

Original article:

Vidangadi Yoga and Takrarishta in Management of Sthaulya (Obesity)

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Abstract :

Background: *Sthaulya* (obesity) is a metabolic disorder increasing globally many folds in the last few decades with a high rate of complication resulting in high morbidity, mortality and reduced quality of life. We tested *Vidangadi yoga* with *takrarishta*, an Ayurvedic medicine for its efficacy in the management of *sthaulya*.

Objective: To study the efficacy of *Vidangadi yoga* and *Takrarishta* in the management of *Sthaulya*.

Methods: Total 60 well diagnosed patients of *Sthaulya*(obesity) presenting with classical symptoms of *Sthaulya* (obesity) of age group 20-60 years of either sex participated in the study. These were randomly divided into two groups, Group A received *vidangadi yoga* 5 mg twice before meals with 10 gm of madhu(Honey) & Group B *Vidangadi yoga* along with *takrarishta* in the dose of 30ml/day in two divided doses with lukewarm water before meal for 90 days. Assessments were done on grading subjective criteria like *Javoparodha*, *Daurbalya*, *Daurgandhya*, *Angagaurav*, *Swedadhikya*, Sr. Lipid profile, T3-T4- TSH, CBC, Urine Routine, BSL- Fasting & PP. Follow up visits were taken every 15 days.

Result: Study showed that both the groups showed improvement in most of the variables and were comparable. Improvement were seen in various variables but *Vidangadi yoga* with *Takrarishta* showed good result on subjective variables like *Javoparodh*, *Daurbalya*, *Angagaurav*, *Kranthan Daurgandhya*, *Swedadhikya*, *Kshudhadhikya*, *Kshudrashwas*, *Nidradhikya*, *Trishnadhikya*, *Gadgadvam* and better result on objective variables like Weight, BMI, Abdominal circumference, Sr. Cholesterol, Sr. Triglyceride, HDL, VLDL level.

Conclusion: clinical efficacy of *Vidangadi yoga* when administered with *takrarishta* in *sthaulya* (obesity) found to be more effective when compared with *vidangadi* alone in most of the variables.

Keywords : *Sthaulya*, obesity, *vidangadi churna*, *takrarishta*

Introduction:

Bhavprakash define *sthaulya* as heaviness in the body due to excessive growth especially in the abdominal region. [1] According to *charka* excessive and abnormal increase of medo-dhatu along with mamsa-dhatu result in sagging appearance of buttocks, belly, breasts whose increase in bulk is not matched by corresponding increase in energy. [2]

WHO defines Overweight and obesity as abnormal or excessive fat accumulation that may impair health. Obesity is a condition in which the body mass index (BMI), obtained by dividing a person's weight by the square of the person's height, is over 30 kg/m² defined as overweight where the normal range is 25–30 kg/m². [3] OBESITY MEDICINE ASSOCIATION defines obesity as chronic relapsing multifactorial neurobehavioral disease wherein increases body fat, promotes Adipose tissue dysfunction & abnormal fat mass physical forces resulting in Adverse metabolic, biomechanical & physiological health consequences. [4] LOW & middle income group is becoming more prone to obesity. [5] Obesity increases the likelihood of various diseases & conditions particularly cardiovascular diseases, type 2 diabetes, obstructive sleep apnea, certain types of cancer, osteoarthritis and depression. [6,7] Obesity is most commonly caused by a combination of excessive food intake, lack of physical activity, and genetic susceptibility. [8] A few cases are caused primarily by genes, endocrine disorders, medications, or mental disorder. [9] According to WHO, globally obesity has tripled since 1975. Death rate observed to be more in countries where Phase-1 study conducted by ICMR-INDIAB shows there is progression in the rate of obesity throughout urban and rural population in India. [10] Globally more than 1.9 billion adults are overweight and 650 million are obese. In developing countries obese patients are at high risk of developing adverse consequences where more than 2.8 million deaths are reported. [11] It is imperative that use of evidence based alternate medicine to noncommunicable (NCD) diseases as an adjunct to modern medicine in national programs can reduce the healthcare burden by these NCDs. [12]

In modern science there are multiple factors affecting the body fat mass. FTO Gene is located on 16 chromosome expressed at the Arcuate cell of hypothalamus responsible for Appetite & fatty acid metabolism. Its AA genotype association is related to overweight where allele A increases body fat. (13) White adipocytes release serum leptin which regulates control of food. Serum leptin when affected due to genetic hindrance leads to loss of food control intake and lead to obesity. (14) Tumor necrosis factor (alpha) affects lipid metabolism causing in hepatic fatty acid synthesis causing increase in body fat mass. (15) mutation in Melanocortin 4 receptor (MC4R) causes obesity, which regulates control on food intake is one factor which was found in Mexican children. (16) Ecto-enzyme nucleotide pyrophosphatase phosphodiesterase-1 (ENPP1) or plasma cell glycoprotein 1 (PC1) located on chromosome 6 inhibits insulin signaling contributes in DM TYPE 2 with obesity. (17) other genes contributing in obesity are peroxisome proliferator activated receptor gamma (PPARG) influencing glucose metabolism (18) Mother carrying the homozygous CC genotype of same gene give birth newborn with increased risk of obesity (19), ACE gene associated with higher BMI (20), INTERLEUKIN (IL) is a pro-inflammatory cytokine which modulates function of Adipose tissue & interacts with metabolic modulation. (21)

According to Ayurveda Acharya Charaka has accepted Ahara as most common pathogenic factor for Medovridhi in Sthaulya (22) whereas Sushruta has accepted Amadosha. (23) Due to obstruction of Srotas by Meda the Vata moving mainly in to Koshtha whips up the Agni causing Dhatwagnimandya and absorbs the food. The corpulent man digests food speedily and craves for food inordinately. Over eating produces more Upadan Rasa, which causes overgrowth of Meda Dhatu leads to Sthaulya.

Vidangadi yoga act as a Kapha and Vata Shamak with the help of Rasa (Katu, Tikta, Kashaya), Virya (Ushna), Vipaka (Katu, Madhur) & Guna (Laghu, Ruksha, Teekshna). Vidangadi yoga has Lekhana properties which acts on Medas (adipose tissue) which is another factor in producing the condition Rasraktagata sneha vridhi or hyperlipidemia. It works in the form of Aparpanatmaka dravya. It may help to reduce the atherosclerosis

because it has lekhana deepana, pachana, properties. With the help of all above mentioned factor Vidangadi yoga acts on sthaulya (obesity), madhu helps in assimilation of the medicine. (24) Medodhatwagnimandya or impaired agni caused by pachaka pitta, kledaka kapha, & samanavata in sthaulya. The pachaka pittas properties decreases by increase in the drava guna, Kledaka kapha properties decreases by increase in the guru snigdha & pichhil guna, The samana vatas properties decreases by increase in sheeta guna. Takrarishta has the property katu vipaka & katu rasa which balances the properties of pachaka pitta & kledaka kapha with the help of laghu, ruksha, teekshna gunna. It increases the action of saman vata which increases the digestion & metabolism of the body. (25) Hence the present study was designed where Vidangadi yoga was utilised with & without takrarishta in the management of sthaulya caused by sedentary lifestyle.

Aims and Objective

To study the etiopathogenesis of Sthaulya, efficacy of Vidangadi yoga in Sthaulya & efficacy of Vidangadi yoga along with Takrarishta in the management of Sthaulya.

Materials and methods:

The patients attending the out patient department of the institute were recruited for the study. The CONSORT statement guidelines (26) have been followed in reporting the outcome of the study.

A] SUBJECT:- Total 60 patients were diagnosed as per the inclusion criteria and recruited visiting the outpatient department of Smt KG Mittal ayurved hospital, Mumbai, Maharashtra, India divided into 2 groups.

INCLUSION CRITERIA:-

The patient from either sex were selected for the study with Age between 21 to 60 years, with no barrier on Race, religion, economic status presenting with classical symptoms of sthaulya mentioned in Shastra having BMI more than 25 with WHR (waist hip ratio) 0.95 in males & WHR >0.8 in female. Hypothyroid cases were also included.

EXCLUSIVE CRITERIA:

The patient with age < 21 & > 60 years; patient with Ischemic heart disease (IHD), Coronary heart Disease (CHD) & Coarctation of Aorta, renal failure; those having any endocrine disorder, patient with hypertension complication (e.g hypertensive encephalopathy, cerebral haemorrhage, convulsive seizure); those with malignant hypertension; pregnant & lactating female patients; patient with diabetes mellitus and its complication & Patients suffering from infectious diseases or kept on any steroids were excluded from the study.

SCREENING METHOD:-

All the patients included in this study were examined thoroughly and data was recorded systematically. Various laboratory and Ayurvedic variables like *prakriti*, *agni*, *satwa* etc., were assessed. Laboratory investigations were carried out at clinical laboratory, SMT KGMPA Hospital, Mumbai at baseline & on the 90th day of intervention.

B] RESEARCH DESIGN:-

The study was open, Randomised, parallel group comparative design clinical study.

INTERVENTION:-

All the patients were randomly divided into two groups: Group A & Group B. Group (n=30) received Vidangadi yoga (23) 5 mg twice before meals with 10 gm of madhu & Group B (n=30) received Vidangadi yoga along with takrarishta (24) for 90 days. Both the interventions are from the classic text of Ayurveda. The drugs were

prepared and authenticated. Duration of intervention was 90 days with follow up after every 2 weeks. The nature & design of the study was explained to the patient & informed consent was obtained. The project was approved by the institutional ethical committee. During the trial period patients were asked to adhere to the treatment protocol and inform any adverse effect to the investigator at the earliest.

C] CRITERIA OF ASSESSMENT: -

Primary outcome:- Javoparodha, Daurbalya, Daurgandhya, Angagaurav, Swedadhikya Kshudhadhikya, Kshudrashwas, Nidradhikya, Trishnadhikya, Gadgadvam. The outcome was recorded by standard operating procedure.

Secondary outcome:- The secondary outcomes were Weight, BMI, Abdominal circumference Sr. Lipid profile, T3-T4- TSH, CBC, Urine Routine, BSL- Fasting & PP. (Table no. 1)

Result:-

The present study was carried out to evaluate the effect of Vidangadi yoga with & without Takraarishta in sthaulya (obesity) in open randomised manner, the data collected from both the groups were assessed accordingly.

Demographical data (Table no.2)

50% patients were found to be lying in the age group of 31-45yr. Female were more significantly affected by obesity (80%). patients who were taking mixed diet were affected more (73.33%). Vaatkaphaj prakruti affected more as compare to other dual prakruti (40%). Visham agni plays significant role in sthaulya pathology (51.67%). Avara satwa patients were found to be affected by sthaulya (50%). Buisness class affected more in this study (40%). Krura koshta patients were found to be more affected by sthoulya (53.33%). More number of patient were found to have positive family history. When social status was accounted, upper class were found to be affected significantly. When the nature of diet was compared the guru diet followed by aatimatra diet where found to be cause of the disease. When lifestyle compared Aatiasan (Lack of movement) followed by divaswap (sleeping in day time) where found to affect more as compare to other factors significantly. When timing of the diet was accounted, it was found that the vishamaashan (irregular timing of meal) was significantly more then others.

Result based on subjective assessment (Table no.3-4)

Wilcoxon matched pairs sign rank test applied to the patient subjected to group B (Vidangadi yoga with Takraarishta) Javoparodh (lack of enthusiasm) found significantly improving where group A (P= 0.0023), group B (P<0.0001). Significant improvement in Daurbalya (weakness) seen in group B, where group A (P=0.0016) & group B (P<0.0001). Daurgandhya (foul smell from body) was treated better in group B when compared, where group A (P=0.018) & group B (P<0.0001). Angagaurav (heaviness) was significantly treated when subjected with Group B, where group A (P=0.033) & group B (P<0.0001). Swedaadhikya (excessive sweating) responded better in group B when compared, where group A (P=0.0115) & group B (P<0.0001). Kshudhaadhikya (excessive hunger) treated well in both the groups (P=0.0001). Nidraadhikya (excessive sleep) showed significant result in both the groups (P<0.0001). Trishnaadhiya (excessive thirst) significantly improved in group B, where group A (P<0.0003) & group B (P<0.0001). Significant improvement in Kranthan (snoring) seen in group B, where group A (P=0.0003) & group B (P<0.0001). Gadagadatwam (indistinctness of speech) was improved significantly in group B, where group A (P=0.0006) & group B (P<0.0001). Significant

improvement in Kshudrashwas (shallow breathing) seen in group A, where group A (P=0.0003) & group A (P=0.0115).

Result based on objective assessment (Table no.5-6)

Statistical test, Wilcoxon matched pairs sign rank test applied to the data collected. weight reduction group B found to be significant (P <0.0001) as compared to group A (P=0.0158). BMI compared in both the groups, group B found to be significant (P <0.0001), group A (P=0.3447). waist hip ratio(WHR) when compared found to be effective in group B (P <0.0001), group A (P=0.2756) Abdominal circumference when compared found (P=0.0002) Significant, group A (P=0.0008). Waist circumference when compared (P<0.0001) in group A considered significant, group B (P=0.0001). Chest circumference When compared, found (P<0.0001) considered significant in both the groups. When tested for Sr. cholesterol (P<0.0001) considered significant in both the groups. Sr triglyceride when compared found (P<0.0001) in group A which is significant as group B (P=0.0007). Sr HDL when compared among both the groups found significant in group A (P<0.0001), group B (P=0.0002). Sr.LDL when compared among both the groups found significant (P<0.0001). VLDL when compared (P<0.0001) in group A considered significant, group B (P=0.0001).

Sr. No	Symptoms	Grade	Lakshana
1	Javoparodha	0	Normal enthusiasm in starting work
		1	Less enthusiasm in starting work at specific time of day
		2	Less enthusiasm in every work at all time of day
		3	No enthusiasm towards any work
2	Daurbalya	0	Can do routine work
		1	Can do moderate exercise without difficulties
		2	Can do exercise with very difficulties
		3	Cannot do even mild exercise
3	Daurgandhya	0	Absence of bad smell
		1	Occasional bad smell in body
		2	Persistent bad smell felt from long distance is not suppressed with deodorant
		3	Persistent bad smell felt from long distance even intolerance to patient himself.
4	Angagaurav	0	No fatigue
		1	Little fatigue in doing routine work
		2	Excessive fatigue in doing routine work
		3	Excessive fatigue in doing little work
5	Swedadhikya (At normal temp. and normal condition)	0	Sweating after heavy work and fast movement or in hot season
		1	Sweating after moderate work and movement
		2	Sweating after little work and movement
		3	Sweating even at rest and in cold season
6	Kshudhadhikya	0	Patient can fast
		1	Diet with Lunch and Dinner
		2	Diet with Breakfast, lunch and Dinner
		3	Supplementary food required even with Breakfast, Lunch and Dinner

7	Nidradhikya	0	6 – 7 hours per day
		1	8 hours per day with Jrimbha
		2	10 hours per day with Tandra
		3	More than 10 hours with tandra and klam
8	Trishnadhikya	0	1 – 2 Liters per day
		1	2 – 3 Liters per day
		2	3 – 4 Liters per day
		3	More than 4 Liters per day
9	Krathan	0	No snoring
		1	Snoring intermittent
		2	Disturbing sleep of person next to him
		3	Disturbing sleep of all person in room
10	Gadgadtawam	0	No heavy words
		1	Heaviness in specific kanthya words
		2	Heaviness in words but other person can understand what he is talking
		3	Heaviness in words but other person can't understand what he is talking
11	Kshudrashwas	0	No dyspnoea even after heavy work
		1	Dyspnoea after little work but upto tolerance
		2	Dyspnoea after little work but beyond tolerance
		3	Dyspnoea in resting also
12	BMI (Body mass index) BMI = weights (Kg) / (Height in meter) ²	< 18.5	Underweight
		18.5 – 24.9	Normal weight
		25 – 29	Overweight
		30 – 39.9	Obese
		> 40	Severe obese
13	WHR (Waist and Hip ratio in cm)	In Male	Less than 0.95
		In Female	Less than 0.8

Table no.1 Gradation & criteria of clinical Assesment.

CRITERIA	CATEGORY	GROUP A	GROUP B	TOTAL	%
AGE(YRS)	21-30	9	9	18	30
	31-45	13	17	30	50
	46-60	8	4	12	20
sex	male	7	5	12	20
	female	26	22	48	80
Diet	VEG	7	9	16	26.66
	MIXED	23	21	44	73.33
PRAKRUTI	VATA-PITTA	9	6	5	25
	KAPHA-PITTA	8	13	21	35
	VATA-KAPHA	13	11	24	40

AGNI	VISHAM	16	15	31	51.67%
	MANDA	3	4	7	11.67%
	TIKSHNA	11	11	22	36.67%
SATWA	AVAR	16	14	30	50.00%
	MADHYA	10	9	19	31.66%
	PRAVARA	4	7	11	18.33%
OCCUPATION	BUSINESS	14	10	24	40.00%
	SERVICE	2	4	6	10.00%
	HOUSEWIFE	10	11	21	35.00%
	STUDENT	3	4	7	11.67%
	PHYSICAL WORKER	1	1	2	3.33%
KOSHITA	krura	17	15	32	53.33%
	Madhyam	10	11	21	35.00%
	Mrudu	3	4	7	11.67%
FAMILY HISTORY	YES	16	17	33	55.00%
	NO	14	13	27	45.00%
SOCIAL STATUS	UPPER CLASS	16	16	32	53.33%
	MIDDLE CLASS	11	12	23	38.33%
	LOWER CLASS	3	2	5	8.33%
TYPE OF DIET	Guru Aahara	22	23	45	75
	Vidahi Aahara	11	12	23	38.33
	Visama Aahara	12	11	23	38.33
	Atimatra Aahara	15	16	31	51.66
	Viruddha Aahara	11	10	21	35
VIHARA	Atiaasan	15	16	31	51.66
	Vegavarodha	10	9	19	31.66
	Divaswapa	20	24	44	73.33
	Atapasevan	7	8	15	25
	Achintya	10	15	25	41.66
	Vyadhijanya	7	7	14	23.33
DIET HABIT	adhyashana	10	8	18	30
	samashana	5	6	11	18.33
	Vishamashana	15	16	31	51.67

Table no.2 Effect of intervention on Age,sex,diet,prakruti,agni,diet measured in percentage on both groups.

Symptoms	MEAN		S.D.		S.E.		MEDIAN		'p' VALUE	'r' VALUE
	BT	AT	BT	AT	BT	AT	BT	AT		
Javo-parodh	1.833	1.233	0.9129	0.7279	0.1667	0.1329	2	1	0.0023	0.2356
Daur-balya	1.467	0.8333	0.9371	0.7466	0.1711	0.1363	1	1	0.0016	0.4742
Daur-gondhya	1.633	1.033	0.9994	0.9994	0.1825	0.1825	2	1	0.0018	0.5141
Angagaurav	1.700	1.133	0.9154	0.9499	0.1671	0.1642	2	1	0.0033	0.3907
Swedadhikya	1.500	0.9667	0.9377	C	0.1712	0.1396	2	1	0.0115	0.3306
Kshudhadhikya	2.033	1.200	0.8503	0.7144	0.1552	0.1304	2	1	0.0001	0.3003
Nidradhikya	1.833	0.9333	0.7466	0.8087	0.1363	0.1477	2	1	< 0.0001	0.4222
Trishnadhikya	1.867	1.067	1.867	0.7184	0.1596	0.1312	2	1	< 0.0003	0.2402
Krathan	1.833	1.033	0.9229	0.7184	0.1685	0.1312	2	1	0.0003	0.3424
Gadgadvam	1.033	1.933	0.7184	0.7849	0.1312	0.1433	2	1	0.0006	0.2595
Kshudrashwas	1.500	1.200	0.7184	0.8867	0.1312	0.1619	2	1	0.0003	0.2925

Table no. 3 Application of WILCOXON MATCHED PAIRS SIGN RANK TEST for Each Symptom On Group-A

Symptoms	MEAN		S.D.		S.E.		MEDIAN		'p' VALUE	'r' VALUE
	BT	AT	BT	AT	BT	AT	BT	AT		
Javoparodh	2.100	0.8333	0.8847	0.7466	0.1615	0.1363	2	0	< 0.0001	0.5409
Daurbalya	2.367	1.133	0.7184	0.7761	0.1312	0.1417	2.5	1	< 0.0001	0.6303

Daurgondhya	2.133	1.000	0.8996	0.7428	0.1642	0.1356	2	1	< 0.0001	0.7080
Angagaurav	2.300	0.7667	0.6513	0.8172	0.1189	0.1492	2	1	< 0.0001	0.4568
Swedadhikya	2.200	1.000	0.7611	0.7788	0.1390	0.1438	2	1	< 0.0001	0.8179
Kshudhadhikya	2.600	0.900	0.6747	0.7589	0.1232	0.1385	3	1	< 0.0001	0.5237
Nidradhikya	2.233	1.33	0.6789	0.7373	0.1240	0.1333	2	1	< 0.0001	0.7153
Trishnadhikya	2.567	0.1267	0.6261	0.7153	0.1143	0.1350	3	1	< 0.0001	0.6992
Krathan	2.133	1.100	0.9371	0.8847	0.1711	0.1615	2	0	< 0.0001	0.5491
Gadgadvam..	2.100	1.100	0.8449	0.8449	0.1585	0.1585	2	1	< 0.0001	0.8339
Kshudrashwas	1.933	0.9667	0.9377	0.7649	0.1712	0.1396	2	1	0.0115	0.3306

Table no. 4 Application of WILCOXON MATCHED PAIRS SIGN RANK TEST for Each Symptom on Group-B

Sr. No.	MEAN		S.D.		S.E.		MEDIAN		'p' VALUE	'r' VALUE
	BT	AT	BT	AT	BT	AT	BT	AT		
Weight	77.517	75.200	11.552	17.744	2.109	3.240	79	79.25	0.0158	0.9969
BMI	28.361	28.255	2.943	3.010	0.5373	0.5496	27.67	27.56	0.3447	0.9796
WHR	0.9443	0.9300	0.02528	0.0400	0.00461	0.00730	0.9500	0.9400	0.2756	0.8025
Abdominal circumference	37.647	37.377	4.013	3.949	0.7327	0.7211	38.2	38.0	0.0008	0.9988
Waist Circumference	37.497	37.166	3.581	3.574	0.6538	0.6525	36.2	36.2	< 0.0001	0.9914
Chest Circumference	38.080	37.724	3.582	3.596	0.6539	0.6566	38.5	38.4	< 0.0001	0.9979
Sr. Cholesterol	205.53	203.70	47.584	47.775	8.688	8.722	183.5	180	< 0.0001	0.9969
Sr. Triglycerides	85.577	84.633	43.482	43.357	7.939	7.916	71.0	71.0	< 0.0001	0.9954

HDL	54.127	53.200	11.954	12.336	2.183	2.252	52	51	< 0.0001	0.9945
LDL	102.48	100.73	33.036	32.959	6.032	6.017	91.5	90.0	< 0.0001	0.9961
VLDL	32.4	31.6	16.675	16.401	3.044	2.994	27.5	26.5	< 0.0001	0.9914

Table no. 5 Application of WILCOXON MATCHED PAIRS SIGN RANK TEST for objective parameter of group A.

Sr. No.	MEAN		S.D.		S.E.		MEDIAN		'p' VALUE	'r' VALUE
	BT	AT	BT	AT	BT	AT	BT	AT		
Weight	75.600	72.5 83	13.37 2	13.5 12	2.441	2.467	73.25	70.00	< 0.0001	0.9668
BMI	28.209	27.1 56	2.672	2.50 5	0.487 9	0.457 3	27.67 5	26.475	< 0.0001	0.8359
WHR	0.9557	0.94 67	0.024 87	0.02 537	0.004 541	0.004 632	0.955 0	0.9400	0.0019	0.8770
Abdominal circumference	35.980	35.6 47	3.106	2.95 0	0.567 1	0.538 5	35.2	35.0	0.0002	0.9895
Waist Circumference	36.707	36.4 00	3.865	3.77 0	0.705 7	0.688 3	35.55	34.90	0.0001	0.9838
Chest Circumference	37.080	36.8 27	4.166	4.15 0	0.760 6	0.757 6	35.60	35.35	< 0.0001	0.9900
Sr. Cholesterol	212.30	209. 80	49.46 1	49.1 08	9.030	8.966	208.5	207.0	< 0.0001	0.9982
Sr. Triglycerides	103.20	104. 83	64.30 2	73.2 62	11.74 0	13.37 6	87.5	86.0	0.0007	0.9942
HDL	50.833	49.8 33	10.04 5	10.1 44	1.834	1.852	49.0	48.5	0.0002	0.9842
LDL	120.40	118. 67	32.78 0	32.5 95	5.985	5.951	113.5	112.5	< 0.0001	0.9960
VLDL	31.144	29.9 81	13.81 5	13.7 91	2.522	2.518	29.0	27.0	0.0001	0.9857

Table no. 6 Application of WILCOXON MATCHED PAIRS SIGN RANK TEST For objective parameter of group B.

Discussion:-

Patient were enrolled randomly in two groups. Patient of group A and group B both were given shaman chikitsa by Vidangadi yoga alone in group A, whereas patient of group B were treated with Vidangadi yoga along with Takrarishta. Sample size for both the groups was fixed to be of 30 patients. During statistical analysis of data available, it was observed that average percent relief obtained in group A=38.60% whereas that in group B is =55.29 %. Difference between both (16.69%) makes it clear that efficacy of group B [Vidangadi churna along with takrarishta] were remarkably better than that of group A [Vidangadi yoga alone]. In group B Good [50-75%] result was found in all symptoms like Javaparodh, Daurbalya, Angagaurav, Kranthan Daurgondhya, Swedadhikya, Kshudhadhikya, Kshudrashwas, Nidradhikya, Trishnadhikya, Gadgadvam. Whereas group A Average [25-50%] result was found in all symptoms of sthaulya (obesity). In objective parameters too group B shows better result than group A in Weight, BMI, Abdominal circumference, Sr. Cholesterol, Sr. Triglyceride, HDL, VLDL level. Whereas group A shows better result than that of group B in WHR, Waist, Chest, LDL level. Wilcoxon Matched pair sign rank test showed that, both group A & group B are showing significant results in treatment of sthaulya. Thus it was necessity to find out which modality is showing better result. There seemed to

be significant difference between results of two groups after application of Mann-Whitney Test. From that statistical analysis data, it can be said that result of Group B is better than that of Group A.

Among 60 patients, 50% were found to be in the age group of 31-45 years. 80% of the patients were females, 73.33% patient's maximum were taking mixed diet, 40% were found to be vata-kapha prakruti, 51.67% were having visham agni, 50% patients were avara satwa, 40% patients were business, 53.33% patients are off krura kostha, 55% patients were of family history, 53.33% patients were upper class social status, 75% patients having causative factor related to *guru aahar hetu*, 51.67% patient having diet habit of *vishamashana*.

As the disease itself is kaphaj pradhan vyadhi, all the factors (hetu) associated in this study were found to be increasing kapha and vaat. In the current study the age group found to be more affected are those associated with more physical & mental burden that affects the pattern of intake of food, quality of food and lifestyle as a whole. Patient in this study were found to be missing their regular timing of meal regularly (*vishamaashan*). This causes vitiation of vaat & quality of food taken where kapha dominant hence causes vaat – kapha vitiation. Patient of vata-kapha prakruti having *guru aahar* helps in disrupting digestion leads to increase in body weight. Patient belong to upper class leads a sedentary life style which includes less exercise both physical & emotional, availability of excess food especially mixed diet. These patients are sukumar having avara satwa are more prone to *sthaulya* (obesity). *Visham agni* again causes increase in vaat & kapha leading to obesity. Maximum patient belongs to business class group which indicates less physical activity causing increase in kapha but mental stress might vitiate vaat leading to obesity. All the factors mentioned in the classical text are validated by the current study.

Conclusion: -

The present study showed that both the groups were comparable in *sthaulya* which very closely resembles with Generalised obesity. Ayurveda drugs could demonstrate its effectiveness on multiple domain & showed comprehensive management strategy for *sthaulya*. *Vidangadi churna* along with *takrarishta* administered in the patient shows remarkably better result i.e. 16.69% than administering *vidangadi churna* alone on all the symptoms. It proves the role of *anupana* in the form of *takrarishta* which increases the efficacy of drug *vidangadi churna* in the disease *sthaulya*. It also shows the efficacy of *vidangadi churna* in the treatment of *sthaulya*. Study should be performed on larger group size for further validation and confirmation of results.

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Date of Submission: 29 December 2020

Date of Peer Review: 27 January 2020

Date of Acceptance: 18 March 2020

Date of Publishing: 30 March 2020

Author Declaration: Source of support: Nil , Conflict of interest: Nil

Ethics Committee Approval obtained for this study? NA

Was informed consent obtained from the subjects involved in the study? Yes

For any images presented appropriate consent has been obtained from the subjects: NA

Plagiarism Checked: Urkund Software

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DOI: 10.36848/IJBAMR/2020/12210.51265