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Research Article

OBSERVATIONAL STUDY ON IMPACT OF *PATHYAPATHYA* IN PREVENTION OF *STHOULYA* (OBESITY)

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ABSTRACT

Weight gain is a natural physiological process but excess of fat leading to the disease *Sthoulya* (obesity) may "lengthen the waist line" but "shortens the life-line" of the individual by imposing an extra burden on all the systems. **Aim:** To study the impact of *Pathyapathya* in prevention of *Sthoulya* (obesity) among college students of VYDSAM. **Materials and Methods:** A randomized open observational Study was conducted at the hospital of VYDSAM, Khurja, using a special diet (menu) planner and exercise planner adopted for weight reduction. Total 450 students were screened through BMI, 33 *Sthoulya* (obesity) cases were selected for trial and 30 cases completed the trial. Relief in the subjective symptoms was assessed in percentage. Then, the statistical significance of result was assessed using Wilcoxon matched-pairs signed-ranks test. **Results:** Defining to the benefits assessed, *Pathyapathya* proved to be quite effective in prevention of *Sthoulya* (obesity) as statistical evaluation shows extremely/very significant effect on various clinical features. Weight loss occurs in *Pathyapathya* because of decreased caloric intake and increases people's total energy expenditure by Physical activity. The burning of calories through physical activity, combined with reducing the number of calories in diet, creates a "calorie deficit" that results in weight loss. **Conclusion:** The overall effect of therapy on clinical assessment leading to Maximum, Moderate, Mild and Unsatisfactory was 6 (20%), 15 (50%), 7 (23.33%) and 2 (6.67%) respectively. The percentage of improvement in subjective, objective parameters and lipid profile highlights the poor prognosis of *Sthoulya* (obesity) managed alone with *Pathyapathya*. So for better result, *Shamana* medications and *Shodhana* procedures may add along with *Pathyapathya*.

INTRODUCTION

Overweight is identifies when BMI is ≥25kg/m^2; and obesity when BMI is ≥30kg/m^2. In Asians, the cut-offs for overweight (≥23.0kg/m^2) and obesity (≥25.0kg/m^2) are lower than WHO criteria due to risk factors and morbidities[1,2]. Overweight/obesity is simulated with *Sthoulya* (obesity) which is a condition where a person has accumulated abnormal or excessive body fat that causes negative effects on health[3,4].

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It is not merely a cosmetic problem but a severe threat to health which causes HTN, DM, OA, CVD etc[5]. For its various health hazards[6,7,8], Acharya Charaka has described it as one among *Astanindaniya Purusa* (the eight most denounced personalities). Obesity is the reason for about 80% of type 2 diabetes, about 70% of cardiovascular disease and 42% of breast and colon cancers etc[9]. The number of overweight children and adolescents has doubled[10].

Acharya Sushruta has clearly mentioned that the disease *Sthoulya* (obesity) occurs due to defect in *Rasa Dhatu* but while explaining the pathogenesis clear involvement of *Meda Dhatu* has been mentioned[11]. It is one of diseases where involvement of *Dushyas* is more predominant than the *Doshas*[12]. The etiology of obesity is complex and incompletely understood, however it is due to fat deposition in the body results

from the discrepancy between energy consume and expenditure. The *Nidana* (etiopathogenesis) highlights on eating habits, sedentary life styles, genetic factors etc.

The aim of treating *Sthoulya* (obesity) is to reduce bodyweight and excess *Meda-dhatu*, which is achieved, by reducing *Vata, Kapha* and *Meda*[13]. Various therapeutic modalities[14] like *Langhan, Swedana, Lekhana, Guru-Atarpana, Vamana, Virechena, Basti* etc have been defined in our classics but as per Ayurvedic principle, first and foremost step for management of a disease is *Nidana Parivarjana* (avoidance of causative factors). By avoiding etiological factor we can restrict disease further. This gives favorable conditions for medicine to work potently on obesity. Ayurveda also emphasized on *Pathyapathya* for each disease including *Sthoulya* (obesity)[15] which includes changing in eating habits and behavioral attitudes. According to Maharshi Charaka[16,17,18], diet that is heavy to digest but low in nutrition value is desirable as it can subside or fulfill the need of aggravated digesting power, while low calorie doesn't increase fat anabolism[19]. *Pathyapathya* also highlights on increasing the physical activity level and behavioral therapy (by monitoring and modifying the food intake) for reduction in weight.

Keeping this in consideration the present observational study was planned and implemented among the college students of VYDSAM to evaluate the impact of *Pathyapathya* in form of specific diet, physical activity in prevention of *Sthoulya* (obesity).

AIM AND OBJECTIVES

Primary Aim

To study the impact of *Pathyapathya* in prevention of *Sthoulya* (obesity).

Secondary Aim

To review of literature related to the disease "*Sthoulya*" from Ayurveda as well as "Obesity" from modern point of view.

OBJECTIVES

- Study the prevalence of *Sthoulya* (obesity) in students of VYDSAM, Khurja, according to BMI.
- Study the impact of *Pathyapathya* on *Sthoulya* (obesity) students.

MATERIAL AND METHODS

Place of Study– Observational study was conducted on students of VYDSAM, Khurja, registered them in OPD of P.G. Dept. of Kaya Chikitsa, V.Y.D.S Ayurved Mahavidyalaya, Khurja (U.P.).

Ethics: The procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional or regional) and with the Helsinki Declaration of 1975, as revised in 2000. Ethical clearance been obtained from ethical committee of VYDS Ayurvedic Mahavidyalaya, Khurja, vide letter no 2019/IEC/35, DT 06/03/2020.

Study Design

Study Type: Randomized open observational clinical study

Sample Size

- Total 450 students were observed through BMI, 33 students were found having *Sthoulya* (obesity).
- Among the 33 *Sthoulya* (obesity) students, 30 cases completed the trial.

Diagnosis Criteria: Diagnosis was made according to higher B.M.I.

Selection of Students: Diagnosed cases of *Sthoulya* w.s.r. to obesity were randomly selected who were agreed for giving consent.

Inclusion criteria

- **Age–** 17–25 years of age
- **Sex–** Both boys and girls
- **BMI** - >25 kg/m^2 and <40kg/m^2
- Presence of clinical features of *Sthoulya* (obesity)

Subjective Parameters

- *Chala Sphik Udara Sthana* (pendulous movement of buttock, abdomen, chest/breast)
- *Sramaswasa/Kshudraswasa* (Exertional dyspnoea)
- *Ati-Pipasa* (Excessive thirst)
- *Ati-Kshudha* (Excessive hunger)
- *Ati-Nidra* (Excessive sleep)
- *Ati-Sweda* (Excessive sweating)
- *Swedadaurgandhya* (Foul smelling)

Objective Criteria

- Body weight in excess (Actual weight– Ideal weight)
- Body Mass Index (BMI – 25 – <40Kg/m^2)
- Skin fold thickness (Male ≥ 40 mm, Female ≥ 50 mm)
- Waist–Hip ratio (W.H.R.) (Male ≥ 1, Female ≥0.8)
- High Lipid Profile

Exclusion Criteria

- Students not fulfilling inclusion criteria or Not agreed for giving consent/ investigations/ follow up
- Age – <17yrs and > 25yrs
- BMI < 25 kg/m^2 and >40 kg/m^2
- Obesity of hereditary/genetic origin or endocrinal involvement or due to any secondary causes like long term steroid treatment etc.

- Cases suffering from major systemic disorders like cardiac diseases (IHD), IDDM, uncontrolled hypertension, renal and hepatic diseases etc.
- Pregnant females and lactating women.

Laboratory Investigations

- Lipid profile (S. Cholesterol, S. Triglyceride, H.D.L., L.D.L.)
- If required CBC, Blood sugar, L.F.T, K.F.T., Thyroid profile etc were done

Intervention

- ***Pathyapathya:*** In this observational study, special diet (menu) planner and exercise planner adopted for weight reduction.

Table 1: Menu Planner

Morning	→ 1 cup of Tea/Coffee (without sugar)
Breakfast	→ 2 Bread slices / Toast - 2 Slices / Dalia 1 bowl / 1 Egg omelet/ Idli - 4 Nos. / Dosa - 3 Nos. / Upma – 1 ½ Cup / Bread - 4 Slices/ Porridge - 2 Cups / Corn flakes with milk - 2 Cups / Poha - 1 Cup / Dhokla - 4 Nos. → 1 cup of milk → 1 seasonal fruit
Lunch	→ 1 Chapatti, Rice half plate / 2 Chapatti → Dal 1 katori → Vegetable 1 katori → Buttermilk (Mattha) 1 Katori / Dahi half katori, → 1 Cucumber / Radish
Evening	→ 1 cup of Tea / Milk → 2 Namken Biscuits
Dinner	→ 2 chapattis, Dal 1 katori, → Vegetable 1 katori, → 1 cucumber/radish/carrot
Note • 1 Cup = 200ml • Oil or ghee - Use 25gm visible fat in the whole day for cooking only. • Salt - <5gm salt during preparation of meal per day • For Non-Vegetarians- Substitute one pulse portion with one portion of egg/meat/chicken/fish	

Table 2: Exercise Planner

• Start physical activity slowly and gradually increase intensity and duration with time.	
• Daily activity time period	
⇨ Normal weight (BMI 18.5-24.99)	⇨ 30 min to 45 min of moderate intensity activity on most days
⇨ Over weight (BMI 25-29.99)	⇨ 45 min to 60 min of moderate intensity activity on most days
⇨ Obese (BMI ≥ 30)	⇨ 60 min to 90 min of moderate intensity activity or 35 min of vigorous activity on most days

Duration of Treatment – 60 days (two months)

Follow up (Observation period) – Every 15th days during trial period and once after 30 days of completion of trial.

Statistical Analysis - According to various scoring pattern of subjective and objective parameters, changes in sign and symptoms was statistically analysed on 15th day (AT1), 30th day (AT2), 45th day (AT3), 60th day (AT4) of after treatment where initial sign and symptoms was taken as 1st day (i.e., B.T.).

Overall Clinical Result - It was noted after treatment upon the subjective and objective parameters in view of percentage of improvement classify as follows:

- Maximum improvement - >75% improvement

- Moderate improvement - >50% to 75% improvement
- Mild improvement - >25% to 50% improvement
- Unsatisfactory - Negligible (≤25%) improvement

OBSERVATIONS AND RESULTS

- Total 450 students were screened through BMI, 33 students were found having *Sthoulya* (obesity).
- Among the 33 *Sthoulya* (obesity) students, 30 cases completed the trial.

Demographic Data of this Study

- Among the 33 *Sthoulya* (obesity) students, majority of the cases i.e., 30 (90.91%) were in BMI of 25-<30kg/m^2 (overweight) and remaining 3 (09.09%) of the cases were in BMI of 30 - <35Kg/m^2 (obese Gr I).
- Maximum numbers of cases i.e., 20 (60.61%) were observed between the age group of 23-<25 years highlights that obesity can occur at any age and generally increases with age.
- Obesity can affects both sexes but the prevalence of overweight and obesity varies and overall, more women are obese than men (maximum numbers of cases i.e., 21 (63.64%) were girls).
- Obesity frequently runs in families (majority of the cases i.e., 27 (81.82%) of cases had a positive family history).
- Most of the cases i.e., 26 (78.79%) were onset of adult age.
- Maximum numbers of cases i.e., 19 (57.58%) were taken non-veg diet.
- Different nature of eating habits influences body weight {maximum number of cases i.e. 29 (87.88%) were in overeating (*Ati sampurana*) habit followed by 22 (66.67%) had inappropriate eating (*Samasana*), 21 (63.64%) had untimely eating (*Vishamasana*) and 20 (60.61%) had eating in between meals (*Adhyasana*)}.
- Eating frequency (number of eating occasions/meals per day) is one aspect of the diet that is thought to be associated with both weight status (maximum number of cases i.e. 22 (66.67%) were in 05–06 times/day periodicity of diet).
- Maximum cases i.e., 23 (69.70%) were found *Madhura rasa* dominancy.
- *Dasavidha Pariksha* shows maximum numbers of cases i.e. 15 (45.46%) were *Sannipataja prakruti*, 18 (54.55%) were in *Madhyam sara* group, 24 (72.73%) were in *Avara samhanana* group, 33 (100%) were in *Adhika Pramana* group, 21 (63.64%) were in *Sarvarasa satmya* group, 21 (63.64%) cases were in *Avara satva* group, 18 (54.55%) cases were had *Pravara Ahara Abhyavarana Shakti* group, 17 (51.52%) were in *Pravara jarana sakti* group, 24 (72.73%) were in sedentary *Vyayama sakti* group.
- Maximum i.e. 20 (60.61%) were in *Madhya kostha* and 20 (60.61%) were in *Tikshnagni* group.

Clinical Data of this Study

Table 3: Statistical Analysis Showing the Effectiveness in Subjective Parameters

Sign & Symptoms	Mean Score			Mean diff.	± S.D.	% of improvement	± S.E.	w– Value	p - Value	Remark
	B.T.	A.T.								
Chala Sphik Udara Sthana (Pendulous movement)	2.6	A.T.1	2.5	0.1	0.316	3.85	0.1	1	> 0.9999	N.S.
	2.6	A.T.2	2	0.6	0.516	23.08	0.163	21	0.0313	S.
	2.6	A.T.3	1.6	1	0.817	38.46	0.258	28	0.0156	S.
	2.6	A.T.4	1.4	1.2	0.633	46.15	0.2	45	0.0039	V.S.
Sramaswasa / Kshudraswasa (Exertional dyspnoea)	2.4	A.T.1	2.3	0.1	0.316	4.17	0.1	1	> 0.9999	N.S.
	2.4	A.T.2	2	0.4	0.516	16.67	0.163	10	0.125	N.S.
	2.4	A.T.3	1.6	0.8	0.422	33.33	0.133	36	0.0078	V.S.
	2.4	A.T.4	1.3	1.1	0.568	45.83	0.18	45	0.0039	V.S.
Ati-Pipasa (Excessive thirst)	1.86	A.T.1	1.714	0.1429	0.378	7.70	0.143	1	> 0.9999	N.S.
	1.86	A.T.2	1.429	0.4286	0.535	23.08	0.202	6	0.25	N.S.
	1.86	A.T.3	1	0.8571	0.378	46.16	0.143	21	0.0313	S.
	1.86	A.T.4	0.8571	1	0.577	53.85	0.218	21	0.0313	S.

Ati-Kshudha (Excessive hunger)	1.89	A.T.1	1.778	0.1111	0.333	5.88	0.111	1	> 0.9999	N.S.
	1.89	A.T.2	1.556	0.3333	0.5	17.64	0.167	6	0.25	N.S.
	1.89	A.T.3	1.222	0.6667	0.5	35.29	0.167	21	0.0313	S.
	1.89	A.T.4	1.111	0.7778	0.441	41.18	0.147	28	0.0156	S.
Ati-Nidra (Excessive and Untimely sleep)	2.25	A.T.1	2.125	0.125	0.354	5.56	0.125	1	> 0.9999	N.S.
	2.25	A.T.2	1.75	0.5	0.756	22.22	0.267	6	0.25	N.S.
	2.25	A.T.3	1.25	1	0.756	44.44	0.267	21	0.0313	S.
	2.25	A.T.4	1	1.25	0.463	55.56	0.164	36	0.0078	V.S.
Ati-Sweda (Excessive sweating)	2.25	A.T.1	2	0.25	0.463	11.11	0.164	3	0.5	N.S.
	2.25	A.T.2	1.5	0.75	0.463	33.33	0.164	21	0.0313	S.
	2.25	A.T.3	1.375	0.875	0.354	38.89	0.125	28	0.0156	S.
	2.25	A.T.4	1.125	1.125	0.641	50.00	0.227	28	0.0156	S.
Sweda daurgandhya (Foul smelling)	2.5	A.T.1	2.25	0.25	0.463	10.00	0.164	3	0.5	N.S.
	2.5	A.T.2	1.875	0.625	0.744	25.00	0.263	10	0.125	N.S.
	2.5	A.T.3	1.25	1.25	0.886	50.00	0.313	21	0.0313	S.
	2.5	A.T.4	1	1.5	0.926	60.00	0.327	28	0.0156	S.

Table 4: Statistical Analysis Showing the Effectiveness in Objective Parameters

Sign & Symptoms	Mean Score			Mean diff.	% of improvement	± S.D.	± S.E.	t-value	p - Value	Remark
	B.T.	A.T.								
Weight in excess	72.4	A.T.1	70.5	1.9	2.62	1.449	0.458	4.146	0.0025	V.S.
	72.4	A.T.2	66.4	6	8.29	1.886	0.596	10.062	< 0.0001	E.S.
	72.4	A.T.3	63.7	8.7	12.02	3.234	1.023	8.508	< 0.0001	E.S.
	72.4	A.T.4	62.4	10	13.81	2.944	0.931	10.742	< 0.0001	E.S.
Body mass index (BMI)	29.1	A.T.1	28.314	0.753	2.59	0.568	0.18	4.191	0.0023	V.S.
	29.1	A.T.2	26.653	2.414	8.30	0.758	0.24	10.074	< 0.0001	E.S.
	29.1	A.T.3	25.578	3.489	12.00	1.248	0.395	8.843	< 0.0001	E.S.
	29.1	A.T.4	25.059	4.008	13.79	1.139	0.36	11.130	< 0.0001	E.S.
Skin fold thickness (Boys)	58.3	A.T.1	56	2.333	4.00	1.528	0.882	2.646	0.1181	N.S.
	58.3	A.T.2	53.333	5	8.57	3.606	2.082	2.402	0.1383	N.S.
	58.3	A.T.3	49	9.333	16.00	3.786	2.186	4.270	0.0507	N.Q.S.
	58.3	A.T.4	47.333	11	18.86	2.646	1.528	7.201	0.0187	S.
Skin fold thickness (Girls)	71.4	A.T.1	69.714	1.714	2.40	1.496	0.565	3.032	0.023	S.
	71.4	A.T.2	65.571	5.857	8.20	2.116	0.8	7.325	0.0003	E.S.
	71.4	A.T.3	62.857	8.571	12.00	3.552	1.343	6.384	0.0007	E.S.
	71.4	A.T.4	61.714	9.714	13.60	3.147	1.19	8.167	0.0002	E.S.
Waist –Hip ratio (Boys)	1.03	A.T.1	1.017	0.0133	1.29	0.012	0.007	2	0.1835	N.S.
	1.03	A.T.2	0.9567	0.0733	7.12	0.015	0.009	8.315	0.0142	S.
	1.03	A.T.3	0.9267	0.1033	10.03	0.015	0.009	11.717	0.0072	V.S.
	1.03	A.T.4	0.9133	0.1167	11.33	0.015	0.009	13.229	0.0057	V.S.
Waist –Hip	0.9614	A.T.1	0.95	0.0114	1.19	0.009	0.003	3.361	0.0152	S.

ratio (Girls)	0.9614	A.T.2	0.9129	0.0486	5.05	0.019	0.007	6.893	0.0005	E.S.
	0.9614	A.T.3	0.89	0.0714	7.43	0.016	0.006	12.01	< 0.0001	E.S.
	0.9614	A.T.4	0.8786	0.0829	8.62	0.018	0.007	12.182	< 0.0001	E.S.

Table 5: Statistical Analysis Showing the Effectiveness in Lipid Profile

Sign & Symptoms	Mean Score			Mean diff.	± S.D.	% of improvement	± S.E.	t-value	p - Value	Remark
	B.T.	A.T.								
S. Cholesterol	279.8	A.T.1	270.6	9.2	4.417	3.29	1.397	6.586	0.0001	E.S.
	279.8	A.T.2	258.7	21.1	5.705	7.54	1.804	11.696	< 0.0001	E.S.
	279.8	A.T.3	238.8	41	9.238	14.65	2.921	14.035	< 0.0001	E.S.
	279.8	A.T.4	225.4	54.4	8.884	19.44	2.81	19.363	< 0.0001	E.S.
S. Triglyceride	220.5	A.T.1	210.9	9.6	5.337	4.35	1.688	5.688	0.0003	E.S.
	220.5	A.T.2	201	19.5	7.892	8.84	2.496	7.814	< 0.0001	E.S.
	220.5	A.T.3	186.3	34.2	12.5	15.51	3.952	8.654	< 0.0001	E.S.
	220.5	A.T.4	177.2	43.3	14.29	19.64	4.519	9.581	< 0.0001	E.S.
H.D.L.	35.9	A.T.1	36.8	-0.9	0.876	2.51	0.277	3.25	0.01	V.S.
	35.9	A.T.2	37.5	-1.6	0.966	4.46	0.306	5.237	0.0005	E.S.
	35.9	A.T.3	40.3	-4.4	1.35	12.26	0.427	10.307	< 0.0001	E.S.
	35.9	A.T.4	41.9	-6	1.491	16.71	0.471	12.728	< 0.0001	E.S.
L.D.L	181.5	A.T.1	175.7	5.8	2.974	3.20	0.94	6.167	0.0002	E.S.
	181.5	A.T.2	169.5	12	3.83	6.61	1.211	9.909	< 0.0001	E.S.
	181.5	A.T.3	156.9	24.6	6.569	13.55	2.077	11.842	< 0.0001	E.S.
	181.5	A.T.4	148.2	33.3	7.732	18.35	2.445	13.619	< 0.0001	E.S.

Table 6: Overall Clinical Assessment of Result

Clinical Assessment of Result	*f*	%
Maximum improvement	6	20%
Moderate improvement	15	50%
Mild improvement	7	23.33%
Unsatisfactory improvement	2	6.67%

Follow-up Period- None of the adverse effects was noted during the study. After completion of trial, patients were asked for follow-up for 1 month, as they were continue the diet and exercise, no change in the status of the patients was observed after 1 month.

DISCUSSION

Obesity is now a world threatening problem and its rate increases day by day. According to W.H.O, Over 340 million children and adolescents aged 5-19 were overweight or obese. W.H.O [20] and also National Health portal of India[21] suggests by making the choice of healthier food and regular physical activity, non-communicable disease like overweight and obesity can be prevented. In almost all Ayurvedic Samhitas[22,23] there is descriptive directory on *Pathyapathya* in prevention of *Sthoulya* (obesity) which includes diets (*Aahar*), directions (*Vihara*), drugs (*Aushadha*) and spirituality (*Aachara*) for whole and holistic health and disease management. WHO Global Strategy on Diet, Physical Activity and Health describes the actions needed to support healthy diets and regular physical activity. The strategy calls upon all stakeholders to take action at global, regional and local levels to improve diets and physical activity patterns at the population level[24].

So, to spread awareness about obesity and its consequences among the population level an effort is made to assess the prevalence of *Sthoulya* among the college students of VYDSAM and evaluate the impact of *Pathyapathya* in prevention of *Sthoulya* (obesity) among them.

Probable Mode of Action of *Pathyapathya*

In Ayurveda, the concept of *Pathyapathya* includes concept of *Pathya* (conducive and wholesome to human being) as well as *Apathya* (non-conducive and unwholesome to human being) which have similarity with healthy lifestyle models elaborated in modern science through modification in diet and physical exercise. Weight loss occurs in *Pathyapathya* because of decreased caloric intake and increases people's total energy expenditure by physical activity. The burning of calories through physical activity, combined with reducing the number of calories in diet, creates a "calorie deficit" that results in weight loss.

The Clinical Study Revealed that

- *Pathyapathya* proved to be quite effective in prevention of *Sthoulya* (obesity) as statistical evaluation shows extremely/very significant effect on various clinical features.
- But the overall effect of therapy on clinical assessment leading to maximum, moderate, mild and unsatisfactory was 6 (20%), 15 (50%), 7 (23.33%) and 2 (6.67%) respectively.
- The percentage of improvement in subjective parameters not so high (46.15% in *Chala Sphik Udara Sthana* (pendulous movement), 45.83% in *Sramaswasa/Kshudraswasa* (exertional dyspnoea), 53.85% in *Ati-Pipasa* (excessive thirst), 41.18% in *Ati-Kshudha* (excessive hunger), 55.56% in *Ati-Nidra* (excessive & untimely sleep), 50.20% in *Ati-Sweda* (excessive sweating), 60.20% in *Sweda daurgandhya* (foul smelling).
- Objective parameters improvement percentage was also not so high {13.81% in weight in excess, 13.79% in Body Mass Index (BMI), 18.86% in skin fold thickness (boys), 13.60% in skin fold thickness (girls), 11.32% in Waist–Hip ratio (boys), 8.62% in Waist –Hip ratio (girls)}
- The percentage of improvement on Lipid Profile was also not so high (19.44% in S. Cholesterol, 19.64% in S. Triglyceride, 16.71% in H.D.L., 18.35% in L.D.L)
- These all highlights the poor prognosis of *Sthoulya* w.s.r. to obesity. Hence along with *Pathyapathya*, *Shamana* and *Shodhana* procedures may add in management of *Sthoulya* w.s.r. to obesity for better result.

CONCLUSION

For most people who are overweight or obese, the safest and most effective way to lose weight is setting goals with life style changes such as eating fewer calories and being physically active. If lifestyle changes are not enough then only medicines and weight loss surgery are options. So there is always a need to spread awareness on diet, physical activity and health to "shortens the waist line" but "lengthen the life-line" to give the best result for obesity.

In this study, defining to the benefits assessed, *Pathyapathya* proved to be quite effective in prevention of *Sthoulya* (obesity) as statistical evaluation shows extremely/very significant effect on various clinical features, but the percentage of improvement in subjective and objective parameters was not so better. Hence along with this *Pathyapathya*, *Shamana* and *Shodhana* procedures may add in management of *Sthoulya* w.s.r. to obesity for better result.

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