A Comparative study of *Vamandhauti (kunjal kriya)* and *Bilvadipanchmula kwath* with Madhu in the Management of *Sthaulya* (Obesity)

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ABSTRACT:

In Present era every person is running after life,s goal. Hence does not have time to think and act for the healthy life and also not able to follow the proper *Dincharya, Ratricharya, Ritucharya* and rules for healthy living as per Ayurveda and other life sciences so that obesity has taken place as an major problem in majority of peoples. *Sthaulya* (Obesity) is such a disease ,which provides the platfrom for so many disease and complication like hypertension, Congenital heart disease, diabetes mellitus, impotency as well as psychological disorders like stress, anxiety, depression etc. so in present study. We try to prove our hypothesis with data collected and analysed on the basis of patient taken in OPD and IPD level as open level randomized clinical trial. The material method, Analysis of data, Result and Conclusion is elaborated in the following Article.
Keywords:- *Ayurveda , Dincharya , Sthaulya , Vamandhauti, Bilvadipanchamula Kwath*, Data Analysis.

INTRODUCTION

Veda is an ancient scientific document from which every science and technology has originated. *Ayurveda* is the oldest science serving the world. It is *Upaveda* of *Atharvaveda. Ayurveda* is the science of life. The fundaments of Ayurveda give healthy human life. Since the Vedic period, healthy and long life has been praised. Body must be maintained, otherwise man can't be healthy.

Obesity is curse of modern age of machines and materialism. It is physiological, psychological and social disorder, which is most disfavored by modern society for social as well as medical reasons. *"STHAULYA"* (obesity) is such a disease, which provides the platform for so many hazards like H.T., C.H.D., D.M., impotency as well as psychological disorders like stress, anxiety, depression etc. Thus, the mortality and morbidity are more in obese person

compared to others.[1]

Studies have also revealed that Indian are genetically prone for obesity. It is further alarming fact that obesity plays a major role in manifestation of certain non-communicable disease like diabetes, Hypertension, coronary artery disease cancer and many metabolic and other neuro endocrine problems.

While describing the treatment of *Sthaulya, Acharya Charaka* emphasized on the use of *Ruksha, Ushna and* mainly *Kapha Vatashamana* drugs like use of *Madhu Udaka* for the management of *Sthaulya*.

In *Charak Samhita Bilvadi Panchmooland* use of Madhu *Udaka* for the management of *Sthaulya* and in *Gherand Samhita vamandhauti karma* described for the management of *kapha and pitta*.

So in light of above references from classics, *Bilvadi Panchmula kwatha* with madhu[2] and Vamandhauti karma[3] were selected for the management of *Sthaulya* (obesity) in the present research entitled **"A Comparative study of *Vamandhauti (kunjal kriya)* and *Bilvadipanchmula kwath* with *Madhu* in the management of *STHAULYA* (Obesity)"** was undertaken with following aims and objectives.

AIMS AND OBJECTIVES

1-To study the a etiopathogenesis of *STHAULYA* according to both *Ayurveda* and modern science.

2-To assess the effect of *Vamanadhauti* in the management of *STHAULYA*.

3-To assess the efficacy of *Bilvadipanchmula* with *Madhu* in the management of *STHAULYA*.

4-To evaluate the comparative syudy of *Vamandhauti* and *Bilvadipanchmula* with *Madhu*

MATERIALS AND METHODS:-

The study was carried out in two parts.

1. Conceptual study
2. Clinical study

1. Conceptual study:

In this study, critical review of relevant literature available in *Ayurvedik* classics, previous research works and different modern medical textbooks was done regarding *STHAULYA*, obesity and drugs under trial. Few journals were referred; help from internet also taken.

2. Clinical study:

This study has been carried out in the form of detailed history, physical and systemic examinations and assessment of the therapies by preparing a special proforma including all the sign and symptoms of *STHAULYA* (obesity).

SELECTION OF PATIENT:

The patient with the signs and symptoms of *STHAULYA* irrespective of their age and sex will be randomly selected from O.P.D. and I.P.D. section of Rani Dulliya Smriti P.G. Ayurvedic College & Hospital, Bhopal. (M.P)

INCLUSION CRITERIA:

1-Patients willing for the trial.

2-Patients suffering from *STHAULYA* (Obesity).

3-Patients age group 18-60 years.

4-Body mass index criteria will be followed for selection of patients. Over weight from 25 to 29.99 BMI and Obese from above 30 to 40 BMI will be included in the study.

EXCLUSION CRITERIA:

1-Patients not willing for trial.

2-Patients not fulfilling the criteria.

3-Obesity due to endocrinal disorder.

4-Drug induced obesity.

INVESTIGATIONS:

1-Routine hematological examination before and after treatment to rule out any other pathological conditions.

2-Routine Urine test

3-Blood sugar estimation.

4-Lipid profile. (if possible)

STUDY DESIGN:

It is an open label clinical trial. The study was cleared by the institutional ethics committee. (Ethical clearance no.- EC/STV/18/01/2016) Written informed consent was taken from all the patients before including them in the trial.

60 Patients of *STHAULYA* (obesity) will be selected and registered for the study and will be divided into two groups. Table-1 Shows the study design and groups division

Criteria For The Diagnosis:

1-A proforma will be prepared containing detailed symptoms, clinical sign and required for investigations.

2-Patients having features of obesity with BMI equal to 30 to 40 will be registered. The symptoms describe in classics and modern texts will be considered to include in the proforma of all the patients.

3-BMI of all the patients would be a core diagnostic feature.

4-Important investigation will be done including.

- Total lipid profile
- Blood sugar
- Hematological tests

Will be investigated in each patient before and after the treatment.

SUBJECTIVE CRITERIA:
Signs and Symptoms of *STHAULYA*[4] (Obesity)
1-Chal Sphik Udar stanam
2-Pipasatiyoga
3-Swedabadha
4-Daurbalya
5-Daurgandhya
6-Kshudhatimatra
7-Javoprodha

1.*Chal Sphik udar stanm* (movement of body parts)
Grade
- Absence of movement   -----   0
- Little movement after fast activity---   1
- Movement after mild activity--   2
- Movement even on changing posture ---3

2. *Pipasatiyoga* (excessive thirst)
- < 1.5 -2 lt./day of fluid   0
- 2 – 3 lt./day of fluid   1
- 3 – 4 lt./ day   2
- > 4 lt./day   3

3. *Swedabadha* (excessive sweating)
- Normal perspiration   0
- Mild perspiration after doing exertion   1
- Heavy perspiration after doing little exertion 2
- Perspiration without exertion   3

4. *Daurbalya* (weakness)
- No tiredness   0
- Mild fatigue after doing work   1
- Tired after doing work   2
- Works with great difficulty   3

5. *Daurgandhya* (bad body odour)
- Absence of odour   0
- Occasional bad odour   1
- Persistent bad odour   2
- Persistent bad odour, intolerable to patient 3

6. *Kshudhatimatra* (excessive hunger)
- < 4   Chapatis /meal 0

- 4 – 6 Chapatis/ meal 1
- 6 – 8 Chapatis/meal   2
- > 8 Chapatis/meal   3

7. *Javoparodha* (lassitude)
- Fully active   0
- Hesitate to start work but once started complete it 1
- Starts but not complete it   2
- Doesn't have drive, works under compulsion 3

OBJECTIVE CRITERIA:
Students't' test was applied to the following objective parameters.
- Body weight
- BMI
- Body circumferences
- Skin fold thickness
- Other Biochemical and hematological parameters.

Body Mass Index Classification - **[BMI=Weight in kg / Length in m²]**

BMI (kg/ m²)	Grade
<30	0
30-34.99	1
35-39.99	2
>40	3

Test used for result calculation-
1-Students Paired't' applied to the statistical data for evaluating the difference in the B.T. and A.T. scores of Objective parameters.
2-Students Un-paired't' test is applied for evaluating the difference in the effects of two therapies Objective Parameter wise.

CRITERIA FOR OVERALL EFFECT OF THERAPY:
The overall effect was decided on the basis of Improvement in Subjective parameters and reduction in Objective criteria i.e. Weight, BMI, Skin fold thickness and W/H Ratio. (Table 2)

General Observations:
In the Present study, total 60 patients of *STHAULYA* were registered for the treatment. Out of which 50 patients completed the full duration of treatment while 10 patients left the treatment at different stages. All the 50 patients of *Sthaulya* were randomly selected

Status of 60 Patients of *Sthaulya* (Obesity)
In the present study total 60 patients were registered and

randomly divided in to two groups of which 5 patients in Group 1 and 5 patient in Group 2 were dropped out of the study without any specific reasons. Total 50 (83.33%) patients, i.e. 25 in each groups completed the course of the therapy.

Age Wise Distribution Of 50 Patients Of *Sthaulya* (Obesity)

In the present study maximum patients i.e. 52% were from the age group of 31-45 years, followed by 28% and 20% from the age group of 16-30 and 46-60 years respectively.

Sex Wise Distribution Of 50 Patients Of *Sthaulya* (Obesity)

It is seen that maximum patients in the present study i.e. 64% were females followed by 36% of male patients.

Religion Wise Distribution of 50 Patients of *Sthaulya*(Obesity)

It is evident from the above table that maximum i.e. 78% patients were Hindus while 22% were observed Muslims; anno other patients had been registered from Christian , Parsi and Sikh religions.

Education Wise Distribution of 50 Patients of *Sthaulya* (Obesity)

Out of 50 patients registered in the present study maximum i.e. 36% patients had completed education up to graduation, followed by 22% had completed HSC, where as 16% of patients had completed primary and post graduation education respectively. None of the patient was uneducated.

Socioeconomic Status Wise Distribution of 50 Patients Of *Sthaulya*(Obesity)

In the present study maximum 50 % were from Middle class while 26 % patients were from Upper Middle, 14 % from Lower Middle, 02 % from Poor class and only 08 % patient from Rich class was observed.

Occupation Wise Distribution of 50 Patients of *Sthaulya* (Obesity)

Data collected shows that maximum i.e. 54% patients were housewives, followed by 10% and 20% patients doing service and business respectively; where as 16% were students and 02% were labour .

Marital Status Wise Distribution of 50 Patients of *Sthaulya*(Obesity)

In present study, almost 76% patients were married followed by 24% were Unmarried.

Deshawise Distribution of 50 Patients of *Sthaula* (Obesity)

Data collected depicts that maximum i.e. 66% patients were from *AnupaDesha* followed by 34% from *Sadharan*

Desha.

Onset Wise Distribution of 50 Patients of *Sthaulya* (Obesity)

Data collected shows that 92% of the patients were having gradual onset of the disease, followed by 8% having sudden onset.

Chronicity Wise Distribution of 50 Patients of *Sthaulya*(Obesity)

Data collected depicts that, 56% patients were having chronicity between 1 to 5 year, followed by 24%, 18% and 01% were having chronicity between 5 to 10 years, less than 1 year and more than 10 years respectively.

Aggravating Factor Wise Distribution of 50 Patients of *Sthaulya*(Obesity)

Maximum 54% of patients were having aggravating factor sedentary life followed by 26% having aggravating factor over eating while use of IUCD/OCP was found in 04% of patients. History of menopause was found in 12% while 12% had delivery as aggravation factor. 00% of patients had undergone through surgery where as 02% had positive history of drug and alcohol as aggravating factor.

Family History Wise Distribution of 50 Patients of *Sthaulya*(Obesity)

Among 50 patients registered in the study 56% patients were having positive family history while only 44% patients reported the negative family history of obesity.

Dietetic Nature Wise Distribution of 50 Patients of *Sthaulya* (Obesity)

Maximum i.e. 52 % patients were non-vegetarian in present study however 48% patients were found vegetarian..

Addiction Wise Distribution of 50 Patients of *Sthaulya* (Obesity)

Data collected depicts that, all the patients i.e. 66 % of were indulged in Tea taking. However, 12 % patients reported to have the addiction of tobacco. Addiction of Pan and Alcohol was found in 10% and 12% of patients respectively.

***Deha Prakriti Wise* Distribution of 50 Patients of *Sthaulya*(Obesity)**

Data collected shows that maximum i.e. 46% of the patients were of Kapha Vataja Prakriti followed by 28%, 20%, 04% and 2% patients were Pitta Kaphaja , Kaphaja, Sam Doshaja and Vata Pittaja Prakriti respectively.

***Manas Prakriti Wise* Distribution of 50 Patients of *Sthaulya* (Obesity)**

Data collected reveals that about 40% patients were having *Tamasika Prakriti* followed by, 40% and 08% which were

having *Rajasika and Satvika Manas Prakriti* respectively.

Sara Wise Distribution of 50 Patients of *Sthaulya* (Obesity)

Data collected data depicts that maximum i.e. 78% patients were having *Madhyama Sarata* followed by 12% and 10% which were having *Avar Sarata* and *Prava Sarata* respectively.

***Samhanana* Wise Distribution Of 50 Patients Of *Sthaulya*(Obesity)**

It was observed that maximum i.e. 66% patients were having *Avara Samhanana* followed by 32% and 2 % which were having *Madhyama and Pravara Samhanana* respectively.\

Satvawise Distribution of 50 Patients of *Sthaulya*(Obesity)

Maximum i.e. 68% patients were found to have Madhyama Satvafollowed by 18% and 14% patients which were having Avara and Pravara Satva respectively.

Satmya wise Distribution of 50 Patients of *Sthaulya*(Obesity)

Maximum i.e. 68% patients were from Madhyama Satmya and 20 % and 12% patients respectively having Avara and Pravara Satmya.

Weight Wise Distribution of 50 Patients of *Sthaulya* (Obesity)

Out of 50 patients registered about 26 % patients were having weight in the category of 70-80 kg, followed by 38%, 14%, 16% and 6 % patients respectively from 80-90 kg, less than 70kg, 90-100 kg and more than 100 kg weight category.

BMI Found In 50 Patients of *Sthaulya* (Obesity)

Data collected shows that maximum i.e. 52% of the patients were having BMI in the range of 30-34.99 kg/m2 (Class-1 obesity) followed by 22% having BMI in the range of <30 kg/m2(overweight) , 16% having BMI between 35-39.99 kg/m2(Class-2 obesity) and 10% having BMI in the range of >40.

***Vyayama Shakti* Wise Distribution Of 50 Patients Of *Sthaulya*(Obesity)**

Maximum patients i.e. 20% were found *Madhyama Vyayama Shakti*, 74 % patients were having *Avara Vyayama Shakti* while 06 % patients were having *Pravara Vyayama Shakti.*

***Abhyavaharana Shakti* Wise Distribution Of 50 Patients Of *STHAULYA*(Obesity)**

In the present study, the table 50 shows that the majority of the patients i.e. 66% patients were of *Madhyama Abhyavaharana Shakti* while 28% were in *Pravara* and

06% were found in *Avara Abhyavaharana Shakti.*

Waist Circumference Found In 18 Males Of *Sthaulya* (Obesity)

Data collected reveals that maximum i.e. 61.11% of the male patients were having waist circumference more than 102 cm followed by 28.89% patients having less than or equal to 102 %.

Waist Circumference Found In 32 Females Of *Sthaulya* (Obesity)

Data collected shows that maximum i.e. 71.87 % of the female patients were having waist circumference more than 88 cm followed by 28.13 % patients having less than or equal to 88 cm.

Waist to Hip Ratio Observed In 18 Male Of *Sthaulya* (Obesity)

Data collected reveals that all 77.77% of the male patients were having waist to hip ratio more than 0.9 and 22.23% of patients having less than or equal to 0.9.

Waist To Hip Ratio Observed In 32 Female Patients Of *Sthaulya*(Obesity)

Data collected shows that 75 % of the female patients were having waist to hip ratio more than 0.85 and 25 % of patients having less than or equal to 0.85.

Agni Wise Distribution Of 50 Patients Of *Sthaulya* (Obesity)

Data collected reveals that 44 % patients were having T*ikshnagni* followed by *Vishamagni* 30%; *Samagni* and *Mandagni* 20 % in each of patients.

***Koshtha* Wise Distribution Of 50 Patients Of *Sthaulya* (Obesity)**

Data collected shows that, maximum i.e. 68 % patients were having Madhyama Koshtha followed by 24 % and 8 % patients which were having Krura and Mridu Koshtha respectively.

Dietary Habit Wise Distribution Of 50 Patients Of *Sthaulya*(Obesity)

Data collected is seen that About 74% patients were found doing *Adhyashana* followed by 22 % and 4 % patients were found doing *Vishamashana* and *Samashana* respectively. None of the patient had habit of *Pramitashana.*

Dominant *Rasa* Wise Distribution Of 50 Patients Of *Sthaulya* (Obesity)

Data collected shows that maximum 84 % patients were taking excessive Madhura Rasa while 40 % were taking Katu Rasa followed by 66 % Lavana Rasa and 42 % Amala Rasa in their diet. Only 14% patients were reported to have *Tikta* and *Kashaya Rasa* dominance in the diet.

Excessive Water Intake At Meal Time Wise Distribution Of 50 Patients Of *Sthaulya* (Obesity)

From Data collected it is seen that About 84% patients were found taking excessive water after meal, while only 10 % and 06 % patients were found taking water during meal and before meal respectively.

Exercise Wise Distribution Of 50 Patients Of *Sthaulya* (Obesity)

Data collected shows that 60 % patients were doing only the routine work, 22% were exercising regularly, 12% irregularly and 06% exercised occasionally.

Sleep Duration Wise Distribution Of 50 Patients Of *Sthaulya* (Obesity)

About 78 % patients were taking sleep up to 8-10 hrs followed by 16 % of the patients which were taking sleep up to 8 hrs per 24 hours. 6% patients were having sleep duration more than 10 hours.

***Divaswapana* Wise Distribution Of 50 Patients Of *Sthaulya*(Obesity)**

Data collected reveals that, habit of Divaswapana was found in 76 % of the patients, whereas 24 % of the patients were found not to have the habit of sleeping in the daytime.

***Aharaja Nidana* Wise Distribution Of 50 Patients Of *STHAULYA*(Obesity)**

From Data collected it is clear that *Aharaja Nidanas* reported as Madhura *Ahara Sevana* in maximum i.e. 80 % patients followed by Guru Ahara Sevana in 74 %, *Atisnigdha Ahara and Navanna* in 64 % and 22% in each, *Atibhojana* in 44 % *Dadhi Sevana* in 46%, *Sheeta Ahara* in 30 % and Gud Vikara in 42 % of patients.

***Viharaja Nidana* Wise Distribution Of 50 Patients Of *Sthaulya* (Obesity)**

In *Viharaja Nidanas, Avyayama* was reported in maximum i.e. 56 % patients, followed by 68 % of the patients having *Divaswapa* and 34 % patients having Avyavaya .*Sukhashayasana* was found in 40 % of patients.

Chief Complaints Wise Distribution Of 50 Patients Of *Sthaulya* (Obesity)

Data collected shows that, maximum i.e. 100 % of the patients were found to have chief complaints of Chala Udara followed by 90 % reporting *Chala Sphika*, 76 % reporting *Chala Stana and Ati Kshdha*, , 88 % reporting *Alasya /Utsahahani,* 80 % reporting *Ayasena Shwasa /Kshudrashwasa,* 78 % reporting *Nidradhikya* and *Swedadhikya,* 70 and 74% % reporting Ati Pipasa, 72 % reporting ,*Daurgandhya,* 72 % reporting. Anga Shaithilya, 48.48 % reporting .

Serum Cholesterol Wise Distribution In 50 Patients Of *Sthaulya* (Obesity)

Data collectedreveals that 66 % of the patients were having cholesterol below 200mg/dl, followed by 34% of the patients were having cholesterol above or equal to 200mg/dl.

RESULT:

The information gathered on the basis of observation made about various parameters, was subjected to analysis in terms of median , standard Deviation (SD) and U test and t – test was carried out at

$P< 0.05$, $P<0.01$, $P<0.001$. The obtained results were interpreted as

Insignificant	–	$P > 0.05$
Significant	-	$P < 0.01, P < 0.05$
Highly significant	–	$P < 0.001$

1-For objective and Subjective parameters, to test for significant change due to treatment. "paired t test " is used
2-Findings are presented along with appropriate summary statistical and graphs/ diagrams and result is interpreted accordingly. The level of significance is kept at 0.05

PRESENTATION OF DATA:

The data collected and compiled from the multi dimensional clinical experimental work was sorted out and processed further by subjective to varied statistical methods. The of individual therapy was evaluated and is hereby presented in the following sections.

1-The first component incorporated the general observation Viz. Sex, Religion etc.
2-The second part deals with the results of therapy evaluated on the basis of improvement in –
(a)Objective Criteria.
(b)Subjective Criteria.

EFFECTS OF THE THERAPIES ON *STHAULYA* PATIENTS :-

In the present study, 60 patients of *Sthaulaya* were registered out of which 10 patients had left the treatment at different stages. Out of the remaining 50 patients, 25patients were treated in Group-A *Bilvadipanchmula* with *Madhu* and 25 patients were treated in Group-B *Vamandhauti* karma. The effect of these therapies on the subjective and objective parameters is being presented here in tabular form.(Table3-10)

DISCUSSION-

The present research work in titled "A comparative study

of *vamandhauti (kunjal kriya) and bilvadipanchmula kwath with madhu* in the management of *STHAULYA* (obesity)" was aimed that evaluating the effect of *Bilvadipanchmula Kwath*[5] *and Vaman Dhauti*[6] in the management of *Shtaulya* (obesity). The selection of topic gained significance and had strong background in view of the fact that 28.1 percentage total population of India is reported to have some or other way obesity. The increased BMI was reported to be prevalent among of total population.

It was with their view *Bilvadi panchamul kwath* (Ch.-21/24) was selected in the present study for evaluating its effect on obesity and Vamana Dhauti (Kunjal kriya) as mentioned in Gherand samhita (1/39) for the treatment of obesity was selected for the second group.

Total 25 patients of **Bilvadipanchmula Kwath** group completed the full course. Out of 25 patients, 02 patients showed mild improvement (08%), 18 patients moderate improvement (72%), and remaining 5 patients got complete relived (20%).

Total 25 patients in **Vamana dhauti** group completed the full course. Out of these 25 patients, 3 patients showed mild improvement (12%), where as remaining 7 patients had moderate Improvement (28%) and 15 patients had complete relive (60%);.

Thus, in this way overall comparison of all the parameter showed that effect of **Vamana Dhauti** was better on reduction of Weight, B.M.I., Body circumference and Signs and Symptoms.

CONCLUSION

Bilvadi Panchamoola Kawatha with madhu plays an effective role in *sthaulya*. but *Vamana Dhauti* is more effective in *sthaulya* as compare to *Bilvadipanchamoola Kavatha*. No side effects were seen. *sthaulya* is a type of *Kaphaja Vyadhi* which affect of all age group of generation. Mainly *Kapha pitta Shamaka chikitsa* has been advished in *sthaulya*.

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REFERENCES

1-Wikipedia.co.in, seen at 22/aug./2016

2-Charak Samhita ,Vaidhya Manorama Tika by Acharya Vidyadhar Shukla et all Chaukhamba Sanskrit Pratisthan Delhi ,2 nd Edition 2000 Sutra sthan 21/24.

3-Gherand Samhita, paramhansa svami Ananta Bharti, Chaukhamba orientalia dilhi ,2 nd Edition 2000, Pratham adhyaya, 1/39

4-Charak Samhita ,Vaidhya Manorama Tika by Acharya Vidyadhar Shukla et all Chaukhamba Sanskrit Pratisthan Delhi ,2 nd Edition 2000 Sutra sthan 21/4-9.

5-Charak Samhita ,Vaidhya Manorama Tika by Acharya Vidyadhar Shukla et all Chaukhamba Sanskrit Pratisthan Delhi ,2 nd Edition 2000 Sutra sthan 21/24.

6-Gherand Samhita, paramhansa svami Ananta Bharti, Chaukhamba orientalia dilhi ,2 nd Edition 2000, Pratham adhyaya, 1/39

Table 1- Shows Study Design of the study

Group	Drug/ Procedure	Form	Dose	Route and Time of Administration	Duration
A	*Bilvadipanchmula kwath*	Kwath	80 ml. (40 ml.twice a day) with 20 ml. *madhu* (10 ml.twice a day)	**Route: Oral** **Time:**Twice daily after meal **Anupan-** *Madhu*	1Month with follow up of 15 days
B	*Vamandhauti*	procedure	R*iktamashya* (In empty stomach at morning)	**Route: Oral** **Time:** Once a week	1Month with follow up of 15 days

Table 2- The overall effect was decided on the basis of Improvement in Subjective parameters and reduction in Objective criteria i.e. Weight, BMI, Skin fold thickness and W/H Ratio.

Percentage of Relief	Effects
100%	Complete remission
75-99%	Markedly improved
50-75%	Moderately improved
25-50%	Improved
10-25%	Mildly improved
00-10%	Unchanged

Table 3-Effect On Sign And Symptoms Of 25 Patients Of Group-1 *Bilvadipanchmula kwath* **With** *Madhu*

Symptoms	B.T	A.T	MEAN DIFF.	% RELIEF	SD	SE	t value	p value
Atikshudha	1.67	0.92	0.75	45%	0.57	0.22	5.68	<0.001
Atipipasa	2.07	1	1.07	51.86%	0.78	0.22	2.96	<0.05
Daurgandhya	1.70	1.1	0.60	41.11%	0.64	0.18	2.27	<0.05
Swedadhikya	2.40	1.33	1.07	44.53%	0.75	0.23	3.95	<0.01
Daurbalyata	1.30	0.57	0.73	55.34%	0.86	0.22	3.40	<0.01
Kshudraswasa	1.33	0.58	0.75	56.34%	.86	0.22	3.23	<0.01
Javoparodha	2.28	1.57	0.71	31.25%	0.72	0.22	5.60	<0.01

Table-4Effect Of Therapy On Weight And Bmi Of Patients Of *STHAULYA* (Obesity)In Group 1 *Bilvadipanchmula* With *Madhu*

Parameter (n=15)	B.T	A.T	MEAN DIFF.	% RELIEF	SD	SE	t value	p value
Weight(kg)	78.07	75.83	2.24	**2.87**	**0.77**	**0.20**	**11.34**	**<0.001**
BMI(kg/m2)	32.08	31.17	0.91	**1.41**	1.04	0.30	4.70	<0.001

Table 5-Effect On Skin Fold Thickness Of 25 Patients Of Group-1 (*Bilvadipanchmula* With *Madhu*)

Skin Fold Thickness(in mm)	B.T	A.T	MEAN DIFF.	% RELIEF	SD	SE	t value	p value
Biceps	16.44	15.4 4	1.00	6.33	0.026	0.008	11.22	<0.001
Triceps	18.09	16.71	1.28	7.07	1.35	0.35	3.64	**<0.01**
Abdomen	24.00	22.48	1.48	6.57	1.58	0.39	4.08	<0.01
Supra iliac	25.20	23.38	1.82	10.79	2.74	0.76	3.73	<0.01

Table 6-Effect On Biochemical Parameters Of Group-1 (*Bilvadipanchmula* With *Madhu*)

Biochemical Parameters	B.T	A.T	MEAN DIFF.	% RELIEF	SD	SE	t value	p value
S.Cholesterol	191.58	182.00	9.00	4.95	22.44	6.6	1.36	>0.05
S.Triglyceride	98.19	94.29	3.90	3.93	37.63	11.06	0.35	>0.05
S.HDL	40.47	33.16	7.31	17.62	11.94	3.51	2.08	>0.05
S.LDL	87.98	84.37	3.61	4.15	24.02	7.11	0.50	>0.05
Hb%	11.2	11.08	0.12	1.00	0.83	0.22	0.55	>0.05

Table-7-Effect On Sign And Symptoms Of 25 Patients Of Group-2 (*Vamandhauti Karma*)

Symptoms	B.T	A.T	MEAN DIFF.	% RELIEF	SD	SE	t value	p value
Atikshudha	1.86	.93	.93	50%	0.50	0.15	7.18	<0.001
Atipipasa	1.60	1	.60	41.15%	0.51	0.15	2.73	<0.05
Daurgandhya	1.4	1	.40	33.13%	0.42	0.13	2.30	<0.05
Swedadhikya	1.90	1.25	.65	36.50	0.81	0.22	4.54	<0.001
Daurbalyata	1.23	0.38	0.84	68.29	0.80	0.22	3.81	<0.01
Kshudraswasa	1.51	0.23	1.28	85.71	0.94	0.25	5.30	<0.001
Javoparodha	1.86	1.36	.50	26.67%	.75	0.20	3.42	<0.01

Table-8Effect Of Therapy On Weight And Bmi Of 25 Patients Of *Sthaulya*(Obesity) In Group-2 (*Vamandhauti Karma*)

Parameter (n=15)	B.T	A.T	MEAN DIFF.	% RELIEF	SD	SE	t value	p value
Weight(kg)	80.38	75.31	5.07	6.30	2.81	0.78	6.5	**<0.001**
BMI(kg/m2)	32.65	31.98	0.67	2.06	0.32	0.08	8.21	<0.001

Table9-Effect On Skin Fold Thickness Of 25 Patients Of Group-2 (*Vamandhauti Karma*)

Skin Fold Thickness(in mm)	B.T	A.T	MEAN DIFF.	% RELIEF	SD	SE	t value	p value
Biceps	20.22	19.25	0.97	4.77	1.15	0.30	3.20	<0.01
Triceps	22.37	20.70	1.67	7.31	1.80	0.48	3.37	<0.01
Abdomen	26.67	24.82	1.85	6.84	1.65	0.45	4.04	<0.01
Supra iliac	24.78	22.10	1.68	10.51	2.67	0.67	3.76	<0.01

Table-9-Effect On Biochemical Parameters of Group-2 (*Vamandhauti Karma*)

Biochemical Parameters	B.T	A.T	MEAN DIFF.	% RELIEF	SD	SE	t value	p value
S.Cholesterol	196.08	178.20	17.08	9.15	33.77	9.86	1.71	>0.05
S.Triglyceride	124.9	116.9	8.00	6.94	60.81	17.45	0.43	>0.05
S.HDL	38.35	70.94	+31.63	81.92↑	45.68	13.13	2.56	<0.05
S.LDL	128.28	74.27	43.01	36.36	50.49	14.02	3.06	<0.01
Hb%	12.15	12.26	0.11	0.93↑	0.511	0.125	-0.84	>0.05

Table 10-Overall Anlysis:

1) **Improvements In Objective Parameters :**

Sr. No.	Parameter	Improvement (%)	
		Group A	**Group B**
1	Weight	2.87%	6.30%
2	BMI	1.41%	2.06%
3	Biceps	6.33%	4.77%
4	Ticeps	1.35%	7.31%
5	Abdominal Circumference	1.58%	6.84%
6	Supra iliac	2.74%	10.51%
Bio chemical parameters			
9	Cholesterol	4.95%	9.15%
10	Triglyceride	3.90%	6.94%
11	HDL	7.31%	81.92%
12	LDL	3.61%	36.36%
13	Hb%	1.08%	0.93%

2) **Improvement Of Subjective Parameters :-**

Sr. No.	Parameter	Improvement (%)	
		Group A	**Group B**
1	*Atipipasa*	51.86.%	41.15%
2	*Atishudha*	45%	50%
3	*Daurgandhyata*	41.11%	43.13%
4	*Swedadhikta*	44.53%	46.50%
5	*Daurbalyata*	45.34%	68.29%
6	*Kshudraswas*	46.34%	85.71%

3.Overall Analysis of Signs And Symptoms (Subjective Parameters):

Overall Result	Group A		Group B	
	No. of patients	**%**	**No. of patients**	**%**
Total relief	5	20%	15	60%
Moderate relief	18	72%	7	28%
Mild relief	2	8%	3	12%
Uncured	0	00.00%	0	00.00%