# A Comparative Clinical Study to Evaluate The Efficacy of *Lekhana Basti i*n *Chaturbhadra Kalpa Basti Krama a*nd *Yoga Basti Krama* in the Management of *Sthoulya* w.s.r to Obesity

**Research Article**

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## Abstract

This clinical study aims to compare the efficacy of *Lekhana Basti* administered through two different protocols —*Yoga Basti Krama* and *Chaturbhadra Kalpa Basti Krama* —in managing *Sthoulya* (obesity). Obesity, characterized by excessive adiposity, poses significant global health challenges and has been traditionally addressed in Ayurveda through Shodhana Chikitsa, including various *Basti* therapies. *Yoga Basti Krama* involves alternating *Anuvasana* and *Niruha Basti* treatments, while *Chaturbhadra Kalpa Basti Krama* employs a sequence of continuous *Anuvasana* and *Niruha Basti* treatments. Conducted at Parul Ayurved Hospital with 40 diagnosed cases of *Sthoulya*, the study assessed the impact of these interventions on weight, BMI, body circumference, and lipid profiles. Results indicated both treatment protocols were effective in reducing weight and improving lipid profiles, with *Chaturbhadra Kalpa Basti Krama* showing more pronounced improvements in body composition and subjective symptoms of obesity compared to *Yoga Basti Krama.*

**Keywords:** Obesity, *Sthoulya, Basti Karma, Yoga Basti, Chaturbhadra Kalpa Basti, Lekhana Basti*.

## Introduction

Obesity is a complex metabolic disorder, leads to excessive adiposity, which has became a global health issue.(1) Obesity has a multifactorial etiology that includes genetic, environmental, socioeconomic, and behavioral or psychological influences.(2) The World Health Organization (WHO) defines overweight individuals as having a body mass index (BMI) >25 kg/m² and obese individuals having a BMI >30 kg/m².(3) In 2022, 1 in 8 people worldwide were obese, and 2.5 billion adults were overweight, including 890 million with obesity. Overall, 43% of adults were overweight, and 16% were obese. (4)

Obesity is a condition similar to descriptions of an Ayurveda clinical conditions called as "*Sthoulya*". *Atisthula* is one among the *Ashtanindithapurushas*. (5) The Ayurveda approach is perfect answer to obesity because Ayurveda does not recommend weight losing pills or fast weight loss programs. In Ayurveda, it is experienced that '*Shodhana Chikitsa'* is effective in *Sthoulya Vyadhi*.(6)(7)

In classical Ayurvedic texts, *Basti* therapy is divided into *Niruha Basti* and *Anuvasana Basti*.(8) Among the various *Basti* patterns mentioned, *Yoga Basti* includes 8 *Basti* treatments, with 5 *Anuvasana* and 3 *Niruha*. Other patterns described by different acharyas include *Karma Basti*, Kala *Basti*, and *Yoga Basti*. Additionally, Acharya Kashyapa introduced a unique pattern called *Chaturbhadra Kalpa Basti*.(9)

*Chaturbhadra Kalpa Basti* is the pattern of giving *Basti*, which is explained in Kashyapa Samhita and mentioned as *Niratyaya* (free from complications). In the *Chaturbhadra Kalpa Basti* pattern first 4 days of continuous *Anuvasana Basti* then 4 days of continuous *Niruha Basti* and in last again 4 days continuous *Anuvasana Basti* is given. *Yoga Basti* comprises five *Anuvasana Basti* and three *Niruha Basti* which are given alternatively starting and ending with *Anuvasana Basti*.

In *Basti* there are many type of *Basti* like *Lekhana Basti* – which reduces *Medodhatu* and produces *Lekhana* in the body.(10) Being a Tikshna formulation, the treatment modality of *Lekhana Basti* is aimed basically at *Apatarpana* of the body for *Sthoulya* which is *Santharpanotthavyadhi*. There are different patterns explained like *Yoga Basti*, *Kala Basti*, *Karma Basti* (11) and different research works have been carried out on these three patterns but regarding *Chaturbhadra Kalpa Basti Krama* which is *Niratyaya* and can be given in *Sukumara* which is mentioned in *Kashyap Samhita*; there is less research work has been done. Therefore, the main reason for selecting this Basti

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pattern was its suitability for individuals with delicate constitutions (*Sukumara*), as it is considered *Niratyaya* (free from complications). This Basti regimen is easier to administer and has no associated complications compared to *Vamana* and *Virechana* therapies, which require more stringent precautions.

According to *Sharangadhara* and *Sushruta Samhita*, it is mentioned that first *Utkleshana* then *Doshahara,* and lastly *Samshamaneeya Basti* should be given. (12) In this way, we can understand *Chaturbhadra Kalpa Basti Krama*, as the first 4 *Anuvasana* may act as *Utkleshana Basti* next 4 *Niruha Basti* may act as *Doshahara Basti,* and the last 4 *Anuvasana Basti* may act as *Samshamaneeya Basti*. (13) (14)

In this clinical research, *Lekahana Basti* was administered to two groups in the management of *Sthoulya* (obesity): Group A received the *Yoga Basti Krama*, while Group B received *Chaturbhadra Kalpa Basti Krama*.

## Materials And Methods
### Clinical Source
Diagnosed 40 cases of *Sthoulya*, were selected by computer-generated simple randomization method from OPD and IPD of Parul Ayurved Hospital, Limda, Vadodara, and special campaigns fulfilling the criteria of selection and who are willing to participate in the present study were done for the clinical study. These patients were divided into two groups, Group A and Group B, each comprising 20 individuals.

- **Group A**: Received *Lekhana Basti* following the *Yoga Basti krama*.
- **Group B**: Received *Lekhana Basti* following the *Chaturbhadra Kalpa Basti Krama*.

### Intervention
**Group A: *Yoga Basti*:** 8 *Basti Krama* (15)

| Table 1: GROUP A: *Yoga Basti Krama* | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Numbers of *Basti*** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| **Types of *Basti*** | AB | NB | AB | NB | AB | NB | AB | AB |

**Group B: *Chaturbhadra Kalpa Basti Krama*:** 12 *Basti* (16)

| Table No. 2: GROUP B: *Chaturbhadra Kalpa Basti Krama* | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Numbers of *Basti*** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| **Types of *Basti*** | AB | AB | AB | AB | NB | NB | NB | NB | AB | AB | AB | AB |

Note: Here AB for – *Anuvasana Basti*; NB for – *Niruha Basti*

### Diagnostic criteria
Patients having a Body Mass Index (BMI) of 30.0 or higher, combined with waist circumference measurements exceeding 102 cm (40 inches) for men and 88 cm (35 inches) for women.

| Table No.3 : Intervention of Group A & Group B | | | | | |
|---|---|---|---|---|---|
| **Treatment Chart** | | **Drugs** | **Dose** | **Duration** | |
| ***Purva Karma*** | *Abhyanga* | *Moorchhita Tila Taila* | Q.S | 20-30 MIN | |
| | *NadiSweda* | *Dashmoola Kashaya* | | Till *Samyaka swinna Lakshana* appears | |
| ***Pradhana Karma*** | *Anuvasana Basti* | *Moorchita Tila Taila* (prepared from G.M.P. certified Parul Ayurved Pharmacy) | 120 ML | **GROUP-A** 1ST, 3RD, 5TH, 7TH, 8TH day | **GROUP-B** 1st,2nd 3rd & 4th day 9th 10th 11th 12th day |
| | *Lekhana Basti* | *Madhu* | 100ML | **GROUP A** 2ND, 4TH, 6TH day | **GROUP B** 5th 6th 7th 8th day |
| | | *Saindhava Lavana* | 6 GM | | |
| | | *Moorchita Tila Taila* | 80 ML | | |
| | | *Putiyavani Kalka* | 48GM | | |
| | | *Triphala Kwatha* | 240 ML | | |
| | | *Avapa Dravya* | | | |
| | | *Gomutra* | 60ML | | |
| | | *Yavakshara, shilajita,kasis, Hingu,Tutha, Vacha* | 6 GM | | |
| | | Total: Approx 550ml | | | |
| ***Paschat Karma*** | *For Anuvasana Basti* | Lifting legs, padding to the buttocks,anticlockwise massage to abdomen etc. Lying-in supine position | | 3-5 mins | |
| | *For Niruha Basti* | *Vishram, Ushna jala snana* | | | |
| ***Parihara Kala*** | | | | **GROUP A** 24 Days | **GROUP B** 16 Days |

### Inclusion criteria
The inclusion criteria required that subjects exhibit signs and symptoms of *Sthoulya* as described in Ayurveda texts, including *Chalasphika Udara Stana*, *Alasya*, *Dourbalya*, and *Swedadikyata*. Participants needed to be between 18 and 60 years of age, regardless of gender, caste, or religion, and have a body mass index (BMI) above 30. Furthermore, subjects were

required to be eligible for Basti karma, which necessitates the absence of anorectal diseases, and those are ready to provide written informed consent.

**Exclusion criteria**

The exclusion criteria specified that subjects under 18 or over 60 years of age were not eligible. Additionally, individuals with *Sthoulya* associated with other known diseases—such as Diabetes Mellitus, Hypertension, Hypothyroidism, cardiovascular diseases, hemiplegia, or other conditions that hinder routine physical activities—were excluded. Subjects experiencing *Sthoulya* in conjunction with pregnancy, ongoing menstruation, or significant associated illnesses, as well as those using corticosteroids or oral contraceptive pills, were also not considered. Furthermore, individuals unfit for Basti karma due to conditions like *Unmada* (psychological disorder), *Bhaya* (fearful), *Shoka* (depressed), *Pipasa* (thirsty), *Arochaka* (loss of appetite), *Ajeerna* (indigestion), *Arsha* (piles), *Bhrama* (vertigo), *Mada* (confusion), *Murcha* (unconsciousness), *Chardi* (vomiting), *Kustha* (skin disorder), *Udara* (abdominal disorder), *Swasa* (asthma), *Kasa* (cough), *Sopho* (inflammation), *Dourbalya Agni* (weak digestion), *Bala* (children), *Vridha* (aged), or *Ksheena* (depletion) were excluded.

**Subjective Criteria Gradings:** (17)

| No. | Subjective Criteria Gradings | Grade – 0 | Grade – 1 | Grade – 2 | Grade – 3 | Grade - 4 |
|---|---|---|---|---|---|---|
| 1 | ***Chalasphika Udara Stana*** | Absence Of *Chalatva* | Little visible movement (in the areas) after fast movement | Little visible movement (in the area) even after moderated movement | Movement (in the areas) after mild movement | Movement (in the area) even after changing posture |
| 2 | ***Alasya*** | No *Alasya* (doing work satisfactorily with proper vigor in time) | Doing work satisfactory with late initiation | Doing work unsatisfactory under mental pressure and takes time | Not starting any work on these responsibilities and doing little work very slowly | Does not take any initiation and not want to work even after pressure |
| 3 | ***Dourbalya*** | Routine exercise can be performed | Moderate activity without difficulty | Only mild exercise | Gentle exercise with very difficulty | Can't do even gentle exercise |
| 4 | ***Swedadikyata*** | Sweating after heavy work and fast movement or in the hot season | Profuse sweating after moderate work and movement | Excessive perspiration following minimal exertion and motion | Abundant sweating after slight physical activity and movement | Profuse sweating without any little work and movement |
| 5 | ***Kshudraswasa*** | Dyspnea after heavy work but relived soon and up to tolerance | Dyspnea after moderate work but reduce later up to tolerance | Dyspnea after little work but reduced later and up to tolerance | Dyspnea after minor works but decrease after that and beyond tolerance | Dyspnea in resting condition. |

**Objective Parameters**

BMI-

| Category | BMI(kg/m²) |
|---|---|
| Underweight | < 18.5 |
| Normal weight | 18.5 – 24.9 |
| Overweight (Pre-obesity) | 25.0 – 29.9 |
| Obesity Class II | 35.0 – 39.9 |
| Obesity Class III | ≥ 40.0 |

Body Circumference:
1. Chest - Expansion at the nipple level during regular expansion.
2. Waist - At the level of umbilicus
3. Pelvis - At the level of the anterior superior iliac spine.
4. Mid arm - Mid of the arm between shoulder joint and elbow joint. (10 cm above elbow joint)
5. Mid-thigh - Mid of the thigh between pelvic joint and knee joint. (16 cm above knee joint)

**Investigation**
1. Cholesterol-
   · Desirable Level/Low risk: <200 mg/dl
   · Borderline Level/moderate risk: 200- 250 mg/dl
   · Elevated Level/high risk: >250mg/dl
2. Triglycerides-
   · Normal: <150 mg/dl
   · Border Line: 150-200 md/dl
   · High: > 200mg/dl
3. LDL-
   · Desirable Level/ Low risk: 60 mg/dl
   · Borderline level: 150-200 mg/dl
   · High: > 200 mg/dl
4. HDL-
   · Desirable Level/Low risk: <130 mg/dl
   · Borderline Level/moderate risk: 130- 159 mg/dl
   · Elevated Level/high risk: >159 mg/dl
5. VLDL- upto 34 mg/dl

## Assessment criteria

| Table No.4: Assessment Criteria | |
|---|---|
| Subjective Parameters | ➢ *Chalasphika Udara Stana*<br>➢ *Alasya*<br>➢ *Dourbalya*<br>➢ *Kshudraswasa*<br>➢ *Swedadikyata* |
| Objective Parameters | ➢ Weight<br>➢ BMI<br>➢ Body circumference |
| Investigation | ➢ Lipid profile |

## Clinical Observation

The demographic data for Groups A and B revealed distinct trends. Both groups were predominantly female, with Group A at 71.4% and Group B at 72.7%. Age distribution was fairly even in both groups across the ranges 21-60, with slight variations. Religiously, Group A was 76.2% Hindu, 19.0% Muslim, and 4.8% Christian, while Group B was 86.4% Hindu and 13.6% Muslim. Education levels varied, with Group A having 38.1% graduates and 19.0% with middle school education, whereas Group B had 63.6% graduates and no middle school representation.

Occupationally, Group A had 38.1% homemakers and 28.6% farm workers, while Group B had 31.8% homemakers and 9.0% retirees. Group A was 61.9% urban, compared to 72.7% urban in Group B. Marital status showed that 61.9% of Group A were married, with 14.3% widowed, while Group B had 77.3% married and 4.5% widowed. Economically, Group A had 42.9% in the lower middle class and 33.3% in the middle class, whereas Group B had 54.5% in the middle class and 22.7% in the upper middle class.

Lifestyle differences included 28.6% vegetarians in Group A compared to 59.1% in Group B. Meal timing was irregular for 95.2% of Group A and 90.9% of Group B. Digestive health was mostly irregular in both groups, and bowel regularity was normal for 95.2% of Group A and 90.9% of Group B. Regular exercise was reported by only 4.8% of Group A but 27.3% of Group B. Tea consumption was high, with 85.7% in Group A and 81.8% in Group B, while alcohol and tobacco use were low.

Health data showed that Group A had 33.3% with regular menstrual cycles, and Group B had 50%. Tongue coating was slight for 52.4% of Group A and 90.9% of Group B. Regarding body constitution, Group A had 61.9% *Vata*-Kapha, while Group B had 77.3% *Vata*-Kapha. Digestive power was mostly moderate, with 66.7% in Group A and 54.5% in Group B. Both groups had moderate assimilation power, and exercise capacity was low in 57.1% of Group A compared to 45.5% of Group B. Overall, Group B was more urbanized, healthier, and had a higher socioeconomic status than Group A.

### Chart 1: Observation on Subjective Criteria
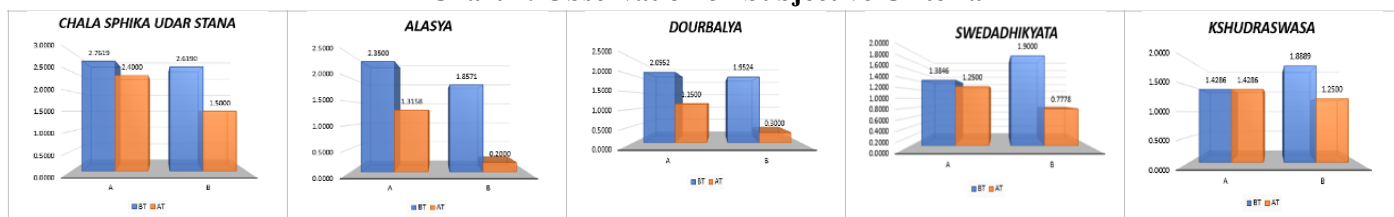


The analysis of "*Chala Sphika Udar Stana* (CHSUS) " for Groups A (21 observations) and B (20 observations) showed that Group A had mean values of 2.76 for CHSUS_BT and 2.40 for CHSUS_AT, with standard deviations of 0.54 and 0.75, respectively. Group B had mean values of 2.62 for CHSUS_BT and 1.50 for CHSUS_AT, with standard deviations of 0.67 and 0.83. For the variables *Alasya* (ALSY), ALSY_BT, and ALSY_AT, Group A (20 observations) had a mean of 2.35 for *Alasya* and 1.32 for ALSY_BT, with standard deviations of 0.67 for both. Group B (21 observations) showed a mean of 1.86 for *Alasya* and 0.20 for ALSY_BT, with standard deviations of 0.79 and 0.52.

In the analysis of *Dourbalya* (DRBL), DRBL_BT, and DRBL_AT, Group A (21 observations) had a mean of 2.10 for *Dourbalya* and 1.15 for DRBL_BT, with standard deviations of 0.62 and 0.49. Group B (20 observations) had a mean of 1.95 for *Dourbalya* and 0.30 for DRBL_BT, with standard deviations of 0.74 and 0.57. For *Swedadhikyata* (SWED), Group A (13 observations) showed mean values of 1.38 for SWED_BT and 1.25 for SWED_AT, with standard deviations of 0.51 and 0.62, while Group B (10 observations) had mean values of 1.90 for SWED_BT and 0.78 for SWED_AT, with standard deviations of 0.74 and 0.44.

### Chart 2: Observation on Objective criteria
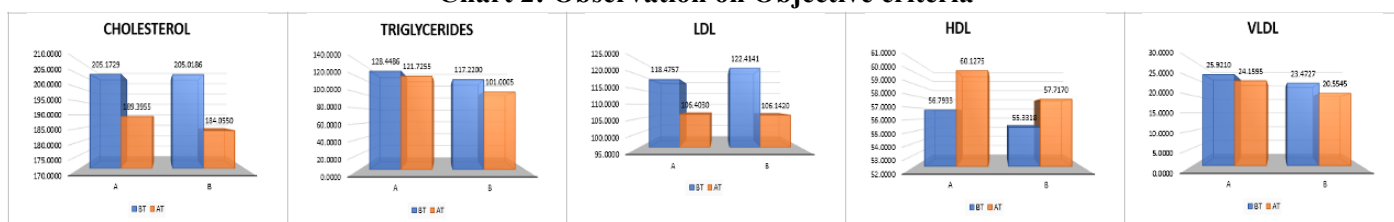
Lastly, the analysis of *Kshudraswasa* (KDSW) for Groups A and B revealed that Group A (7 observations) had mean values of 1.43 for both KDSW_BT and KDSW_AT, with a standard deviation of 0.79. Group B (9 observations) showed mean values of 1.89 for KDSW_BT and 1.25 for KDSW_AT, with standard deviations of 0.78 and 0.71, respectively. The data highlights variations in mean values and variability between the two groups across all measured variables.

The data compares cholesterol, triglyceride, LDL, HDL, and VLDL levels before and after treatment in two groups, A and B. In Group A, the mean cholesterol level decreased from 205.17 to 189.40 after treatment, with standard deviations of 42.83 and 46.12, respectively. Group B showed a similar decrease from 205.02 to 184.06, with standard deviations of 39.73 and 31.53. For triglycerides, Group A's mean dropped from 128.45 to 121.73 (standard deviations 39.51 and 35.77), while Group B's mean decreased from 117.22 to 101.00 (standard deviations 33.02 and 27.22).

For LDL levels, Group A's mean declined from 118.48 to 106.40 (standard deviations 34.16 and 28.15), and Group B's from 122.41 to 106.14 (standard deviations 24.85 and 31.67). In HDL levels, Group A's mean increased from 56.79 to 60.13 (standard deviations 5.96 and 5.91), while Group B's mean rose from 55.33 to 57.72 (standard deviations 7.88 and 8.59). For VLDL levels, Group A's mean dropped from 25.92 to 24.16 (standard deviations 8.37 and 8.10), and Group B's from 23.47 to 20.55 (standard deviations 6.93 and 6.34). Overall, both groups showed reductions in cholesterol, triglycerides, LDL, and VLDL, with a slight increase in HDL after treatment.

# Results

**Table No. 5:Effect of *Basti Karma* on Weight, BMI, Anthropometry, and Lipid Profile (T-Paired Test)**

| Parameter | Group | Mean Difference | Standard Deviation | t-value | df | p-value | Significance |
|---|---|---|---|---|---|---|---|
| WT (Weight) | A | 2.19 | 1.31 | 7.48 | 19 | <0.05 | Significant |
| | B | 3.21 | 1.15 | 12.49 | 19 | <0.05 | Significant |
| BMI (Body Mass Index) | A | 0.88 | 0.50 | 7.79 | 19 | <0.05 | Significant |
| | B | 1.25 | 0.50 | 11.23 | 19 | <0.05 | Significant |
| CST (Chest Circumference) | A | 0.61 | 0.61 | 4.44 | 19 | <0.05 | Significant |
| | B | 0.98 | 0.54 | 8.09 | 19 | <0.05 | Significant |
| WST (Waist Circumference) | A | 0.67 | 0.56 | 5.31 | 19 | <0.05 | Significant |
| | B | 0.94 | 0.58 | 7.20 | 19 | <0.05 | Significant |
| PVS (Parameter Value Score) | A | 0.14 | 0.22 | 2.74 | 19 | 0.013 | Significant |
| | B | 0.39 | 0.53 | 3.28 | 19 | 0.004 | Significant |
| MAR (Measurement A) | A | 0.27 | 0.38 | 3.17 | 19 | 0.005 | Significant |
| | B | 0.51 | 0.36 | 6.24 | 19 | <0.05 | Significant |
| MAL (Measurement B) | A | 0.27 | 0.38 | 3.17 | 19 | 0.005 | Significant |
| | B | 0.51 | 0.36 | 6.24 | 19 | <0.05 | Significant |
| MTR (Measurement C) | A | 0.38 | 0.41 | 4.17 | 19 | 0.001 | Significant |
| | B | 0.58 | 0.35 | 7.40 | 19 | <0.05 | Significant |
| MTL (Measurement D) | A | 0.38 | 0.41 | 4.17 | 19 | 0.001 | Significant |
| | B | 0.58 | 0.35 | 7.40 | 19 | <0.05 | Significant |
| CLS (Cholesterol Levels) | A | 16.12 | 10.82 | 6.67 | 19 | <0.05 | Significant |
| | B | 19.13 | 16.28 | 5.26 | 19 | <0.05 | Significant |
| TRG (Triglycerides) | A | 7.73 | 8.37 | 4.13 | 19 | 0.001 | Significant |
| | B | 16.10 | 21.73 | 3.31 | 19 | 0.004 | Significant |
| HDL (High-Density Lipoprotein) | A | -3.72 | 6.13 | -2.72 | 19 | 0.014 | Significant |
| | B | -3.27 | 5.68 | -2.58 | 19 | 0.019 | Significant |
| LDL (Low-Density Lipoprotein) | A | 12.75 | 11.06 | 5.15 | 19 | <0.05 | Significant |
| | B | 16.22 | 26.83 | 2.70 | 19 | 0.014 | Significant |
| VLDL (Very Low-Density Lipoprotein) | A | 1.91 | 1.58 | 5.43 | 19 | <0.05 | Significant |
| | B | 2.90 | 4.02 | 3.23 | 19 | 0.004 | Significant |

Notes: WT: Weight; BMI: Body Mass Index; CST: Chest Circumference; WST: Waist Circumference; PVS: Parameter Value Score; MAR, MAL, MTR, MTL: Specific anthropometric measurements; CLS: Cholesterol Levels; TRG: Triglycerides.

**Chart 3: Effect of *Basti Karma* on Weight, BMI, Anthropometry, and Lipid Profile**
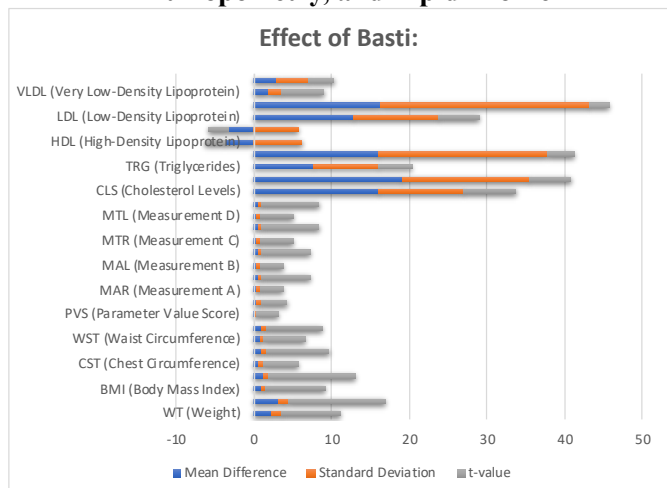


The table shows that *Basti Karma* significantly improved multiple markers in both groups. Group B generally exhibited slightly more significant changes than Group A, especially in weight (3.21 vs. 2.19 kg) and BMI reductions (1.25 vs. 0.88). Both groups demonstrated significant decreases in chest and waist circumferences, as well as in various anthropometric measurements (MAR, MAL, MTR, MTL). Additionally, the intervention led to substantial improvements in lipid profiles, with significant reductions in cholesterol, triglycerides, LDL, and VLDL levels, while HDL levels also decreased significantly. These consistent, statistically significant results across the measured parameters suggest that *Basti Karma* can be effectively beneficial in *Sthoulya.*

## Discussion

This clinical research topic was chosen because of the increasing obesity epidemic, concerning statistics from the WHO, limitations in traditional *PanchaKarma* methods, a research gap in *Chaturbhadra Kalpa Basti Krama*, the simplicity and safety of this approach, the underutilization of *Kasyapa Samhita* in adult health, and the potential for further research and clinical application.

The discussion on the effects of therapy on subjective parameters such as *Chala Spika Udara Stana*, *Alasya*, *Dourbalya*, *Swedadhikyata*, and *Kshudraswasa* reveals significant findings in both groups A and B, with Group B generally showing a more substantial improvement.

For "*Chala Spika Udara Stana*,", therapy resulted in a 13.10% improvement in Group A and a 42.72% improvement in Group B, indicating a significant effect in both groups. The reduction in fat deposits is attributed to the properties of *Lekhana Basti*, which has *Medohara* (fat-reducing), *Bhedana*, and *Lekhaniya* properties, leading to a reduction in excess *Meda* (fat tissue).

In the case of "*Alasya* " (laziness), caused by incomplete metabolic processes and the accumulation of lactic acid, Group A showed a 44.255% improvement, while Group B demonstrated an 89.23% improvement, again with significant effects in both

groups. The therapy, through its *Deepana* (digestive), *Pachana* (metabolism-correcting), and *Lekhaniya* properties, addresses the vitiated metabolic processes and reduces *ALASYA* by correcting *Asthayi Meda* in circulation.

"*Dourbalya*" (weakness) showed a 45.11% improvement in Group A and an 84.63% improvement in Group B, with significant effects in both groups. This condition, caused by the improper nourishment of other *dhatus* due to the excessive production of *Meda*s *dhatu*, is alleviated by *Lekhana Basti*, which corrects the nourishment in circulation and strengthens the body by addressing *Asthayi Meda*.

For "*Swedadhikyata*" (excessive sweating), Group A showed a 9.72% improvement, which was non-significant, while Group B showed a significant 59.06% improvement. Excessive sweating, due to the vitiation and accumulation of *Meda dhatu*, is reduced by *Lekhana Basti*, which has properties that dry up excess *Meda* and corrects the condition.

Lastly, "*Kshudraswasa*" (dyspnea or shortness of breath) showed no improvement in Group A (0%) but a significant 33.823% improvement in Group B. This condition, caused by the obstruction of *srotas* (channels) due to *Vata* vitiation, is alleviated by *Lekhana Basti*, which corrects the *Vata* and clears the obstructions in the channels, reducing *KSHUDRASWASA*.

The study demonstrates that *Lekhana Basti* positively impacts obesity-related parameters, including weight, BMI, anthropometric measurements, and lipid profile. Both groups experienced reductions in weight (1.79% in Group A, 5.24% in Group B) and BMI (2.36% in Group A, 4.89% in Group B), indicating improved fat metabolism and body composition. Reductions in anthropometric measurements (0.41% in Group A, 1.19% in Group B) suggest better fat distribution, while decreases in cholesterol levels (7.68% in Group A, 10.24% in Group B) highlight the therapy's benefits on lipid metabolism and potential cardiovascular health. Overall, *Lekhana Basti* is effective in managing obesity by improving these key health indicators.

The significant improvements in the serum lipid profile observed after the administration of *Lekhana Basti*, including reduced levels of total cholesterol, triglycerides (TGL), LDL cholesterol, and increased HDL cholesterol, can be attributed to several factors. These include its *Medohara* (fat-reducing) activity, which aids in breaking down and reducing excess fat, and the bypassing of first-pass metabolism, enhancing the direct absorption of beneficial components.(18)

Additionally, *Lekhana Basti* regulates *Vata Dosha*, which is crucial for balancing metabolic processes, and helps in regulating calorie intake. The therapy also performs channel cleansing (*Srotoshodhana*), ensuring clear pathways for the movement of nutrients and waste, further contributing to improved lipid metabolism.

*Yoga Basti Krama* and *Chaturbhadra Kalpa Basti Krama* exhibit several key differences. In terms of *Anuvasana Basti* (AB), *Yoga Basti* includes 5 treatments

with a shorter retention time of 435 minutes and a lower *vega* of 1.15, resulting in a lesser *Dosha* elimination effect. In contrast, *Chaturbhadra Kalpa Basti* has 8 treatments with a longer retention time of 495 minutes and a higher *vega* of 1.40, leading to a more pronounced *Dosha nirhana* effect.

For *Niruha Basti* (NB), *Yoga Basti* includes 3 treatments with a retention time of 6 minutes and a *vega* of 6, whereas *Chaturbhadra Kalpa Basti* consists of 4 treatments with a longer retention time of 15 minutes and a *vega* of 8. The long retention time in *Chaturbhadra kalpa Basti krama* may be due to the greater number of AB, i.e.,4 at the start. Moreover, *Chaturbhadra Kalpa* fully achieves *Samyaka* AB *Lakshana*, while *Yoga Basti* does not fully meet these standards. These distinctions highlight *Chaturbhadra Kalpa's* more robust and comprehensive effects compared to *Yoga Basti*.

*Yoga Basti Krama* and *Chaturbhadra Kalpa Basti Krama* differ in several key aspects. *Yoga Basti* includes 5 *Anuvasana Basti* (AB) with a shorter retention time of 435 minutes and fewer *vega* (1.15), leading to a lesser effect on *Dosha* elimination and incomplete *Vata Shamana*. In contrast, *Chaturbhadra Kalpa* has 8 AB with a longer retention time of 495 minutes and more *vega* (1.40), resulting in a more significant *Dosha* elimination and complete *Vata Shamana*. Additionally, *Yoga Basti* has 3 *Niruha Basti* (NB) with a shorter retention time of 6 minutes and fewer *vega* , while *Chaturbhadra Kalpa* includes 4 NB with a longer retention time of 15 minutes and more *vega* , achieving complete *Samyaka* AB *Lakshana*, which *Yoga Basti* does not fully accomplish.

## Conclusion

In conclusion, both *Yoga Basti Krama* and *Chaturbhadra Kalpa Basti Krama* demonstrate significant efficacy in managing *Sthoulya* (obesity), with both protocols effectively reducing weight, improving BMI, and enhancing lipid profiles. However, *Chaturbhadra Kalpa Basti Krama* offers superior benefits in terms of body composition and alleviation of obesity-related symptoms. These findings suggest that *Chaturbhadra Kalpa Basti Krama* could be a more effective therapeutic approach for *Sthoulya* , providing a valuable alternative or adjunct to conventional obesity treatments. Further research with larger sample sizes and longer follow-up periods could strengthen these conclusions and help optimize therapeutic strategies for obesity in Ayurvedic practice.

## References

1. Welsh A, Hammad M, Piña IL, Kulinski J. Obesity and cardiovascular health. Eur J Prev Cardiol. 2024;31(8);1026–1035

2. Khanna D, Welch BS, Rehman A. Pathophysiology of Obesity.In: StatPearls. StatPearls Publishing; 2024 Jan.

3. https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight #dated 02-04-2025 time 23:15 IST

4. Welsh A, Hammad M, Piña IL, Kulinski J. Obesity and cardiovascular health. European Journal of Preventive Cardiology. 2024; 31(8); 1026-1035.

5. Agnivesha, Charakasamhita, Commentary by Chakrapanidatta, Yadavji TrikamjiAcharya.Varanasi ; Chaukamba Surabharathi Prakashana,;2000.738,116p.

6. Brahmanand Tripathi. Charak Samhita. Delhi; Chaukhambha Sanskrit pratishthan;.2015.Sutra Sthana 16/13. 192p.

7. Brahmanand Tripathi. Astanga Hridaya. Delhi ;Chaukhambha Sanskrit pratishthan.; 2015,Sutra Sthana.14/12-13. 192p.

8. Jadvji trikamji acharya. Sushrut samhita nibandha sangrah commentary. Varanasi; Chaukhambha Sanskrit Sansthan;. 2022.Chikitsa Sthana 35/18.526p

9. Sharma pandithhemaraja. kashyapasamhita. Varanasi; Choukambha publication;2006, 279p

10. Auti SS, Thakar AB, Shukla VJ, Ravishankar B. Assessment of Lekhana Basti in the management of hyperlipidemia. Ayu. 2013;34(4);339-345

11. Acharya Vidyadhar Sukla, Ravidutta Tripathy. Charak Samhita of Agnivesha. Delhi; Chaukhambha Sanskrit Pratishthan;2015.884p.

12. Bramhanand Tripathi. Sharangdhara Samhita.Varansi;Chaukhambha Surbharati Prakashana; Uttarakhand 6/16;2017. 239p.

13. Anantram Sharma. Sushruta Samhita. Varanasi;Chaukhambha Surbharati Prakashana; Chikitsa Sthana 38/91. 2017. 480p.

14. https://www.ncbi.nlm.nih.gov/books/NBK541070/ dated 02-04-2024, 23:19.

15. Sharma pandithhemaraja: kashyapasamhita, Varanasi; choukambha publication; Reprint 2006, 279p

16. Tewari PV. Kashyapa Samhita. Varanasi;Choukhamba Bharati Academy;Reprint 2002; Siddhi Sthana .527p

17. Milana M N , Sudarshan Bhat. A Comparative Clinical Study To Evaluate The Efficacy Of Udvartana With Haridradi Gana Churna And Kshara Basti In Sthoulya (Obesity). International Ayurvedic Medical Journal.December,2023;11(12);2982-2993

18. Pooja BA, Bhatted SK. A standard controlled clinical study on *Virechana Karma* and *Lekhana Basti* in the management of dyslipidemia (*Medoroga*). Ayu. 2016;37(1):32-37.

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