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Medicine for novel therapy

Effect of *Rodhradi Gana Udavartana* in the Management of *Sthaulya* (Overweight) with Special Reference to Obesity

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Abstract: *Sthaulya* is considered as a consuming issue of today's time, which can be correlated to obesity. It happens because of the sedentary way of life, unwholesome food propensities, absence of physical exercise, mental pressure, and so forth. It has reached at pandemic degrees in India during the 21st century with dismalness affecting 5% of its people. The obesity prevalence has increased day by day in children and adults. This obesity is associated with many medical illnesses (like Hypertension, atherosclerosis and diabetes). The Acharyas also do an elaborative description of *Chikitsa*. Generally, it consolidates *Shodhana* and *Shamana* therapy. Among them, is the *Udavartana Karma* which has *Kaphahara* and *Medohara* property, and is used as often as possible with *Rukshana Dravyas.* Hence, our aim is to find out the role of *Rodhradi gana Udvartan* on *sthaulya,* and objectives that were assessed are body weight, BMI, Body Circumference and Lipid Profile. This was an Open-labelled single-arm interventional clinical study. Fifteen patients (age group 20 to 50) diagnosed with *Sthaulya* were registered from the outpatient and inpatient of the Department of Panchakarma, Mahatma Gandhi Ayurved College Hospital & Research Centre, Wardha, Maharashtra, India, and *Udavartana* with *Rodhradigana Churna* was done for consecutive 15 days. The selected obese patient's data were statistically analyzed using Wilcoxon Signed Ranks Test and Paired t-test. Highly significant (p<0.001) result was found in all the assessment of subjective as well as objective parameters. *Udavartana* has the characteristics of *Kapha Hara* and *Medovilayana* properties. Due to *Ushna* and *Tikshna Guna* of *Rodhradi gana Dravya* and strong massage impact, the *Virya* of medication goes into the body. Thereafter it opens the *Siramukha* (openings of veins), does the digestion of *Kapha* and *Medas*. Based on the results, we concluded that *Udavartana* with *Rodhradigana Churna* was profoundly successful in reducing weight, BMI, and Lipid (Kg/cm^2, mg/dl) profile with a significant (level of significance 0.05%) reduction in symptoms of *Sthaulya*.

Keywords: Obesity, *Rodhradigana Churna*, *Rukshana Dravyas*, *Sthaulya*, *shodhana* and *shamana*, therapy *Udavartana* .

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1. INTRODUCTION

Obesity is a genuine wellbeing condition that can prompt an early death. A range of clinical problems, together with hypertension, heart condition, diabetes, apnoea, depression and inflammatory disease, are related to overweight. A person who is 30% heavier than their optimum weight (determined by standard medical and insurance data) is considered as obese.[1,2] Obesity is the nearest clinical entity for *Sthaulya* in Ayurveda. Once the Agni (digestive fire) is being vitiated, the Ama (a toxic substance) is developed in the body, resulting in obesity. It is a condition with an abundance of fatty tissue mass in the body under the skin. "Overweight" refers to an excessive amount of bodyweight that incorporates muscle, bone, fat and water.[3] Ayurveda characterizes eight assortments of "*Nindita Purusha*" and among them is *Atisthula*.[4] *Atisthula* is morbid obesity which will be considered as 40-50 BMI and Super obesity, i.e., above 50 BMI.[5] The depositions of adipose tissues/ fats in the body parts such as trunk, abdomen, gluteal or thigh are a direct result of excessive high caloric food intake. Because of the absence of information regarding the eating regimen rules and routine for taking the food[6] or in light of quick life or dynamic life vogue, society cannot follow the ideas regarding '*Ahara*' and '*Vihara*'. Thus, currently most extreme individuals are encountering issues of constipation, indigestion and so on.[7] Obesity has reached an epidemic in India in the 21st century with morbid obesity influencing 5% of the nation's people.[8] As per WHO (2016), worldwide obesity has significantly increased since 1975. 39% of adults aged 18 years and over were overweight in 2016 and 13% were obese.[9] About 75% of Indian women in the urban region are apple-shaped whereas 58% of men are so [10] They are finding out the cure either by dietary constituents and fasting, Still they have - stress on their Mind. So, it needs a superior cure by observing these facts and insights pervasiveness of overweight and obesity in India. The current obesity treatment mainly depends on traditional drugs use like sibutramine, fenfluramine, dexfenfluramine etc. which goes about as hunger inhibitors have unfriendly impacts and can't be used for over a quarter of a year .The diuretic and laxative drugs are similarly used to treat obesity, for shorter-term and the patients weight gain after the end of treatment. A few gadget-like vibrators are being employed for local lipolytic activity.[11] Dietary supplements are costly and that they too have untoward impacts, but Ayurveda offers an appreciable amount of positive result in treatments like *Lekhana Vasti, Udavartana etc*. The framework's novel lies in cleansing, i.e., treatment by which various tools expel poisons gathered in the body.[12] The periodical *Shodhana* has also proven its efficacy which has been mentioned by all *Acharyas* for the management of *Sthaulya Roga*.[13] On the opposite, *Udavartana* is a procedural technique that can be considered every day with a starter coaching. Consequently, for the present study, it was decided to select *Rodhradigana Udavartana*. The observation at our institution conducted a pilot study that showed a significant decrease in the weight in an exceptionally brief period with no antagonistic impacts. To document and investigate the statistical interpretation method, the present study entitled Effect of *Rodhradi Gana* Udavartana in *Sthaulya* was attempted. The *Rodhradi Gana* was not established with valid research even though the Ayurveda well affirmed in the text for its action against weight reduction. In this study, the selected drugs of *Rodhradi Gana* are predominantly having *Laghu, Ruksha Guna, Kashaya, Tikta Rasa, Katu Vipaka* and *Ushna Virya*. Thus, these

properties act as *Vatakaphahara* and relieve *Medavrutavata* and reduce weight and circulating lipids also.

2. MATERIALS AND METHODS

A total of 15 patients were registered for the study from the outpatient and inpatient of the Department of Panchakarma, Mahatma Gandhi Ayurved College Hospital & Research Centre, Wardha, Maharashtra, India who were diagnosed with *Sthaulya* w.s.r. to obesity (E66.0 of ICD-10 criteria) of preset. Informed consent was obtained from the patients before starting the intervention. DMIMS(DU) IEC/2015.16/1321)

2.1 Diagnostic criteria

- *Pratyatma Lakshana* of *Sthaulya* presenting with symptoms like *Chala Sphik Udara Stana, Kshudra Shwasa, Dourbalya, Nidradikyata, Swedadikyata, Daurgandhyata, Asepipasa, Atikshudha* and *Alasya*
- Value of BMI.

2.2 Inclusion criteria

1. Primary obesity (E66.0 of ICD-10 criteria)[16]
2. Patients with overweight BMI > 25-30 kg/m^{2}
3. Patients aged between 20 to 50 years.

2.3 Exclusion criteria

1. Drug-induced obesity (E66.1 of ICD-10 criteria)
2. Extreme obesity with alveolar hypoventilation (E 66.2 of ICD-10 criteria)
3. Obesity due to any secondary causes.
4. Adiposogenital dystrophy lipomatosis (E23.6 of ICD-10 criteria)
5. Dolorosa (E88.2 of ICD-10 criteria)
6. Prader-Willi syndrome (E87.1 of ICD-10 criteria)
7. Other systemic diseases which intervene with the course of treatment.
8. Patients aged under 20 and above 50 years.

2.4 Data Collection

Patients designated were completely analyzed by each subjective and objective parameter. A detailed history and physical assessment findings were noted. Laboratory investigations were done, to exclude and include within the study.

2.5 Treatment

Rodhradigana Churna Udavartana (100gm) was done along with *Pathya* for 45 mins[14].

2.6 Study Duration

Initially, treatment lasted for 15 days and a follow-up period after 1 month. The total study duration was 45 days.

2.7 Procedure of Udavartana[15]

100 gm (Uniform dose was used to all patients to avoid the bias) of powder of *Rodhradi Gana* (Lodhra, Palash, Shonaka, Ashoka, Bharangi, Kayaphala, Yelvaluka, Shalmali, Manjishtha, Kadamba, Kadali* in equal proportion) was utilized daily per

patient for the procedure of *Udvartana*. Powder of *Rodhradigana* was massaged over the body in *Pratiloma* direction. *Udvartana* procedure was done in the following positions: Supine, Left lateral, Right lateral and Dorsal. After the procedure, the patient was suggested to relax and to scrub down with warm water. Time and duration: Patients were asked to come to the morning session for the procedure. Duration of the procedure was 45 min for 15 days.

2.8 Diet and exercise

Patients were encouraged to stick to the *Pathya Ahara* and

Vihara prepared according to Ayurvedic principles[16] [17] and calorie counts and food items and caloric interest. Besides, these patients were encouraged to do exercise or *Yogasana* and brisk walking for an hour daily.

2.9 Assessment Criteria

2.9.1 Subjective Criteria

Chala Sphik Udara Stana, Kshudrashwasa, Dourbalya, Nidradikyata, Swedadikyata, Daurgandhyata, Asepipasa, Atikshudha and *Alasya* were considered as subjective parameters having grades are shown in table 1.

Sr.No	Assessment Parameter	Gradation
	Table 1: Assessment criteria for subjective parameters	
1.	*Chala Sphik Udara Stana*	**Grade – 0** Absence of *Chalatva* **Grade - 1** Little noticeable movement (in the zones) after quick movement **Grade - 2** Little noticeable development (in the zones) much after moderate movement **Grade -3** Movement (in the zones) after mellow development **Grade -4** Movement (in the zones) considerably after changing stance
2.	*Kshudra Shwasa*	**Grade – 0** Dyspnoea after serious work however soothed soon and up to resilience **Grade – 1** Dyspnoea after moderate work yet soothed later and up to resilience **Grade – 2** Dyspnoea after little work yet soothed later and up to resilience **Grade – 3** Dyspnoea after minor works yet assuaged later and past resistance **Grade – 4** Dyspnoea in resting condition
3.	*Dourbalya*	**Grade – 0** Can do routine activity **Grade – 1** Can do direct exercise certainly **Grade – 2** Can do solely delicate activity **Grade – 3** Can do delicate activity with terrible issue **Grade – 4** Cannot do even delicate activity
4.	*Atinidra*	**Grade – 0** No day rest will rise early, night rest < 6 hrs. **Grade – 1** Can stay away from day rest effortlessly bit languid, Night rest < 7-8 hrs. **Grade – 2** Cannot stay away from day rest tired, day rest 1-2 hrs. and night rest 8-9 hrs. **Grade – 3** Always sluggish, drowsy, day rest 3-4 hrs. and night rest 9-10 hrs. **Grade – 4** Sleep while sitting itself, day rest 5-6 hrs. and night rest > 10hrs.
5.	*Swedadhikyata*	**Grade – 0** Sweating after severe work and quick movement or in hot season **Grade – 1** Profuse perspiring after moderate work **Grade -2** Sweating after little work **Grade – 3** Profuse perspiring after little work and movement
6.	*Daurgandhyata*	**Grade – 0** Absence of unhealthy smell **Grade –1** Occasional unhealthy smell from the body, which expelled in the wake of washing **Grade – 2** Persistent unhealthy smell restricted to close zones trouble to smother with antiperspirants **Grade – 3** Persistent unhealthy smell felt from a significant distance and isn't stifled by antiperspirant **Grade – 4** Persistent unhealthy smell felt from a significant distance even unfortunate
7.	*Atipipasa*	**Grade – 1** Up to 1-liter excess water intake **Grade – 2** 1 to 2 liters excess water intake **Grade – 3** 2 to 3 liters excess water intake **Grade – 4** More than 3 liters excess water intake
8.	*Atikshudha*–*Atikshudha* was determined on the basis of *Ruchi*, *Abhyavaharana Shakti* and *JaranaShakti (Ref.)*	
	Ruchi	**Grade – 0** Totally reluctant for food **Grade – 1** Unwilling for food, yet could take the food **Grade – 2** Willing towards solely most loving food, and not to other **Grade–3** Willing towards just one among *Katu/Amla/Madhura* food items **Grade – 4** Willing towards some particular *Ahara* or *Rasa Vishesha* **Grade – 5** Equal willing towards all the *Bhojya Padarth*
	Abhyavaharna Shakti	**Grade – 0** Person not taking food in the least. **Grade – 1** Person taking food in less amount once in a day **Grade – 2** Person taking food in less amount twice in a day **Grade – 3** Person taking food in moderate amount twice in a day

		Grade – 4 Person taking food in typical amount two times every day
		Grade – 5 Taking food in inordinate amount twice or threefold
	Jarana Shakti	According to the presence of symptoms like *Jirna Ahara Lakshana, Utsaha, Laghuta, Udgara Shuddhi, Kshudha, Trishna Pravritti, Yathochitamalotsarga.* **Grade – 0** Presence of one symptom following 6 hours **Grade – 1** Presence of two symptoms following 6 hours **Grade – 2** Presence of three symptoms following 5 hours **Grade – 3** Presence of four symptoms following 5 hours **Grade – 4** Presence of all symptoms following 4 hours **Grade – 5** Presence of all symptoms at interval 4 hours
9.	*Alasya*	**Grade – 0** No *Alasya* (accomplishing work good with good energy in time) **Grade – 1** Doing work good with late commencement **Grade – 2** Doing work dissatisfactory beneath mental tension and requires some energy **Grade – 3** Not beginning any work on his own and doing little work gradually **Grade – 4** Does not take any commencement and not have any desire to work considerably after tension

2.10   Objective Criteria

1.   Weight (unit) kg
2.   BMI calculation (Weight in kg divided by height in meter square)
3.   Body circumference calculation in cm (Any specific ?) by measuring tape
4.   Lipid profile (Total Cholesterol, HDL, LDL, Triglycerides, VLDL) were considered as Objective parameters are shown in table 2.

Table 2: Assessment criteria for Objective parameters

Sr.No.	Objective parameters	Grades
1.	Weight	**Grade -0** 5kg and above **Grade -1** 3-4kg **Grade -2** 1- 2kg **Grade -3** no change (Basic)
2.	BMI	**Grade -0** 2.01- and above **Grade-1** 1.01- 2 kg/m^2 **Grade – 2** 0.1 – 1 kg/m^2 **Grade-3 no** change (Basic)
3.	Body circumference	**Grade – 0 4** and above **Grade – 1** 2 – 3.99 cm **Grade – 2** 0.01 – 1.99 cm **Grade- 3** no change (Basic)
4.	Lipid Profile (Total Cholesterol, HDL, LDL, Triglycerides, VLDL)	

3.   RESULT

The maximum number of patients were females (53.33%), were belonged to 20-30 age groups (60%), were Hindus (86.7%), higher class category socioeconomic status (40%). Distribution according to occupational status, it was observed that the majority of patients were actively occupational among which 3 (20%) belong to sedentary, 11 (73.33%) were active and labor groups were minimal i.e. 1 (6.7%). Majority of patients had no family history obesity (60%). The maximum number of patients had a mixed diet (60%) and *Madhura Rasa maka Ahara* (66.6%). It is observed that the majority of patients had *Kapha Prakriti* 7 (46.6%) and *Vata Kapha Prakriti* 5(33.3%). Thus, the *Kapha* dominance is noticed. Majority of patients had *Krura Koshta* (53.3%), *Tikshna agni* (53.4%), *Asamyak Mala pravrutti* (66.6%) and *Saam Jivha* (73.3 %). As per subjective parameters, all patients had shown a significant reduction in all symptoms of *Sthaulya*

with a highly significant p-value (p<0.001) [Table 3]. According to objective parameters, patients had diminished weight with an average of 1.17 to 0.75 kg after completion of treatment. The maximum decrease was 2.6 kg. After one month of follow-up, average weight reduction was 2.7 to 1.28 kg. The maximum BMI reduction was 0.99 with a normal decline of 0.49 to 0.31, which shows its high significance difference after completing the treatment. Following the study duration, the normal decline of BMI was 1.06 to 0.28. All patients had diminished total cholesterol with an average of 6.55 to 4.63 mg/dl after completion of treatment. The maximum reduction was 20.1 mg/dl. There was a mean increment in HDL by 1.78 to 1.146 mg/dl and indicated high significance (p<0.001) in HDL increment. There was a decline in LDL levels with an average of 8.61 to 5.828 mg/dl. All fifteen patients had a decline in their LDL levels. There was an impressive variation in Triglycerides levels. All patients had an average decrease of 2.20 to 1.398 mg/dl in the Triglycerides level [Table 4].

Table 3: Assessment of the effect of therapy on Subjective parameters

Sr.No.	Subjective Parameters		N	Mean Rank	Sum of Ranks	Z	p-value
1.	*StanaUdara Sphik Chalatva* Before – After	Negative Ranks	15	8.00	120.00	-3.482	0.000* S
		Positive Ranks	0	0.00	0.00		
		Ties	0				
2.	*Kshudra shwasa* Before – After	Negative Ranks	15	8.00	120.00	-3.448	0.001* S
		Positive Ranks	0	0.00	0.00		
		Ties	0				
3.	*Dourbalya* Before – After	Negative Ranks	15	8.00	120.00	-3.448	0.001* S
		Positive Ranks	0	0.00	0.00		
		Ties	0				
4.	*Nidradikyata* Before – After	Negative Ranks	15	8.00	120.00	-3.624	0.000* S(significant)
		Positive Ranks	0	0.00	0.00		
		Ties	0				
		Ties	0				
5.	*Dourgandyata* Before – After	Negative Ranks	15	8.00	120.00	-3.571	0.000* S (significant)
		Positive Ranks	0	0.00	0.00		
		Ties	0				
6.	*Asepipasa* Before – After	Negative Ranks	14	8.39	117.50	-3.293	0.001*S (significant)
		Positive Ranks	1	2.50	2.50		
		Ties	0				
7.	*Atikshuda* Before – After	Negative Ranks	15	8.00	120.00	-3.690	0.000* S(significant)
		Positive Ranks	0	0.00	0.00		
		Ties	0				
8.	*Alasya* Before – After	Negative Ranks	15	8.00	120.00	-3.571	0.000* S (significant)
		Positive Ranks	0	0.00	0.00		
		Ties	0				

The values are Mean ± S.D (P<0.05) statistically significant

Table 4: Assessment of effect of therapy on Objective parameters

Sr. No.	Objective Parameters		Mean ± SD	Std. Error Mean	t value	p value
1.	Weight (Kg)	Before	86.9333± 8.26755	2.13467	7.618	0.000* S (significant)
		After	84.0667 ± 8.29343	2.14135		
2.	BMI	Before	34.9867 ± 2.06704	0.53371	7.801	0.000*S (significant)
		After	33.8400 ± 2.38860	0.61673		
3.	Waist to Hip Ratio	Before	0.9493 ± 0.05347	0.01381	-0.471	0.645 NS (Non-significant)
		After	0.9516 ± 0.05761	0.01487		
4.	Chest Circumference (cm)	Before	102.3000 ± 4.19949	1.08430	5.442	0.000* S (significant)
		After	99.2667 ± 4.43149	1.14421		
5.	Abdomen Circumference (cm)	Before	105.1000 ± 6.24271	1.61186	6.611	0.000* S
		After	102.6333 ± 6.34560	1.63843		
6.	Total Cholesterol (unit)	Before	179.6667 ± 42.47464	10.96691	5.337	0.000* S (significant)
		After	168.2000 ± 43.17397	10.11468		
7.	HDL	Before	37.1333 ± 6.17445	1.59424	6.759	0.001* S (significant)
		After	38.6000 ± 8.65035	2.23351		
8.	LDL	Before	110.2000 ± 37.88743	9.78249	6.255	0.000* S (Significan)
		After	107.6667 ± 38.29149	9.88682		
9.	Triglycerides	Before	163.4667 ± 77.07869	19.90163	6.783	0.000* S (significant)
		After	157.4667 ± 85.92511	21.18577		
10	VLDL	Before	38.8000 ± 17.84804	5.00834	5.936	0.000* S (significant)
		After	34.4667 ± 20.46648	5.80082		

The values are Mean ± S.D;(n-15) P<0.05 statistically significant

Statistically significant results (p<0.001) were found, which shows that *Udavartana* with *Rodhradigana Churna* was effective in reducing the intensity of symptoms of *Sthaulya*. This shows *Udavartana* is having its efficacy over relieving associated features. The results obtained were highly significant (p<0.001) in objective parameters which shows that *Udavartana* was highly effective in reducing weight, BMI and lipid profile.

4. DISCUSSION

Obesity is a chronic disease prevalent worldwide among the people who have a sedentary lifestyle and habit of overeating. The aetiology of obesity is multifactorial; lifestyle is changing drastically and turns out to be exceptionally quick and occupied.[18] Overuse of fast-food, pizza and burger culture, vehicle-friendly lifestyle, faulty dietary habits, lack of exercise, more mental work than physical, to use of medications that have weight gain as an undesirable side effect, overburden of work and mental stress lead to Obesity and Obesity-induced other disorders. *Atisthaulya* (Obesity) is considered as one of the eight disreputable conditions as depicted by Acharya Charaka. An individual in whom there is the excessive aggregation of *Meda* (fat/adipose tissue) prompting flabbiness of hips, mid-region and breast has been arranged as *Atisthula*.[19] Dholakiya D. et.al. Stated that *Apakva Meda Dhatu* along with *Ama* and *Rasa Dhatu* assume key job being developed of the illness and will prompt numerous ways of life issues (*Santarpanottha Vyadhi*).·[20,21]

4.1 Probable mode of action of Udvartana

Udvartana has the characteristics of *Kapha hara* and *Medovilayana* properties[22]. Due to *Ushna* and *Tikshna Guna* of *Dravya* and strong massage impact and the *Virya* of medication goes into the body through. Thereafter it opens the *Siramukha* (openings of veins), thereby does the digestion of *Kapha* and *Medas*. Because of this, there will be liquefaction of *Kapha* and *Meda*. *Swedana*, which is given after *Udvartana* will additionally, does digestion of the same. It also initiates the *Swedana,* which removes stiffness, heaviness and coldness from the body. In the procedure of *Udvartana*, rubbing of medication to the skin happens. This rapid increase in nearby temperatures due to dilatation of vessels. Hence it opens circulatory channels, encourages metabolic action. Deep pressure massage helps the exchange of tissue liquids by extending the stream and the superficial vein and lymphatics.[23] The pressure enables the substance of vessels to move towards the heart. Whenever applied powerfully and rapidly, it has an invigorating impact. It will increase nutrition altogether. Because it causes cutaneous vasodilation, it will increase the disposal of metabolic waste. It improves the state of the sensory system by animating the cutaneous sensitive spots. It impacts the general digestion when applied to the enormous region. It additionally helps within the organic process of inflammatory products and assimilation of fat in adipose tissue. Subsequently, *Udvartana* helps in the decrease of subcutaneous deposition of fats. Jayashankar et al. also mentioned in his study that Udvartana opens the minute channels and improves blood as well as lymphatic circulation[24].

4.2 Probable mode of action of Udvartana on lipids

Udvartana has acceptable viability over lipid levels. Because of expanding rubbing to body parts, the triglycerides present within the hypodermic issue will separate into unsaturated fats. These unsaturated fats are dispensed to the liver because of the impact of centripetal or opposite massage, which increments flow to the inner organ for the conversation of these unsaturated fats into bile. As less caloric food is equipped together with substantial activities, the body wants additional energy to satisfy the equivalent. Without starch, fats are utilized with energy production. The bile that is framed in the liver, on purgation will be expelled

out in overabundance consequently, the reabsorption of bile will be diminished, successively additional using the lipid which is circulating in the body. Advancement of discharge of bile in the defecation is employed in concert with treatment standard to treat hyperlipidemia, e.g. Colestipol. Pandit MA et al. (2013) expressed that *Udavartana* demonstrated at the molecular level and by increasing heat production underneath the skin, it acclimatizes the *Kleda* and removes the blockage of channels and in this manner important to address and correct *Metadata agnimandya* which therefore helps in regulation of fat absorption.[25]

4.3 Advantages of Udvartana

1) **Twakprasadakara:** This beneficial impact of *Udvartana* is employed to build confidence and to improve the skin texture Improvement in the appearance is the best measure to survey the cosmetic property. The shade of skin depends on the level of melanocytes, blood circulating beneath the skin and carotenoids. Color given to skin by blood principally relies on the amount of haemoglobin. By performing *Udavartana*, the quantity of blood flow underneath the skin will increase because of contact. Because of the alteration, the skin cells are furnished with more oxygen, thereby changing the color to some extent.

2) **Angasthirikarana (Body stability):** There will be an increment in adipose cells either in the variety or in size or both in fat individuals. By performing *Udavartana*, these adipose cells get lipolyzed then the cells get contracted to inflict compactness. Therefore, one can appropriate the above advantage.

3) **Gaurav ahara (Diminished heaviness): Gaurav's feature** relies on the increment of *Kapha* and *Medas*. *Udavartana* upgrades the transport of cholesterol from the outskirts to the liver. This cholesterol is used for the development of bile salts. Consequently, because of the reduction of fat, one feels lightness.

4) **Dourgandhyahara (evacuation of bad body odor):** *Dourgandhya* is the resultant of *Sweda*, which is *Mala* of *Meda*. Because of *Udavartana*, there will be a decline in *Mala* of *Mead*. Henceforth, development of excess sweat is decreased.

5) **Tandra hara (expulsion of tiredness):** *Tandra* is expected to *Tamo Guna*, which is accrued by *Vikruta Kapha*. *Udavartana* helps in lessening the *Kapha*, Thus eases *Tandra*.

6) **Kandua (itching reduces):** One amongst the explanations for *Kandu* is an obstacle within the *Sweda vaha Srotas*. As *Udavartana* frees the openings from *Swedavaha Srotas* by its cleansing property, it reduces cutaneous itching.

7) **Malahara (expulsion of metabolic waste):** Here, *Sweda* indicates solely *Sweda* that is expelled through orifices of the skin by *Udavartana*.

8) **Vatahara**: In *Sthaulya*, *Meda* and *Kapha* hinder *Vata*. *Udavartana* lessons both and in this way normalizes the *Vata*.

9) **Shukrada**: Due to diminished *Medodhatwagni*, the successive nutrients to *Dhatu* gets hampered. *Udavartana* improves *Medodhtwagni* and consequently, the development of sequential *Dhatu* happens, thereby expanding the degree of *Shukra* Dhatu, which is mentioned as "fatties of the testosterone" means the elevated level of lipid will diminish androgenic hormones. *Udavartana* diminishes the cholesterol, thereby clogging

the androgenic hormone is restricted, subsequently making great convenience of testosterone.

10) **Twakamriduta (skin softening):** *Udvartana* helps in expelling the dermis because of rubbing. It additionally will increase blood flow to skin layers, thereby providing extreme oxygen to dermal cells. Consequently, the delicateness of skin is discovered. Furthermore, kneading impact on fatty organs invigorates sebum production and thereby carries softness to skin.

5. CONCLUSION

The conception driving clarifying *Sthaulya* in concert among the *Ashta Nindita* is a principle because of indications like *Ayushohrasa* (diminished life expectancy), difficult pathology and future management. *Sthaulya* isn't merely physical weight trouble, yet the patients additionally face several mental issues directly from sporting tight materials ill affront in the general public. This clinical study was done for 15 patients. All patients were subjected to *Rodhradigana Udavartana* and were encouraged to follow the activity and recommended diet. Lipid profiles and other objective parameters were done before and after the intervention. On analyzing all observations, it tends to be reasoned that *Rodhradi gana Udavartana* resulted in *Sthaulya* and had a critical impact on

lipids. *Udvartana* ought to be practiced as a daily regime particularly for obese patients. In the classical text, it is portrayed to practice after exercise and before bath, however if done before exercise, then it will be useful to utilize the peripheral unsaturated fats for energy, thereby expanding the lipolytic activity. As the sample size was small, so exact conclusions can't be drawn. Thus, it is recommended to lead a similar study over a large sample. The subsequent period was confined for one month, keeping the study period. In the future, a similar study ought to be allotted to visualize the weight regained for a substantial period.

6. AUTHORS CONTRIBUTION STATEMENT:

Dr. Shweta P conceptualized the idea, guided this study, drafted the manuscript and evaluated the result. Dr. Piyush B and Dr. Manju M PG carried out the research study. Dr. Milind N contributed to the research to the drafting manuscript and data analysis of the result.

7. CONFLICT OF INTEREST

Conflict of interest declared none.

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