



Clinical Research

Assessment of *Lekhana Basti* in the management of hyperlipidemiaSwapnil S. Auti, Anup B. Thakar¹, Vinay J. Shukla², B. Ravishankar³

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Abstract

Hyperlipidemia is highly prevalent and is closely related to coronary heart disease which is the most common cause of death. Raised cholesterol is estimated to be responsible for 18% of cerebrovascular disease and 56% of ischemic heart disease. Overall, these diseases account for about 4.4 million deaths (7.9% of the total). Based upon the etiological factors and symptom complexes, hyperlipidemia can be considered as a part of *Medoroga*. Being a *Tikshna* formulation, the treatment modality of *Lekhana Basti* is aimed basically for *Apatarpana* (emaciation) of the body, as *Basti* is the fastest *Apatarpana*. In the present clinical trial, a total of 22 patients were registered of whom 19 patients completed the course of the therapy. Under randomization, the registered patients were divided into two groups of which group A was treated with *Lekhana Basti* and group B was administered standard control drug, i.e., *Triphala Guggulu*, for 21 days. The results of the study revealed that in patients treated with *Lekhana Basti*, there was a decrease of about 4.99% in S. cholesterol, 9.13% in S. low density lipoprotein (LDL), and 0.36% in S. apolipoprotein B. *Lekhana Basti* was found to have significant effect in reducing the symptoms of *Medodushti* and in reduction of objective parameters like weight, body mass index (BMI), body fat percentage, body circumferences such as chest, abdomen, hip, pelvis, mid-thigh circumference, etc., and skin fold thickness as biceps, triceps, mid-arm, and abdominal skinfold thickness.

Key words: Hyperlipidemia, *Lekhana Basti*, *Triphala Guggulu*

Introduction

Hyperlipidemia is one of a number of modifiable risk factors for Coronary Heart Disease (CHD).^[1] Raised cholesterol (>220 mg/dl) is prevalent in 60% population of 50-59 years age group and 55% population of 60-100 years age group in females in India, whereas in males it is prevalent in 45% individuals of 40-49 years age group. From point of view of High Density Lipoprotein (HDL), 28.2% males and 12.9% females have HDL below 1 mmol/l.^[2]

Hyperlipidemia is a condition in which the levels of lipoproteins [cholesterol, triglycerides (TGs), or both] are raised in the plasma, which can be co-related to raised "*Meda*" (lipids) in the body. Hyperlipidemia is contributed by high fat diet, sedentary lifestyle, etc., These causative factors can be compared to *Snigdha*, *Guru*, *Picchila Gunasevana*, and *Chesthadvesha* (lack of exercise), which lead to *Santarpanjanya Vyadhis* (diseases produced by overnutrition) according to

Ayurveda. Hence, hyperlipidemia can be brought under the broad umbrella of "*Santarpanjanya Vyadhis*." *Apatarpana* is the remedy for *Santarpanjanya Vyadhis*. Taking into consideration all the treatment modalities in *Ayurveda*, "*Basti*" seems the best because it is a fastest *Apatarpana*, when prepared with *Apatarpaka* drugs.^[3] *Apatarpana* also being more specific, "*Lekhana*" (emaciation/desiccation) is the treatment which can remove abnormally increased *Sneha*.^[4] So, in light of the above references from classics, *Lekhana Basti* was selected for the present study with an aim to assess its effect in the management of hyperlipidemia.

Materials and Methods

Patients having lipid profile with increased value than normal were selected for the present study. Patients fulfilling the criteria and attending OPD and IPD of *Panchakarma* Department and cases referred by other departments of IPGT and RA Hospital, GAU, were selected randomly irrespective of race, cast, sex, religion, etc.

Inclusion criteria

- Patients having any one or all of the following were selected:

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- Serum cholesterol: 201 mg/dl or more
- Serum TGs: 151 mg/dl or more
- Serum low density lipoprotein (LDL): 101 mg/dl or more
- Serum very low density lipoprotein (VLDL): 41 mg/dl or more
- Patients of age between 20 years and 60 years were selected.

Exclusion criteria

- Patients having age less than 20 years and above 60 years
- Patients having serious cardiac problems like Myocardial Infarct, cardiac failure, etc
- Patients having major illnesses like Insulin Dependent Diabetes Mellitus, Diabetes Mellitus which is poorly controlled or newly diagnosed, or are taking new therapy or recently adjusted therapy
- Patients having history of untreated thyroid disorders
- Hyperlipidemia due to drugs, e.g. glucocorticoids
- Pregnant females and lactating females
- Body mass index (BMI) >40 kg/m²
- Renal insufficiency or any other serious systemic illness.

Investigations

- Routine hematological examination before and after treatment to rule out any other pathological conditions
- Total lipid profile
- Apolipoprotein B levels
- Fasting blood sugar (FBS), S. proteins, blood urea, S. creatinine, liver function tests (LFT), and other investigations before and after treatment.

Study design

- Randomized controlled study.

Drugs and posology

Group A

Patients in this group were given *Triphaladya Taila Anuvasana* 3 *Pala* (160 ml) followed by three *Lekhana Basti* [Table 1], each of 12 *Prasruta* (1000 ml) and one *Anuvasana* on the last day, in a schedule of 21 days.

Group B

Patients in this group were given *Triphala Guggulu* (standard control) in a dose of 500 mg 2 tid (3 g/day) before meals with lukewarm water for 21 days.

Table 1: Contents of *Lekhana Basti*

Content name	Quantity (in <i>Ayurvedokta Mana</i>)	Quantity (in g or ml)
<i>Makshika</i> (honey)	3 <i>Prasruta</i>	210 ml
<i>Saindhava</i> (rock salt)	1 <i>Karsha</i>	12 g
<i>Triphaladya Taila</i>	1.5 <i>Prasruta</i>	160 ml
<i>Putoyavanyadi Kalka</i>	1 <i>Prasruta</i>	96 g
<i>Triphala Kwatha</i>	5 <i>Prasruta</i>	480 ml
<i>Gomutra</i> (cow's urine)	10 <i>Karsha</i>	120 ml
<i>Prakshepa</i> (catalytic adjuvant)- <i>Yavakshara</i> , <i>Shuddha Shilajit</i> , <i>Kasis</i> , <i>Hingu</i> , <i>Tuttha</i>)	1 <i>Karsha</i> (all in equal quantity)	12 g

(Note: In the present study, quantities of ingredients in liquid form were determined in millilitres by considering the specific gravities of the basic component of the formulation and converting the grams to millilitres).

Thus, the final prepared 12 *Prasruta Basti* comes to be of 1000 millilitres.

For *Anuvasana Basti: Triphaladya Taila*^[5]

$$3 \text{ Pala} = 1.5 \text{ Prasruta} = 160 \text{ millilitres}$$

To assess the effect of *Lekhana Basti* in hyperlipidemia, *Triphala Guggulu*^[6] was selected as the control drug.

Pathya–Apathya

Patients were advised to take food according to *Aharvidhi Visheshayatana*^[7] (rules for proper diet consumption). For dietary changes, the patients were made to limit the use of oil and ghee. They were also made to curtail the use of energy-rich foods like rice, potatoes, fried foods, and bakery products. All the patients were advised to avoid overeating and leave one-third of the stomach capacity empty. They were also advised to drink lukewarm water and avoid refrigerated water.

Assessment of therapy

Criteria for assessment

The patients were examined weekly and suitable scoring pattern and objective signs were recorded to assess any changes present in the patients. After completion of 21 days of treatment, the efficacy of the therapy was assessed on the basis of the subjective as well as objective criteria.

Subjective criteria: Symptomatic evaluation of all the patients was undertaken for which a multidimensional scoring pattern was adopted. The patients were assessed twice, before and after the therapy, to assess the severity of the symptoms. The severity was scored according to the criteria shown below. The percentage relief and statistical analysis was done to assess the efficacy of the therapy.

• Absence of symptom	0
• Mild degree of symptom	1
• Moderate degree of symptom	2
• Severe degree of symptom	3
• Very severe degree of symptom	4

A detailed scoring pattern was prepared and used for the main signs and symptoms such as flabbiness in hip–abdomen–breast (*Angachalatva*), laziness/lack of enthusiasm (*Alasya/Utsahahani*), dyspnea on exertion (*Kshudrashwasa*), weakness (*Daurbalyata-Alpa Vyayama*), excess sleep (*Nidradhikya*), excess sweating (*Swedadhikya*), body odor (*Daugandhya*), oily body luster (*Snigdhangata*), excess thirst (*Atipipasa*), excess hunger (*Atikshudha*), heaviness in the body (*Angagaurava*), joint pain (*Sandhishoola*), and fatigue (*Gatrasada*).

Objective criteria: The following objective criteria were assessed:

1. Biochemical tests: Complete lipid profile, including serum cholesterol, serum TGs, serum HDL, serum LDL, and serum VLDL, was done before and after treatment. Since the plasma levels of apolipoprotein B are known to reflect the total number of atherogenic particles,^[8] it was used as a biomarker for hyperlipidemia and was assessed in selected patients before and after treatment

2. Body fat percentage: Body fat percentage was measured in selected patients using the Omron Body Fat Monitor (Model HBF-306, Omron Healthcare Co. Ltd., Matsuoka, Japan). Body fat percentage refers to the percentage of the body fat mass (weight of the fat) in relation to the total body weight.^[9] The weight of the body that is exclusive of fat is referred to as the fat-free body mass.

Body fat percentage = [body fat mass (kg)/body weight (kg)] × 100
 Body fat mass = body weight (kg) – fat-free mass (kg)

3. Body circumference measurements: Measurement of the girth of the following areas, where adipose tissue is generally found to be more, was taken:
- Chest: In normal expansion, at the level of the nipples
 - Waist: At the level of the umbilicus
 - Pelvis: At the level of the anterior superior iliac spine
 - Hip: At the level of the highest point of distension of the buttocks
 - Mid-arm: Middle of the arm between the shoulder joint and the elbow joint
 - Mid-thigh: Middle of the thigh between the hip joint and the knee joint
 - Mid-calf: Middle of the calf between the knee joint and the ankle joint
4. Skin fold thickness: The effectiveness of therapy on body fat was assessed by measuring the skinfold thickness using vernier calipers before and after treatment; measurement was taken in the following areas:
- Skinfold thickness over the middle portion of the biceps muscle
 - Skinfold thickness over the middle portion of the triceps muscle
 - Skinfold thickness over the abdomen
 - Skinfold thickness over the middle portion of arm
5. BMI: The BMI, a measurement that compares a person's weight and height, was also assessed.

Statistical analysis

The information gathered on the basis of above observations was subjected to statistical analysis. The Wilcoxon's signed-rank test was carried out for all non-parametric data (i.e., for subjective criteria) to analyze the effect of individual therapy in the both groups. The obtained results were interpreted as:

- Insignificant $P > 0.05$
- Significant $P < 0.05$
- Highly significant $P < 0.01$

Chi-square test was used to compare the effect of therapies of the two groups for non-parametric data.

Student's paired "t" test was applied for the objective parameters like lipid profile, biochemical investigations, body weight, etc., to analyze the effect of individual therapy in the both groups. Unpaired "t" test was applied to compare the effect of therapies of the two groups. The obtained results were interpreted as:

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

The overall effect was decided on the basis of percentage improvement in biochemical parameter (lipid profile) and subjective parameters. Thus, the total effect of the therapies was marked as following:

- Complete remission: 100% relief
- Markedly improved: 75-99% relief
- Moderately improved: 50-75% relief
- Improved: 25-50% relief
- Mildly improved: 10-25% relief
- Unchanged: 0-10% relief
- Worsened: <0%.

Observations and Results

A total of 22 patients were registered of whom 3 patients in group B dropped out at different stages of the study without any specific reasons. So, totally 19 (86.36%) patients, i.e. 10 in group A and 9 in group B, completed the course of the therapy.

The following observations were recorded: maximum patients, i.e., 40.91%, were from the age group of 50-60 years; 59.09% were females; maximum patients belonged to Hindu religion (77.27%); 45.45% patients had completed education up to graduation; socioeconomic status wise, maximum (40.91%) patients were from upper middle class; maximum, i.e. 45.45% patients, were housewives; 95.45% patients were married; 72.73% patients were from urban habitat; 95.45% patients were from *Sadharana desha*; 27.27% of the patients were of *Pittapradhana Kaphanubandhi Prakriti* and 50% patients were found to be having *Tamasic Prakriti*; 50% patients were having weight in the category of 70-80 kg; maximum (i.e. 40.91% of the patients) were having BMI in the range of 29-32 kg/m² (Grade 3 obesity); 88.89% of male patients were having body fat above 25%, whereas 100% of females were found to have body fat above 32%; all male patients (100%) were found to have waist to hip ratio more than 0.9 and all (100%) female patients were having waist to hip ratio more than 0.85; 59.09% patients were having *Avara Vyayamashakti*; 50% patients were having *Pravara Abhyavaharana Shakti*; 50% patients were having *Madhyama Koshtha, Aharaja Nidan*; maximum (i.e. 63.64% patients) were reported to have *Guru* and *Atisnidha Ahara Sevana*, followed by 45.45% patients having *Akala Ahara Sevana, Viharaja Nidan*; maximum (i.e. 77.27% patients) were found to have *Divaswapa*. In *Manasika Nidan*, maximum (50% patients) were found to have *Atichinta*; *Beejadosh* was reported in 45.45% of patients; maximum (i.e. 72.73%) of the patients were found to have chief complaints of weight gain, dyspnea on exertion, and flabbiness in hip-abdomen-breast. In maximum (i.e. 63.64%) of the patients, obesity was found to be associated, *Kaphavridhi* was found in 68.18% of the patients, 86.36% patients were having *Meda Vridhi*, 77.27% patients were found to have *Medovaha Srotodushti*, 59.09% patients were found to have *Swedovaha Srotodushti*.

Effect of therapy

Effect on subjective parameters

Lekhna Basti showed a decrease of 25% in the flabbiness of the abdomen, 92.31% on laziness/lack of enthusiasm, 80.36% in dyspnea on exertion, 57.14% in weakness, 74.07% in excess sleep, 52.94% in excess sweating, 57.14% in body odor, 100% in excess thirst, 50% in excess hunger, 75% in heaviness in

the body, 59.09% in joint pain, and 66.18% in fatigue. All the changes were statistically significant. In the standard control group, no reduction was found in flabbiness. However, a reduction of 76.92%, 50%, 41.67%, 78.57%, 25%, 25%, 33.33%, 50%, 20%, 45.45%, 25%, and 42.86% was seen in laziness/lack of enthusiasm, dyspnea on exertion, weakness, excess sleep, excess sweating, body odor, oily body luster, excess thirst, excess hunger, heaviness in the body, joint pain, and fatigue, respectively, of which except laziness reduced significantly ($P < 0.01$) and all other changes were statistically insignificant ($P > 0.05$). On comparing the results of both the groups, no difference was seen statistically in the effect of therapies on subjective parameters [Figure 1].

Effect on lipid profile and apolipoprotein B

In patients treated with *Lekhana Basti*, there was a decrease of about 4.99%, 9.13%, and 0.36% in S. cholesterol, S. LDL, and S. apolipoprotein B, respectively. However, S. TG and S. VLDL were found to be increased by 15.48% and 17.16%, respectively. Also, S. HDL was reduced by 4.15%. All these changes were statistically insignificant ($P > 0.05$). In patients treated with standard control, there was a significant ($P < 0.01$) decrease of about 10.34%, 6.67%, and 13.38% in S. cholesterol, S. HDL, and S. apolipoprotein B, respectively. However, S. TG, S. LDL, and S. VLDL were found to be decreased by 12.84%, 10.53%, and 14.2%, respectively, but the decrease was found to be statistically insignificant ($P > 0.05$) [Figure 2].

Effect on body parameters

In patients treated with *Lekhana Basti*, there was a highly significant decrease of about 3.34%, 3.36%, and 2.80% in weight, BMI, and body fat %, respectively. In patients treated with standard control, there was a significant ($P < 0.01$) decrease of about 1.19%, 1.28%, and 0.96% in weight, BMI, and basal metabolic rate (BMR), respectively. Body fat % also reduced by 1.40%, but this reduction was statistically insignificant ($P > 0.05$) [Figure 3].

Effect on body circumferences

In patients treated with *Lekhana Basti*, there was a highly significant ($P < 0.001$) decrease of about 1.54% in the abdominal girth. However, a significant reduction ($P < 0.01$) in organ measurement was reported in chest, hip, and mid-thigh of about

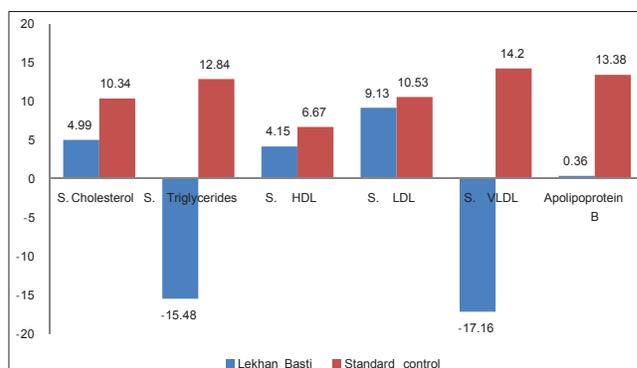


Figure 2: Effect of therapy on lipid profile and apolipoprotein B (% relief)

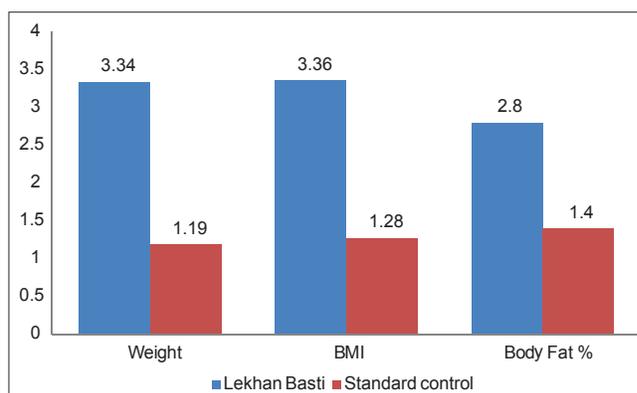


Figure 3: Effect of therapy on body parameters (% relief)

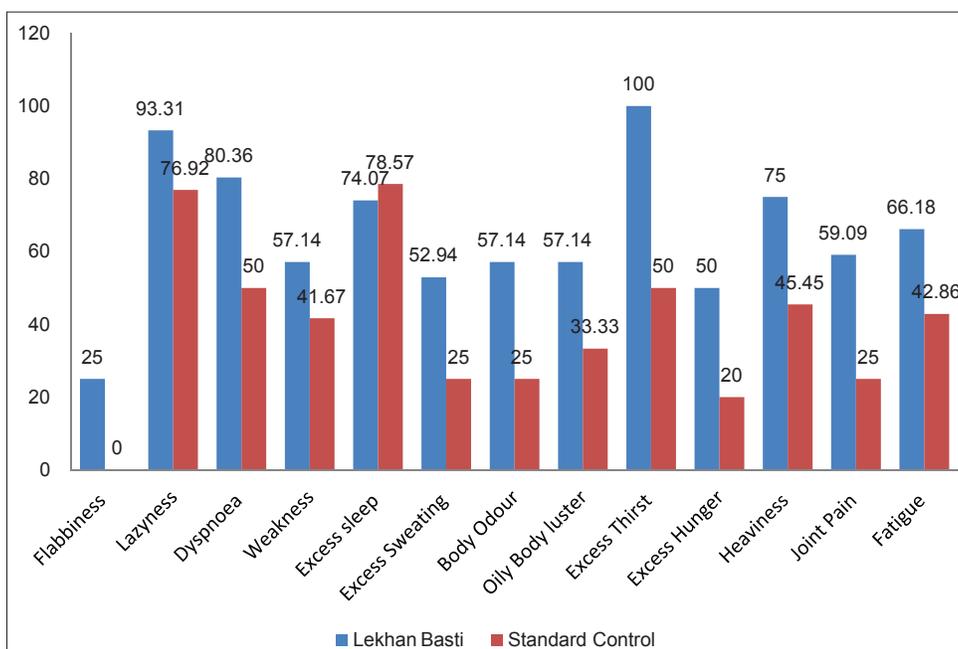


Figure 1: Effect of therapy on subjective parameters (% relief)

0.93%, 1.28%, and 2.35%, respectively. Pelvis girth also reduced significantly ($P < 0.05$) by 0.92%. Nonsignificant reduction of about 0.52% was found in leg circumference. In patients treated with standard control, there was a significant ($P < 0.01$) decrease of about 0.88% in the abdominal girth. However, a nonsignificant reduction ($P > 0.05$) in organ measurement was reported in chest, hip, pelvis, mid-thigh, and leg by about 0.49%, 0.79%, 0.24%, 0.45%, and 0.32%, respectively [Figure 4].

Effect on skinfold thickness

In patients treated with *Lekhana Basti*, there was a highly significant ($P < 0.001$) decrease of about 3.80% in abdominal skinfold thickness. A significant reduction ($P < 0.01$) of about 2.66% and 2.69% was found in the skinfold thickness of

right and left triceps, respectively. Also, significant reduction ($P < 0.05$) of 4.65%, 4.67%, 1.6%, and 1.64% was found in right biceps, left biceps, right mid-arm, and left mid-arm skinfold thickness, respectively.

In patients treated with standard control, there was a significant ($P < 0.05$) decrease of about 0.43% in left mid-arm skinfold thickness. However, a nonsignificant reduction ($P > 0.05$) of about 0.25%, 0.23%, 0.65%, 0.7%, 0.61%, and 0.35% was reported in the skinfold thickness of right biceps, left biceps, right triceps, left triceps, abdomen, and right mid-arm, respectively [Figure 5].

Overall effect of therapy

In group A (*Lekhana Basti* group), maximum (i.e. 50%) patients reported improvement, followed by 20% which reported mild improvement and 10% had moderate improvement. However, 10% patients remained unchanged and 10% were worsened by the treatment. In group B (standard control group), totally nine patients completed the treatment of whom the maximum (i.e. 44.44%) reported improvement, followed by 33.33% having mild improvement and 11.11% having moderate improvement. However, 11.11% patients remained unchanged [Figure 6].

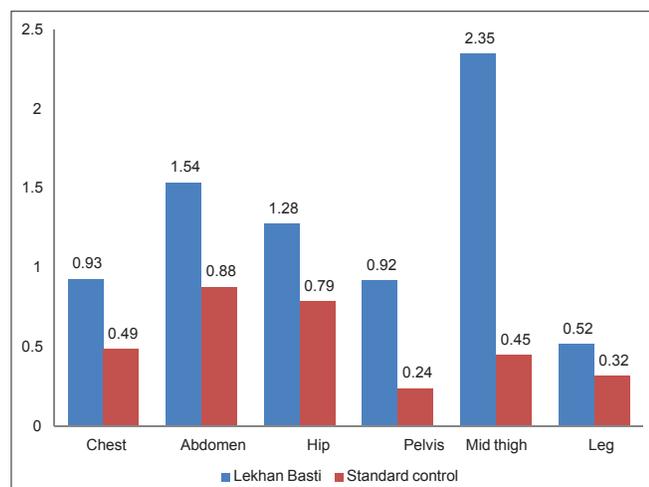


Figure 4: Effect of therapy on body circumferences (% relief)

Discussion

Lekhana Basti has *Sneha*, *Meda*, *Kleda Upashoshana*, *Deepana*, *Pachana*, *Tikshna*, *Lekhana*, *Ruksha*, and *Kapha-Vatahara* properties by virtue of its *Rasapanchaka* dominance, which has resulted in the reduction of the following: flabbiness in hip-abdomen-breast (*Angachalatva*), laziness/lack of enthusiasm (*Alasya/Utsahahani*), excess sleep (*Nidradhikya*), excess sweating (*Swedadhikya*), body odor (*Daurgandhya*), oily body luster

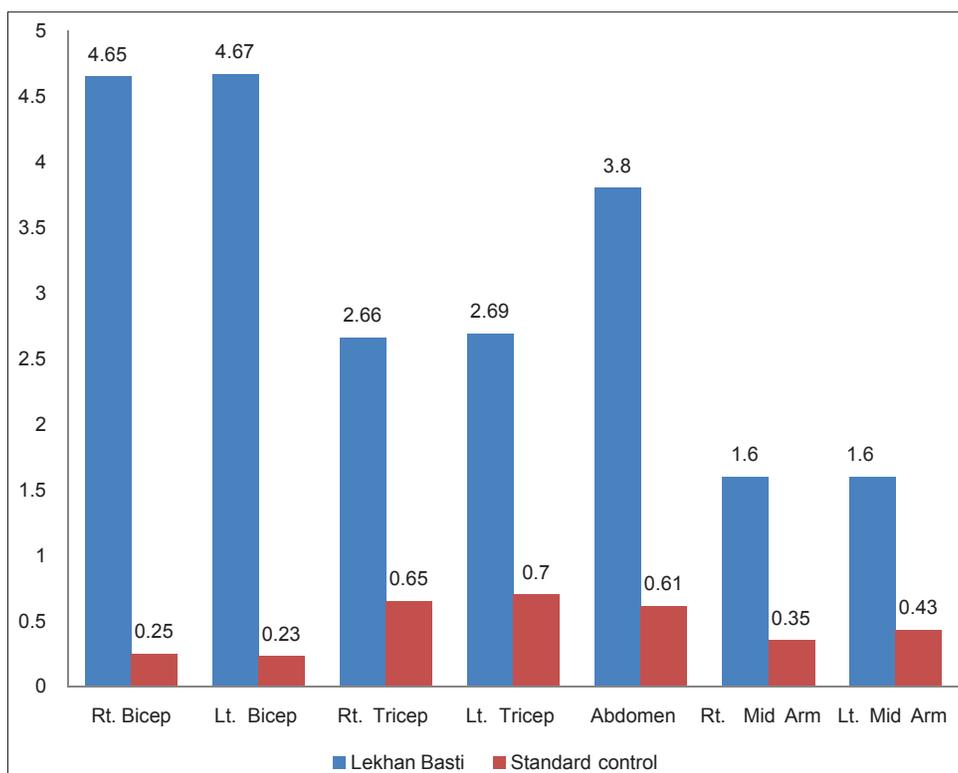


Figure 5: Effect of therapy on skin fold thickness (% relief)

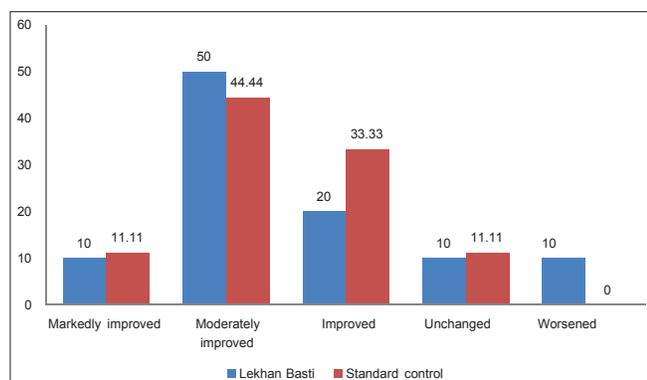


Figure 6: Overall effect of therapy (% of patients)

(*Snigdhangata*), heaviness in the body (*Angagaurava*), and fatigue (*Gatrasada*). Reduction in dyspnea on exertion (*Kshudrashwasa*) and joint pain (*Sandhishoola*) can also be attributed to the *Srotoshodhana* (cleansing of body's micro-channels) caused by *Basti*,^[10] thus removing *Avaranajanya Vataprakopa*. Weakness (*Daurbalyata-Alpa Vyayama*) is associated with increased weight.^[11] Thus, reduction in the weight significantly has contributed to the reduction in weakness. The superiority of the standard control drug in reducing excess sleep may be due to its dominance of *Laghu-Ruksha Guna, Katu-Tikta-Kashaya Rasa*, and *Ushna Virya*, causing reduction in excess sleep by reducing *Kapha*. *Basti* being best *Vatahara*^[12] treatment the reduction in excess thirst (*Atipipasa*), excess hunger (*Atikshudha*) may be attributed to correction of vitiated *Vayu* which is known to cause *Jatharagni Sandhukshana*^[11] and *Trisha*.^[11]

Lipid profile is associated with *Asthayi Meda* and other objective parameters are associated with *Sthayi Meda*. The results obtained can be attributed to the *Deepana-Pachana* property of standard control, increasing the *Dhatvagni*, checking the *Medodhatvagnimandya*,^[13] and digesting the *Ama* in *Srotasa* leading to hypolipidemic action, as *Ama* is a part and parcel in the pathogenesis of hyperlipidemia due to *Agnimandya*.

A fall in HDL (though not significantly) in *Lekhana Basti* treated group may be attributed to the fact that there lies an inverse association between TG and HDL.^[14] Increase in TG level might have contributed to the unwanted HDL reduction. However, in standard control group, a simultaneous fall of TG, HDL, LDL, and VLDL was found, which is not a common phenomenon, but this indicates dietary mishaps by the patients (especially those leading to fall of HDL, e.g. consuming unsaturated fats^[15]) as HDL which is expected to be increased or remain unchanged has fallen significantly. Fall in other parameters is not statistically significant, hence cannot be considered to draw any conclusion about the simultaneous rise of all the lipid parameters, as serum cholesterol which is the sum of all the cholesterol variants was found to decrease significantly.

Significant effect on body weight, BMI, BMR, body fat %, skinfold thickness, and body organ measurement was seen, which proves that *Lekhana Basti* has affected *Sthayi Meda* more potently due to *Kledanirharana* (fluid expulsion) and *Lekhana* properties. *Lekhana Basti* is mainly *Apatarpana* type of the *Basti* as all ingredient drugs are *Ruksha, Tikshna*, and *Srotoshodhaka*.

Moreover, the *Prakshepa* which was added is also having irritant effect over intestinal lining, thus making more fluid to get secreted into intestinal lumen.^[16] Thus, this daily *Basti Karma* for 21 days acts as a *Nitya Shodhana*, which is one of the main principles in the treatment that had resulted in significant weight loss.

Probable reasons for limitation of *Lekhana Basti* to produce effects

Increased endogenous production

Regarding cholesterol, a higher intake from food leads to a net decrease in endogenous production, whereas lower intake from food has the opposite effect. The main regulatory mechanism is the sensing of intracellular cholesterol in the endoplasmic reticulum by the protein sterol regulatory element-binding protein (SREBP) 1 and 2.^[17] As patients were advised to avoid fatty diet and other factors related to dietary supplement of lipids, this might have led to relative increase in the endogenous production of the lipids.

Shorter duration of the treatment

Hyperlipidemia is a metabolic syndrome with multisystem involvement to cause raised lipids. It involves a long chain of defects right from the *Jatharagni* up to *Dhatvagni* level. To reverse this pathogenesis, the duration of 21 days might be too small. Hence, in both the treatments, a marked improvement is very less. The *Lekhana Basti* has shown reduction in lipids on follow-up in some of those patients in whom lipids were deteriorated previously on treatment.

Conclusion

Lekhana Basti has reduced S. cholesterol, S. LDL, and S. apolipoprotein B marginally. It was found to have significant effect in reducing the symptoms of *Medodushti* and in reduction of objective parameters like weight, BMI, body fat percentage, body circumferences such as chest, abdomen, hip, pelvis, and mid-thigh circumferences, and skinfold thickness as biceps, triceps, mid-arm and abdominal skinfold thickness.

Though it is effective to a lesser extent on lipid profile than standard control, *Lekhana Basti* can be used for effective management of all other subjective and objective parameters.

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हिन्दी सारांश

हायपरलिपिडिमिया मे लेखन बस्ति का प्रभाव

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प्रस्तुत चिकित्सकीय अध्ययन मे हायपरलिपिडिमिया की चिकित्सा मे लेखन बस्ति का अध्ययन किया गया, जिसमे २२ रुग्ण सहभागी हुये जिनमे से १९ रुग्णों ने चिकित्सा पूर्ण की । प्राप्त चिकित्सा परिणामों से यह देखा गया की लेखन बस्ति से चिकित्सा किये गये रुग्णों मे कोलेस्टेरौल ४.९९%, एल.डी.एल. ९.१३% एवं अपोलायपोप्रोटीन बी. ०.३६% कम हुआ । मेदोदुष्टी के लक्षण तथा भार, बी.एम.आय., शरीर मेद प्रतिशत, शरीर आयाम यथा उर, उदर, नितंब कटि एवं जंघामध्य और त्वचा की मोटाई यथा बायसेप, ट्रायसेप, मध्य बाहू एवं उदर की त्वचा की मोटाई आदी में लेखन बस्ति चिकित्सा से सार्थक परिणाम प्राप्त हुये ।