, are described in 20<sup>th</sup> *adhyaya* of *Sutrasthana* of *Charak Samhita*<sup>6</sup>. *Atisthulya* has been mentioned under the title of *Ashtau- Nindita Purusha* in *Sutra Sthan* 21st *Adhyaya*<sup>2</sup>. *Ashtadosha* of *Sthaulya* and its aetiopathogenesis<sup>4</sup> and pathophysiology of excessive hunger and thirst and complication due to its ignorance, definition and cardinal symptoms of *Sthaulya* are described

### ASHTADOSHA OF ATISTHULA

The *Atisthula Purusha* is characterized by the 8 impediments or *Ashta Dosha* which are also referred as symptoms of *Sthaulya* by some of the *Acharya* in Ayurvedic texts. But *Charaka* has specified these as impediments related to *Ati Sthula*.<sup>(4)</sup>This also indicates that the people with these impediments are difficult to treat as they qualify for the *Nindita Purusha criterias* and these people are more prone for other complications. The *Ashta Dosha* are enlisted as

1. *Aayushohras-*

This impediment is also named as *Alpa Pran* by some of the *Granthakara*. In *Medasvi* person, specifically *Meda Dhatu* is over nourished but other *Dhatu* are under nourished due to the *Avarana* created by excess of *Meda Dhatu* in the path of other *Dhatu Parinamana*. Hence it leads

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to *Ayu Hras*<sup>4</sup>. According to Vachaspatyam the meaning of the words “*Aayu*” and “*Hras*” are *Aayu*- the *samyoga* of *Sharir*, *Aatma*, *Mann*, and *Indriya*. It is also interpreted as *Jivita Kala*(*Aayus*), *Avastha*, *Vaya*<sup>7</sup>, which means life span or longevity of life. *Hras* is interpreted as *Apachay* i.e. loss . Hence the literal meaning of *Aayu Hras* is loss in longevity of life which either shows early mortality or early ageing in the alive patients. The early ageing can be assessed by the *Hras Kram* given by *Sharangdhar Samhita*<sup>8</sup> as seen in Table no.1.

**Table 1-**Aayu Hras Kram:

No.	Decades	Years	Sarangadhara
1	First	1-10	Balya
2	Second	11-20	Vrddhi
3	Third	21-30	Cabi
4	Fourth	31-40	Medha
5	Fifth	41-50	Tvaca
6	Sixth	51-60	Drsti
7	Seventh	61-70	Sukra
8	Eighth	71-80	Sukra
9	Ninth	81-90	Buddhi
10	Tenth	91-100	Karmendriya

### 2. *Javoparodha* (*Utsah Hani*) –

This characteristic can also be termed as *Ayatha Upachaya*. Literal meaning of the word *Javoparodha* is interpreted as *Avarana* of any *Vega* or stopping the *Vega*(drive to perform any activity) in Ayurveda *Shabdakosha*. *Acharya Charaka* has explained that consumption of *Madhur Ras*, *Snigdha Dravya*, and *Sheet Virya Dravya* leads to *Shithilata* (muscle weakness) and also whole body weakness (*Sukumarta*) is witnessed<sup>4</sup>.

### 3. *Krichhravyavaya* –

*Acharya Charaka* has mentioned that, when excess of *Meda Dhatu* sometimes even *Kapha*

*Dosha* is involved, obstructs the *Shukravaha Srotas*<sup>4</sup>. Hence leading to lack of sexual drive in *Atisthula* person. The literal meaning of *Krichhra* is “with difficulty” in *Shabdasagar*. and the meaning of *Vyavaya* is *Maithun Karma*.

### 4. *Daurbalya*-

This means weakness or lack of strength. *Bala* of a person a very important role in controlling any disease. This proves Body’s strength does not depend on the size of the body but depends on the nourishment of the body. *Chakrapni* has commented that *Medoroga* or *Sthaulya* leads to the improper nourishment of the *Dhatus* and hence does not give strength but leads to weakness in the body.

### 5. *Daurgandhya* –

*Acharya Charaka* has mentioned that *Daurgandhya* (bad odour) from the body is seen in *Atisthula*<sup>4</sup> due to *Dosha* of *Meda Dhatu*. As *Sweda* is *Mala* of *Meda Dhatu* and if *Meda* is excessively produced the *Mala* will also be produced in excess and get stored. As this *Dhatu* is not formed in a pure form the *Mala* is also not bifurcated properly and hence it may contain some traces of *Ama* which leads to *Daurgandha*.

### 6. *Swedadhikya*-

*Acharya Charaka* has mentioned that as *Swabhav* (natural tendency) *Sweda* is directly proportional to *Meda*<sup>4</sup>. Hence in *Medoroga* or *Sthaulya* *Atisweda* can be witnessed. *Chakrapani*, has explained that the *Meda Dhatu* when accompanied with *Kapha Dosha* creates excessive *Vishyandan* , due to *Gurutva* and *Vyayam Asahatva* (intolerance to physical

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activity) altogether leads to *Swedabadha*.

### 7. Atikshudha-

Acharya Charaka has specified the excessive production of *Meda Datu* creates obstruction due to which *Vata Prakopa* can be witnessed which in turn ignites digestive fire (*Koshthagni*) abnormally and this leads to pseudo hunger<sup>4</sup>.

### 8. Atipipasa-

Acharya Charaka has mentioned this as the last characteristic of *Atisthula*. The pathogenesis of this also can be understood by the *Tikshnagi* and *Dushti* of *Pachaka Pitta* which leads to *Ama* and can result into *Pipasa Adhikya*<sup>4</sup>.

### Sushruta Samhita-

Acharya Sushruta has described "*Sthaulya*" in *Sutra Sthana*, 15th *Adhyaya* "*Dosha Dhatu Mala Kshaya Vriddhi Vigyaniya*." He has also mentioned there, the aspects of *Nidana*, *Samprapti*, *Updrava* & *Chikitsa* etc<sup>9</sup>. He also described the treatment principles of *Sthaulya* in *Sutra Sthana* 35th *Adhyaya*, *Aturopkramniya Adhyaya*<sup>10</sup>. Further, the course and complication of the disease with some different line of treatment are discussed at various places in *Sushruta Samhita*. *Sthaulya* is considered as the physical condition of the body as a result of vitiated *Meda Dosha*<sup>11</sup> and a symptom of disruption of *Medovaha Srotas*<sup>12</sup>, *Rasa nimitaja disorders*<sup>13</sup>.

### Ashtanga Sangraha & Hridaya-

*Vridha Vagbhatta* and *Vagbhatta* have elaborated aetiopathogenesis of *Sthaulya* on the basis of formation of *Ama* and disturbance of the process of *Dhatu Parinamana* i.e. intercellular

metabolism and mechanism of *Agni* which was later on understood as process of metabolism in modern era. In *Ashtanga Hridaya, Sutrasthana*<sup>14</sup>, Chapter 14 and in *Ashtanga Samgraha* Chapter 24, they have mentioned various therapeutic and prophylactic measures to cure and prevent this disease

### 2. Laghutrayi-

#### Madhava Nidan-

In *Nidan Sthana* the pathophysiology has been explained on the basis of fat tissue and fat deposit sites and also the natural tendency toward *Android Obesity* has been mentioned<sup>15</sup>. The symptomatology of *Sthaulya* has been mentioned including some new symptoms such as *Moha*<sup>16</sup>.

#### Sharangdhar Samhita-

*Sthaulya* has been described in this *Samhita* by the name of *Medo Dosha*. This text mentions *Medo-Dosha* of only one type and it is caused by the aggravation and dominancy of *Vata*<sup>17</sup>. *Sweda* has been referred as *Updhatu* of *Meda*<sup>18</sup> and *Mala of Rasna, Danta, Kaksha, Medhruadi as Mala of Meda*<sup>19</sup>. *Jatharastha Meda* which can be referred as fat in abdomen and omentum receives nourishment by *Vrikka* i.e. Role of renal-suprarenal gland was first time observed by *Sharangdhar*<sup>20</sup>. Sequential *Dhatupaka Kala* (time taken for 16 metabolism of *Dhatu*) of one month for seven was mentioned in *Purvakhanda*<sup>21</sup>. *Medaparinaman Kala* can be calculated on the basis of *Dhatupaka Kala* i.e. 15 days and 108 minutes. There is also a reference for *Basti* playing role in increasing *Meda* which says 7th *Basti* given in sequence is said to be *Meda*  
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Vardhan<sup>22</sup>. *Sthaulya* has been mentioned in the characteristics of *Shleshma Prakriti*<sup>23</sup>.

### **Bhavprakash-**

Bhava Prakasha described *Sthaulya Roga* in *Madhyam Khanda*, 39th *Adhyaya* “*Sthaulyadhikar Adhyaya*” with detailed description like: *Nidana*, *Medovriddhi Samprapti*, *Medas Sthana*, *Chikitsa* etc. He has emphasized more on risk factors, morbidity and other additional therapies<sup>24</sup>

**3. Journals-**Ayurvedic journals and articles related to *Sthaulya*.

**4. Official website-** Literature available on official websites regarding obesity and lipid profile.

**5. Modern literature-** Modern literature available such as, “Harrison’s principle of internal medicine” was referred for the etiopathogenesis of Obesity and dyslipidemia. And “Textbook of Medical laboratory techniques” was referred for the Lipid profile testing methodology and interpretation.

**6. Questionnaire/scale/score-** The memory functioning questionnaire, the Glogau scoring scale, the visual acuity tests and the WHO scoring of *Ashtadosha* were the materials used to assess the subjects.

**B. Volunteers-** 100 subjects of both genders.

**C. Source of data-** Volunteers from OPD and IPD of the study centre.

**D. Study centre-** Concerned Ayurvedic College and Hospital.

**E. Ethical clearance-** Clearance from ethics committee of the institute has been taken.

**F. Consent-** An informed written consent of the volunteers included in the study, in their best known language has been taken.

### **METHODS:**

- Study Design: Observational, Cross sectional study.

- Sampling technique- Randomly sampling was done ,consent was taken.

- Study Population – *Sthaulya* patients from OPD and IPD of our institute with BMI >25 (BMI and Waist Hip ratio will be measured)

- Sample Size: The sample size was calculated with the formula- $n=Z^2 \times P(1-P)/d^2$

- Data Collection Tool -Questionnaire, case record form for example, lipid profile test; master chart.

### **CRITERIA FOR ASSESSMENT**

**A] Assessment of *Ashtadosha* on the basis of the following questionnaire. –**

**1) *Aayu Hras-*** *Aayu Hras*<sup>7</sup> means loss of period of life span, it consists of 2 main aspects i.e.early mortality and also early or premature ageing. In this study subjects cannot be examined for the mortality but early researches have concluded the early mortality<sup>25</sup> hence only the early ageing is applied here. This can be examined with the help of *Aayu Hras Kram* said by Sharangdhar<sup>8</sup> applicable from the age 20 to 60 the parameters were examined on the basis of early ageing characteristics as given in Table no.2 and Table no.3

***MEDHA AND SMRITI HRAS (MEMORY LOSS):*** It was assessed by MFQ (Memory

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Functioning Questionnaire).

**Table 2-** Assessment of Premature Ageing  
Following features were assessed as:

Assessment of premature ageing	Present	Absent
Chavi hras and twak hras (Assessed on the basis of Skin ageing- By 1)Glogau score of skin ageing 2)Hairfall 3)Whitening of hair)		
Drishti Hras (Visual defects)- By Visual acuity tests (Snellen’s chart and near vision test)		

**Table 3** Assessment of Skin ageing  
Glogau scores for the aging of skin<sup>(26)</sup>

Classification	Age	Characteristics
Mild	28-35	Few wrinkles, no keratosis.
Moderate	35-50	Early wrinkling
Advanced	50-65	Persistent wrinkling & skin discoloration
Severe	60 up	Severe wrinkling, damage and sagging

**Table 4** Memory Functioning Questionnaire  
**General rating scale**

**Question-** How would you rate your memory in terms of the kinds of problems that you have?

Major problems	Minor problems	No problem
1 2 3	4 5	6 7

**Retrospective functioning scale**

**Question** –How is your memory compared to the way it was?

	Much worse	Same	Much better
1 year ago	1 2 3	4 5	6 7
5 years ago	1 2 3	4 5	6 7
10 years ago	1 2 3	4 5	6 7
20 years ago	1 2 3	4 5	6 7
When you were 18	1 2 3	4 5	6 7

**Frequency of forgetting scale**

**Question:** How often do these present a problem for you?

	Always	Sometimes	Never
Name	1 2 3	4 5	6 7
Faces	1 2 3	4 5	6 7

Appointments	1	2	3	4	5	6	7
Where you put things	1	2	3	4	5	6	7
Performing household chores	1	2	3	4	5	6	7
Direction to places	1	2	3	4	5	6	7
Phone numbers	1	2	3	4	5	6	7
Things people tell you	1	2	3	4	5	6	7
Keeping up correspondence	1	2	3	4	5	6	7
Personal dates	1	2	3	4	5	6	7
Words	1	2	3	4	5	6	7

**Table 5** Scoring of *Utsah Haani*.

	score
Does work satisfactory with proper vigor in time	0
Desire to work with initiation but late in time	1
Does work with lots of mental pressure and late in time	2
Does not initiate or work even after pressure	4

**Memory Functioning Questionnaire<sup>27</sup>:** As given in Table no.4

2) **UTSAH HAANI (LOSS OF ENTHUSIASM):** It was assessed according to WHO scoring of *Utsah Haani*. As given in Table no.5

3) **KRICHCHHRAVYAVAYATA (LOSS OF LIBIDO):** It was assessed according to WHO scoring of *Krichhravyavayata*. As given in Table no.6

4) **DOURBALYA (WEAKNESS):** It was

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assessed according to WHO scoring of *Dourbalya*. As given in Table no.7

**Table 6-** Scoring of *Krichhravyavayata*

	SCORE
Normal performance	0
Decreased frequency with normal performance	1
Decreased frequency with insufficiency	2
Normal performance with external stimulation	3
No sexual stimulation at all	4

**Table 7** Scoring of *Dourbalya*.

No daurbalya	0
Not able to perform strenuous activity	1
Not able to perform moderate activity	2
Cannot perform moderate activity but can perform mild activity without any difficulty	3
Even mild activity cannot be performed	4

**Table 8-** Scoring of *Dourgandhya*.

	SCORE
No odour	0
Bad odour	1
Strong odour but can be lessened by use of deodorants or perfumes.	2
Very strong odour even after using Fragrance	3

**Table 9-** Scoring of *Swedadhikya*.

	SCORE
Sweating after heavy work and fast movement or in hot weather	0
Profuse sweating after moderate work and movement	1
Sweating after little work and movement (stepping ladder)	2
Profuse sweating after little work and movement	3
Sweating even at rest or in cold weather	4

**Table 10-** Scoring of *Kshudhadhikya*

	SCORE
As usual/routine	0
Slightly increased with routine diet (1 meal extra with routine diet)	1
Moderately increased (2 meals extra with routine diet)	2
Markedly increased (3 meals with routine diet)	3

**Table 11-** Scoring of *Pipasatiyoga*

	SCORE
Feeling of thirst (7-9 times/24hrs )and relieved by drinking water	0
Feeling of moderate thirst (>9-11/day) and	1

relieved by drinking water	
Feeling of excess thirst (>11-13/day) not relieved by drinking water	2
Feeling of severe thirst (>13/ day) not relieved by drinking water	3

**Table11** Evaluation of Serum Lipid profile

Triglycerides	CHOLESTEROL
HDL	HDL:LDL RATIO
LDL	VLDL

**5) DOURGANDHYA (BAD ODOUR):** It was assessed according to WHO scoring of *Dourgandhya*. As given in Table no.8

**6) SWEDADHIKYA (PERSPIRATION):** It was assessed according to WHO scoring of *Swedadhikya*. As given in Table no.9

**7) KSHUDHADHIKYA (INCREASED APPETITE) (1MEAL = 350GM DIET):** It was assessed according to WHO scoring of *Kshudhadhikya*. As given in Table no.10

**8) PIPASATIYOGA (INCREASED THIRST):** It was assessed according to WHO Scoring of *Pipasatiyoga*. As given in Table no.11

**B. Evaluation of Serum Lipid profile-** As given in Table no.12

**OPERATIONAL METHOD FOR LIPID PROFILE:**

Serum of blood sample minimum 2ml. with no haemolysis under 10-12 hours fasting condition in fluoride bulb, preferably from cubital vein, As non fasting condition can give higher value of triglycerides.

The procedures were done with Automated analysers with the Colorimetric (Watson) Method<sup>27</sup>.

**Triglycerides- Reagents-**

1) Enzymes- Lipoprotein-lipase, glycerol kinase,

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glycerol phosphate oxidase, peroxidase, glycerol phosphate

2) p-Chlorophenol reagent.

### HDL-Reagents-

1) Cholesterol reagent 1- 2,5-dimethyl benzenesulfonic acid in glacial acetic acid and acetic anhydroxide.

2) Cholesterol reagent 2- Concentrated Sulphuric Acid.

Additional: Phosphotungstic acid reagent, Magnesium chloride reagent, Cholesterol standard 100mg/dl. VLDL mg/dl = Triglyceride/5

LDL mg/dl = Total cholesterol-HDL-VLDL

Total Cholesterol: Reagents-

1) Cholesterol reagent 1

2) Cholesterol reagent 2

3) Cholesterol Standard

**C] DATA ANALYSIS PLAN:** Statistical analysis (Inferential Statistical Test and Pearson's Test was applied on the data obtained and prevalence was calculated); the overall correlation between Ashtadosha and dyslipidemia was calculated by applying Chi-square test.

## OBSERVATIONS AND RESULTS

For this study 100 subjects were included based on the inclusion criteria. The selected subjects were examined with the help of case record form mentioned in the end. Subjects were asked the questionnaire of the Ashtadosha and were also tested for lipid profile. The observed data and its results are discussed below-

### A) Demographic analysis-

1) **Age-** As shown in Graph no.1- Age wise distribution of 100 subjects:

**Result-** It was observed that 15% patients belonged to the 20-30 yrs age group, 25% patients belonged to the 41-50 yrs age group and most of the patients i.e. 30% patients belonged to the 31-40 yrs age group and 30% patients belonged to the 51-60 yrs age group.

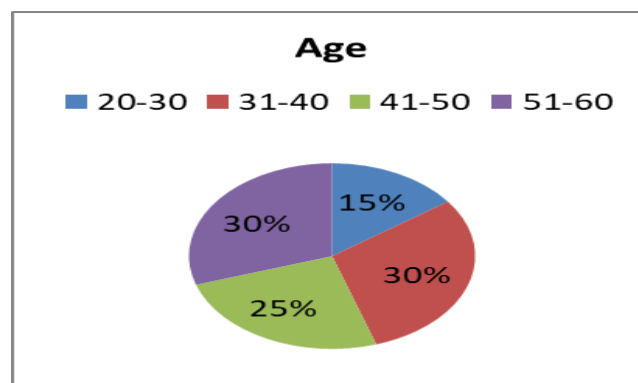
### 2) Gender-

As shown in Graph no.2- Sex wise distribution of 100 subjects:

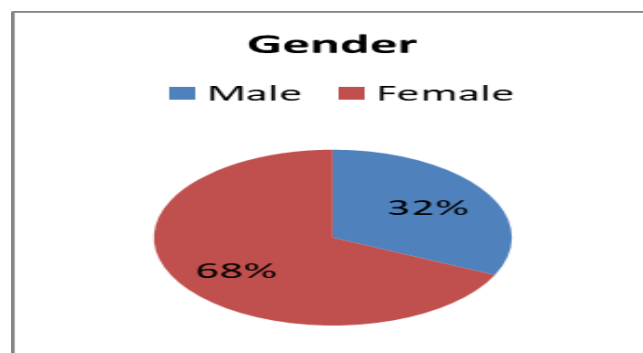
**Result-**From demographic analysis it was observed that maximum patients i.e. 68% were female and 32% were male

### 3) Prakruti-

As shown in Graph no.3- Prakruti wise distribution of 100 subjects



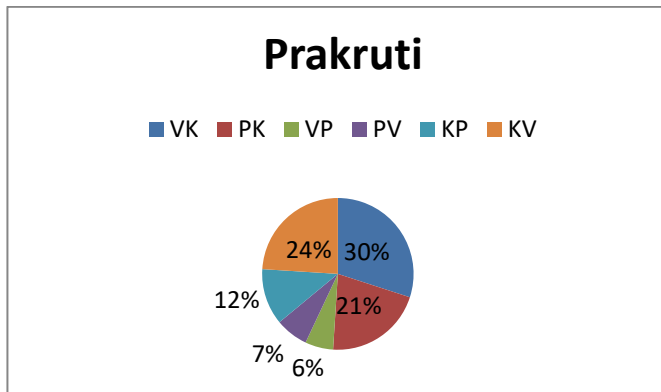
Graph no.1- Age wise distribution of 100 subjects



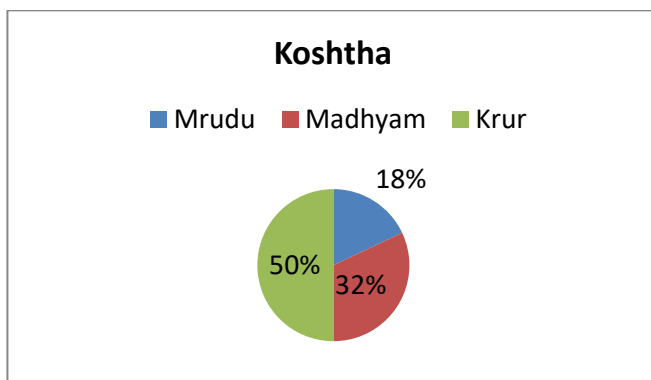
Graph no.2- Sex wise distribution of 100 subjects:



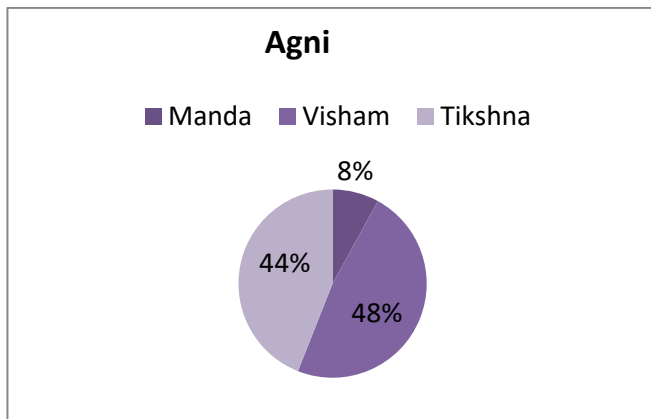
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**Graph no.3** Prakruti wise distribution of 100 subjects



**Graph no.4-** Koshtha wise distribution of 100 subjects



**Graph no.5-** Graph no.5 Agni wise distribution of 100 subjects-

**Result-** maximum i.e. 30% were of Vata-Kapha Prakruti, 24% were of Kapha-Vata Prakruti, 21% were of Pitta-Kapha Prakruti, 12% were of Kapha-Pitta Prakruti, 7% were of Pitta-Vata Prakruti and 6% were of Vata-Pitta Prakruti

**4) Koshtha-**

As shown in Graph no.4 Koshtha wise distribution of 100 subjects-

**Result-** Out of 100 subjects, maximum i.e. 50% had Krur Koshtha, 32% had Madhyam Koshtha and 18% had Mrudu Koshtha.

**5) Agni-**

As shown in Graph no.5 Agni wise distribution of 100 subjects-

**Result-** Maximum i.e. 48% had Visham Agni, 44% had Tikshna Agni and 8% had Manda Agni.

**6) Height-**

As shown in Graph no.6 Height wise distribution of 100 subjects-

**Result-**Maximum i.e. 35% were found with height between 151-160 cm, 30% had height between 161-170 cm, 21% had height between 140-150 cm and 14% had height between 171-180cms.

**7) Weight-**

As shown in Graph no.7 Weight wise distribution of 100 subjects-

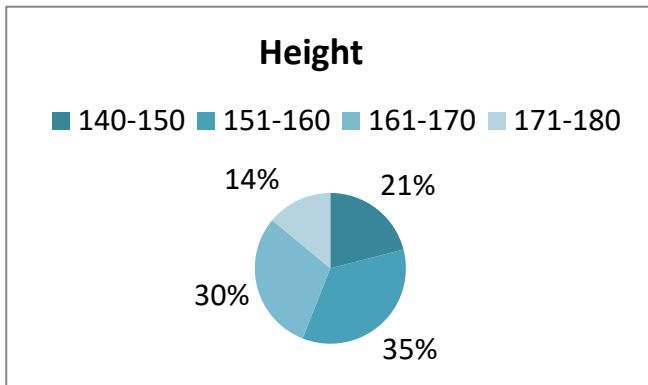
**Result-** 40% had weight between 71-80 kgs, 29% had weight between 81-90 kgs, 18% had weight 90 kgs and above, 10% had weight between 61-70 kgs, 2% had weight between 51-60 kgs and 1% had weight between 40-50 kgs.

**8) BMI-**

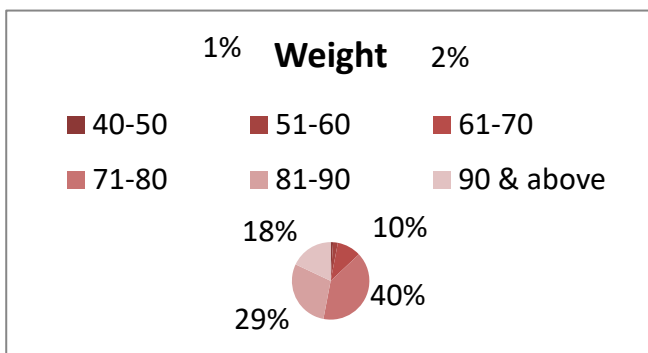
As shown in Graph no.8 BMI wise distribution of 100 subjects

**Result-** On the basis of Basal metabolic index (BMI), 41% came under obese class-1 having BMI between 30-34, 31% came under pre-obese group having BMI between 25-29.99, 24% came under the obese class-2 having BMI between 35-39.99 and only 4% came under the obese class-3 having BMI above 40.

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Graph no.6- Graph no.6 Height wise distribution of 100 subjects-



Graph no.7- Graph no.7 Weight wise distribution of 100 subjects



Graph no. 8 BMI wise distribution of subjects

9) Waist-Hip ratio (W.H.R)-

As shown in Graph no.9 W.H.R wise distribution of 100 subjects-

**Result-** 68% had WHR between 0.91-1.00, 18% had WHR between 0.80-0.90, 12% had WHR between 1.01-2.00 and only 2% had WHR below 0.80.

Assessment of Ashtadosha-

1) Aayu Hras (Premature ageing)-

• Medha and Smriti Hras-

As given in Graph no.10 Medha and Smriti Hras wise distribution of 100 subjects-

**Result-** Out of the 100 subjects, Medha Hras and Smriti Hras was present in 64% subjects and was absent in 36% subjects.

2) Utsah Hani (Loss of enthusiasm)-

As given in Graph no.11 Utsah Hani wise distribution of 100 subjects-

**Result-** Utsah Hani was absent in 8% subjects, was present in 92% subjects as, grade 1- 39%, grade 2- 36%, grade 3- 17% and grade 4- 0%.

3) Krichchhravyavayata (Loss of libido)-

As given in Graph no.12 Krichchhravyavayata wise distribution of 100 subjects-

**Result-** Krichchhravyavayata was absent in 17% and was present in 83% as grade 1- 44%, grade 2- 18%, grade 3- 6%, grade 4- 15%.

4) Daurbalya (Weakness)-

As given in Graph no.13 Daurbalya wise distribution of 100 subjects-

**Result-** In 5% Daurbalya was absent and in 95% of the subjects it was present as grade 1- 63%, grade 2- 26%, grade 3-3%, grade 4- 1%.

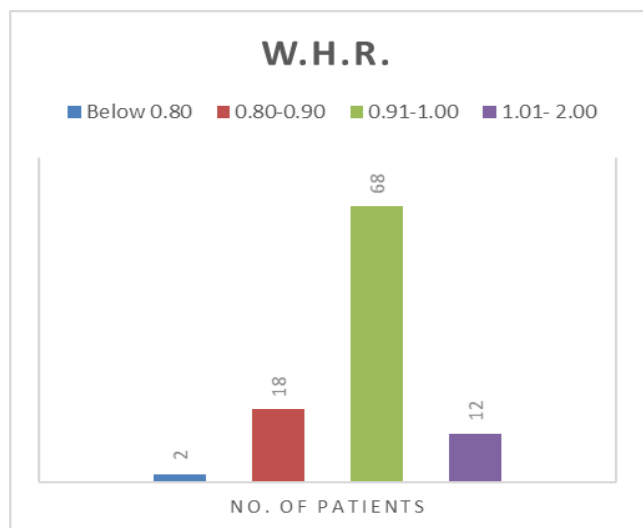
5) Dourgandhya (Bad odour)-

As given in Graph no.14 Dourgandhya wise distribution of 100 subjects-

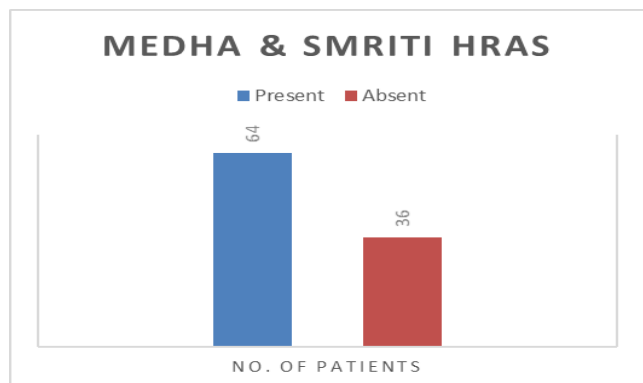
**Result-** Dourgandhya was absent in 34% subjects  
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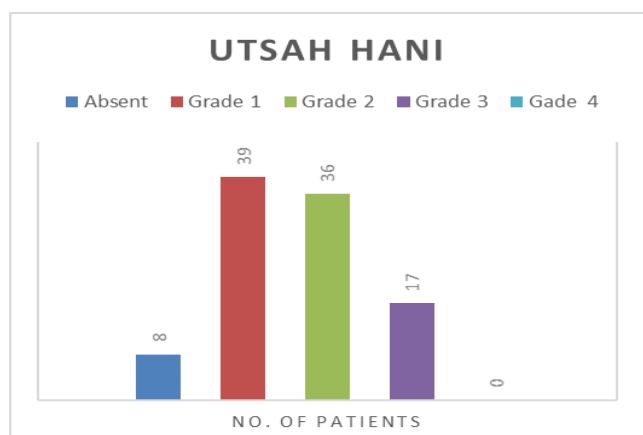
and was present in 66% of the subjects as grade 1-48%, grade 2- 14%, grade 3- 1%.



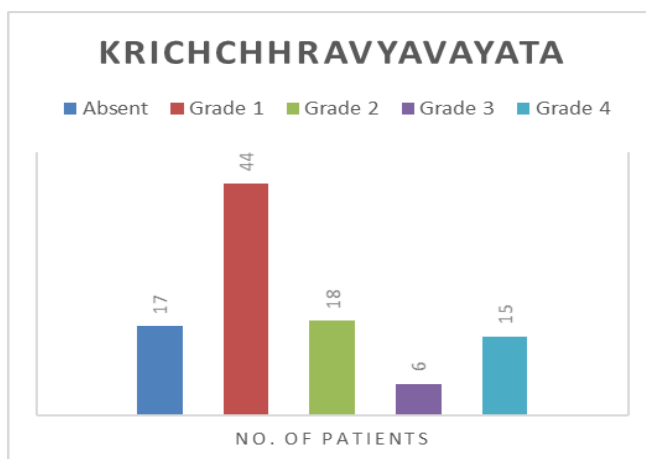
Graph no.9- Graph no.9 W.H.R wise distribution of 100 subjects



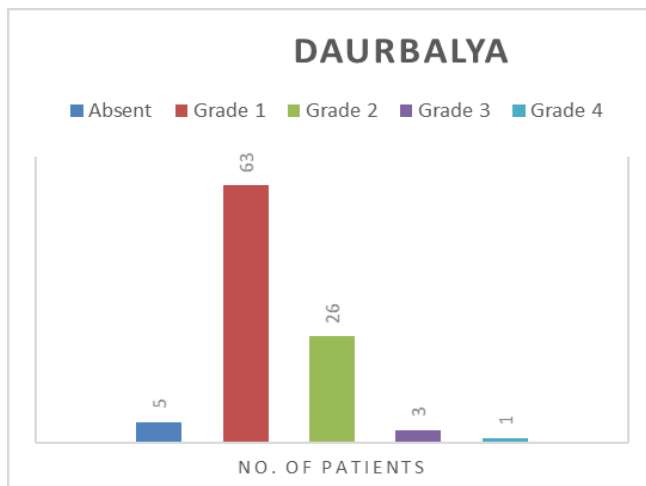
Graph no.10- Graph no.10 Medha and Smriti Hras wise distribution of 100 subjects



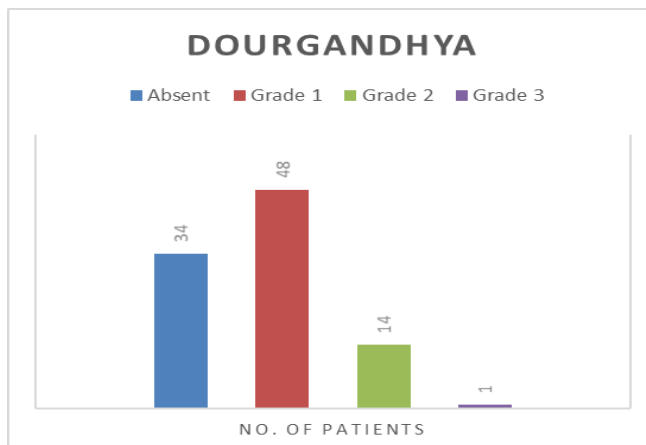
Graph no.11- Graph no.11 Utsah Hani wise distribution of 100 subjects



Graph no.12- Graph no.12 Krichchhravyavayata wise distribution of 100 subjects

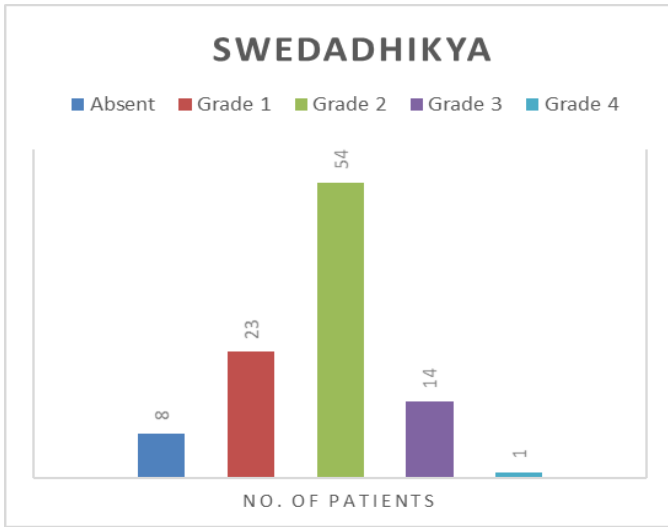


Graph no.13- Graph no.13 Daurbalya wise distribution of 100 subjects

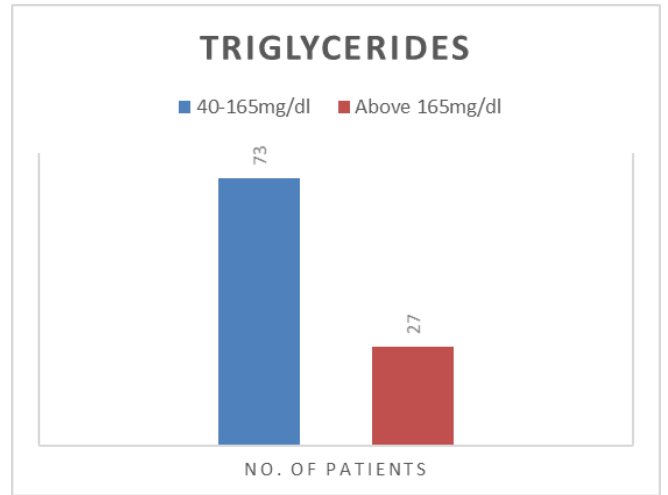


Graph no.14- As given in Graph no.14 Dourgandhya wise distribution of 100 subjects

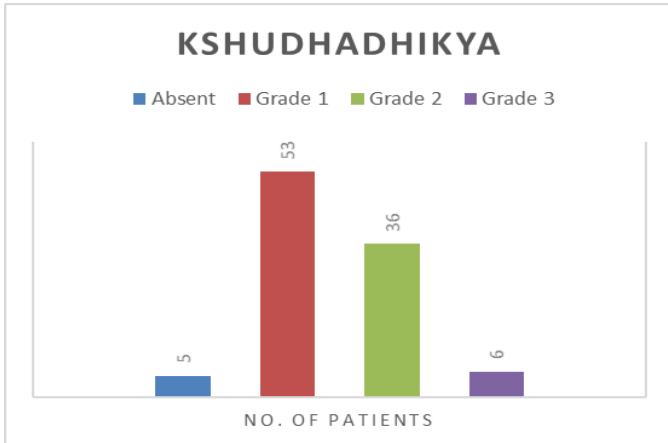
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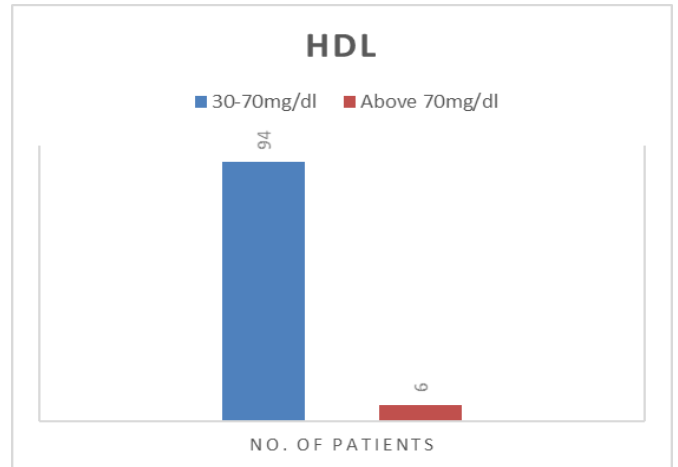
**Graph no.15-** As given in Graph no.15 Swedadhikya wise distribution of 100 subjects



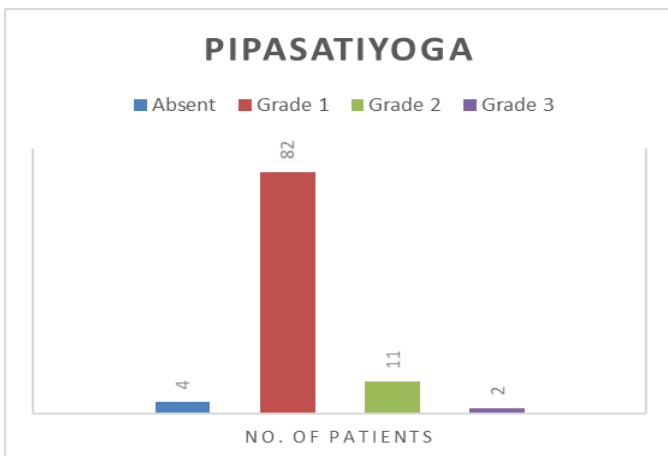
**Graph no.18-** As given in Graph no.18 Distribution of 100 subjects on the basis of TGL



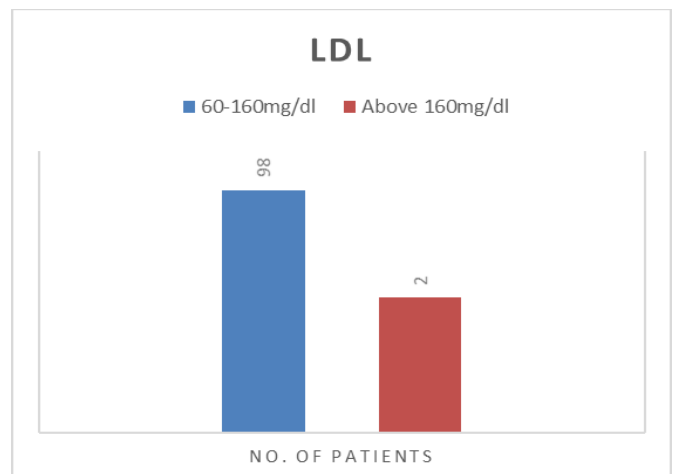
**Graph no.16-** As given in Graph no.16 Kshudhadhikya wise distribution of 100 subjects



**Graph no.19-** As given in Graph no.19 Distribution of 100 subjects on the basis of HDL

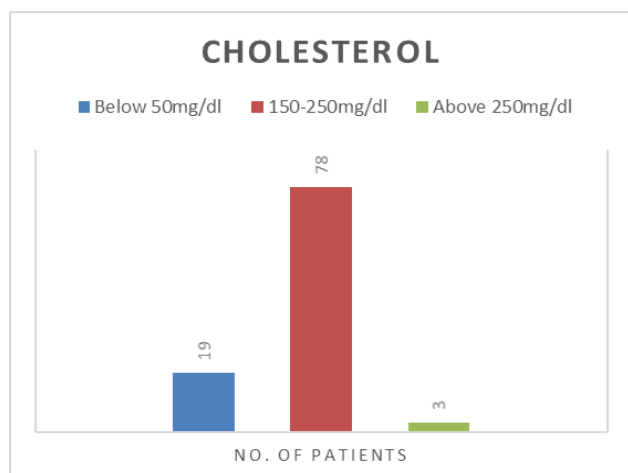


**Graph no.17-** As given in Graph no.17 Distribution of 100 subjects on the basis of PIPASATIYOGA

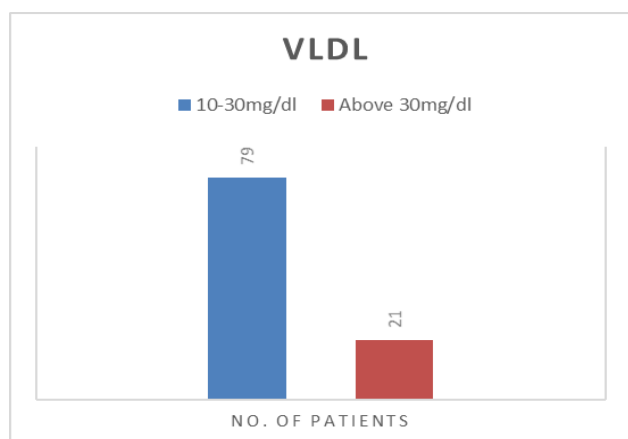


**Graph no.20-** As given in Graph no.20 Distribution of 100 subjects on the basis of LDL

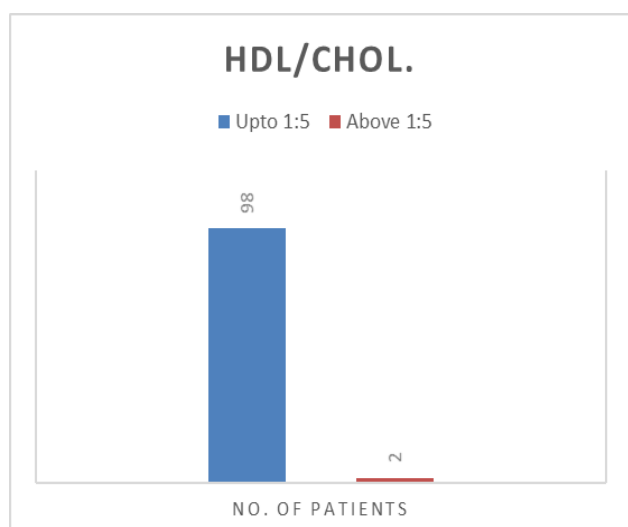
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**Graph no.21-** As given in Graph no.21 Distribution of 100 subjects on the basis of Cholesterol.



**Graph no.22-** As given in Graph no.22 Distribution of 100 subjects on the basis of VLDL



**Graph no.23-** As given in Graph no.23 Distribution of 100 subjects on the basis of HDL:Cholesterol ratio

**6) Swedadhikya (Perspiration)-**

As given in Graph no.15 Swedadhikya wise distribution of 100 subjects-

**Result-** Swedadhikya was absent in 8% of the subjects and in 92% it was present as, grade 1- 23%, grade 2- 54%, grade 3- 14%, grade 4- 1%

**7) Kshudhahdikya (Increased appetite)-**

As given in Graph no.16 Kshudhahdikya wise distribution of 100 subjects-

**Result-** Kshudhahdikya was absent in 5% of the subjects and in 95% of the subjects it was present as, grade 1(mild)- 53%, grade 2(moderate)- 36%, grade 3(severe)- 6%.

**8) Pipasatiyoga (Increased thirst)-**

As given in Graph no.17 Pipasatiyoga wise distribution of 100 subjects-

**Result-** Pipasatiyoga was absent in 4% of the subjects and in 96% of the subjects it was present as, grade 1(mild)- 82%, grade 2(moderate)- 11%, grade 3(severe)- 2%.

**Lipid profile evaluation-**

**1) Triglycerides (TGL)-**

As given in Graph no.18 Distribution of 100 subjects on the basis of TGL

**Result-** 73% subjects had triglycerides in normal range (40-165mg/dl) and 27% had >165mg/dl triglyceride level.

**2) High density lipoprotein (HDL)-**

As given in Graph no.19 Distribution of 100 subjects on the basis of HDL –

**Result-** 94% subjects had HDL levels under normal range (30-70mg/dl) and 6% had >70mg/dl HDL.

**3) Low density lipoprotein (LDL)-**

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As given in Graph no.20 Distribution of 100 subjects on the basis of LDL-

**Result-** 98% had the LDL levels under the normal range (60-160mg/dl) and only 2% had >160 mg/dl LDL.

### 4) Cholesterol-

As given in Graph no.21 Distribution of 100 subjects on the basis of cholesterol-

**Result-** 78% had cholesterol levels under normal range (150-250mg/dl) 19% < 50mg/dl and only 3% > 250mg/dl.

### 5) Very low density lipoprotein (VLDL)-

As given in Graph no.22 Distribution of 100 subjects on the basis of VLDL-

**Result-** 79% had VLDL levels under normal range (10-30mg/dl) and 21% had >30mg/dl VLDL.

### 6) HDL:Cholesterol-

As given in Graph no.23 Distribution of 100 subjects on the basis of HD: Cholesterol ratio-

**Result-** 98% subjects had the ratio under the normal limit (upto 1:5) and only 2% had the ratio above 1:5.

### Statistical Analysis-

Pearson's correlation test is applied to prove whether there is a correlation between Ashtadosha and Lipid profile.

## DISCUSSION

On the basis of the impediments of Sthaulya mentioned by Charaka and also on the basis of correlation established between Sthaulya and dyslipidemia, it was decided to work on the

impediments (Ashtadosha) mentioned in the Charaka Samhita and also to see if there is any association of the impediments and dyslipidemia. Thus the present study entitled "CROSS SECTIONAL STUDY OF ASSESSMENT OF ASHTADOSHA IN ATISTHULA WITH SPECIAL REFERENCE TO LIPID PROFILE" was planned.

After the ethical clearance, 100 subjects having BMI>25 and fulfilling the inclusion criteria were included in the study. The subjects were examined according to the case record form. Weight, Body mass index, waist circumference, hip circumference and waist-hip ratio were evaluated as per the respective methods. An informed written consent was taken from the subjects. They were assessed for the Ashtadosha by the questionnaire and were also tested for Fasting Lipid Profile. On the basis of the observations the results obtained are discussed below-

## DISCUSSION ON PREVALENCE OF ASHTADOSHA:

1) Aayu Hras (Premature ageing)- This could be examined with the help of Aayu Hras Kram said by Sharangdhar applicable from the age 20 to 60 yrs, the parameters have been examined on the basis of early ageing characteristics given as-

Medha and Smriti Hras- Out of the 100 patients, 64% of the patients showed presence of Medha and Smriti Hras. These parameters were observed on the basis of the Hras Kram, where if the ageing of next age group seen in the early one it was considered to be positive. This indicates that

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Medha and Smriti Hras is evidently present in Sthool patients.

Chavi and Twak Hras- Out of the 100 patients, 95% patients showed the Chavi and Twak Hras, hence Chhavi and Twak Hras is more evidently present in Sthool patients. As these patients consume such kind of foods which leads to Medovaha Srotodushti and Mansavaha Srotodushti showing Twak Hras.

Drishti Hras- Out of the 100 patients, in 66% patients there was presence of Drishti Hras. This concludes that even Drishti Hras is evidently found in Sthool patients. Hence this leads to an inference that in this study Aayu Hras was profoundly prevalent in the Sthool (obese) patients. This can be due to the pathogenesis of Sthaulya in which there is no proper metabolism of Dhatu that can lead to improper formation of essence of Dhatus and Oja which then can be seen in form of Chhavi Twak Hras, Medha Smriti Hras and Drishti Hras.

2) Utsah Hani- Utsah Hani (lack of enthusiasm) was very evidently present in obese patients i.e. 92% which was majorly in mild form i.e. (grade1- 39%), this can be due to the incomplete metabolism of Dhatus, improper nourishment of body and over nourishment of fat leading to muscle weakness and general lassitude.

3) Krichhravyavayata- Krichhravyavaya was evidently present in obese patients i.e. 83%, majority found in mild form i.e. (grade1- 44%), as the fatty tissues convert the testosterone into female sex hormones (oestradiol) so the excess of fat can lead to loss of libido, also an article has

concluded the Obese males show erectile dysfunction. According to the pathogenesis of Sthaulya, the covering of Meda Dhatu does not allow proper metabolism and flow of Shukra Dhatu.

4) Daurbalya- Daurbalya was evidently prevalent in obese patients i.e. 95%, maximum were found with mild form i.e. (grade1-63%), this is due to the improper nourishment of Dhatus leading to weakness in the body

5) Dourgandhya- Dourgandhya was evidently prevalent in patients i.e. 66%, majority of which were accounted under mild form(grade1-48%). This was seen due to the excessive sweating seen in the patients which ultimately resulted in bad body odour.

6) Swedadhikya- Swedadhikya was more evidently prevalent in obese patients i.e. 92%, majority of which were accounted under moderate form (grade2- 54%). This is due to the excess fat deposition which results into excessive perspiration as it is a by product of Meda Dhatu and also intolerance to hot weather. As the majority of patients showed perspiration even with a mild movement and not on a heavy workout or exercise, therefore this is said to be a moderate Dosha out of the Ashtadosha.

7) Kshudhadhikya- Kshudhadhikya also was more evidently prevalent in obese patients i.e. 95%, maximum of them were found under mild form (grade1- 53%), this is due to the pathogenesis of hyper stimulated digestive fire (Tikshna Agni) which in turn makes the patient feel hungry and due to the ignition of digestive

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fire the food gets quickly digested but improperly, hence it leads to hunger on short intervals and also there is no proper energy supply. Here patients were widely divided in other grades also as this was a subjective question based observation. Obese individuals don't usually consider their overeating a problem. 8) Pipasatiyoga- Pipasatiyoga was more evidently prevalent in obese patients, i.e. 96% of the patients, majority of which were found under mild category (grade1- 82%), this was due to the highly ignited digestive fire which also makes the patient feel thirsty. Excessive thirst is also an important symptom of Diabetes which is commonly associated with obesity (Diabesity).

## CONCLUSION

The most prevalent amongst the Ashtadosha was Pipasatiyoga- 96%, followed by Daurbalya, Kshudhadhikya and Chhavi Twak Hras (Aayu Hras)-95% each, Utsah Hani and Swedadhikya-92% each, Krichhravyavaya-83% and Dourgandhya-66%, The prevalence of Dosha on the basis of severity were- mild Dosha is Pipasatiyoga i.e. 82%, moderate Dosha is Swedadhikya i.e. 54% and severe Dosha is Krichhravyavayata i.e. 21%. The prevalence of dyslipidemia amongst the 100 subjects were, high triglycerides in 21% subjects, high VLDL in 26% subjects, high LDL in 2% subjects, high cholesterol in 3% subjects and high HDL: Cholesterol ratio in 2% subjects. This shows dyslipidemia was not significantly prevalent in

this study population.

- There was a correlation between Aayu Hras and lipid profile which was statistically not significant whereas, HDL: Cholesterol ratio and Meda Smriti Hras has shown no correlation.
- There was a correlation of Utsah Hani with lipid profile which was statistically not significant except for the correlation with HDL which was statistically significant but of no clinical significance.
- There was a correlation between Krichhravyavaya and lipid profile but was statistically non-significant.
- There was a correlation between Daurbalya and lipid profile but was found to be statistically non-significant.
- There was a correlation between Dourgandhya and lipid profile which was statistically non-significant.
- There was a correlation between Swedadhikya and lipid profile being statistically non-significant.
- There was a correlation between Kshudhadhikya and lipid profile which was statistically non-significant.
- There was a correlation of Pipasatiyoga with lipid profile which was not statistically significant except for the correlation with LDL and Cholesterol which was found to be statistically significant.



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