RESEARCH PAPER

# A Clinical Study To Evaluate The Efficacy Of Vamana KarmaFollowed By Pathya Ahara And Yoga In The Management Of Sthaulya

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**Abstract**
**Background:** *Sthaulya* (obesity), a Santarpanajanya Vyadhi described across classical Ayurvedic texts, has emerged as a major global non-communicable disease driven by Kapha–Meda Dushti at the pathophysiological level and by sedentary living and caloric excess at the epidemiological level. Despite an expanding pharmacological armamentarium in conventional medicine, sustainable, low-cost, and holistic management strategies remain a pressing research need.
Objective: This review critically synthesises the biomedical and Ayurvedic literature on obesity, with a focused, in-depth appraisal of a single-arm clinical study (n = 20) that evaluated Vamana Karma (therapeutic emesis) followed by Pathya Ahara (dietetic regimen), Yoga (Sukshma Kriya and Suryanamaskar), and Varunadi Kashaya as Shamana Aushadhi in the management of Sthaulya.
**Methods:** A narrative-review approach was adopted, integrating anatomical, physiological, and pathophysiological literature on obesity; conventional and Ayurvedic diagnostic and therapeutic frameworks; and a detailed re-analysis of the index thesis dataset, which recorded subjective parameters (Chalasphikudarasthana, Alasya, Dourbalya, Swedadhikya, Kshudraswasa) and objective parameters (body weight, BMI, circumferences, lipid profile) at four time points — Before Treatment (BT), After Vamana/Visit (AV), After Treatment (AT), and Day-60 follow-up (D60).
**Results:** The treatment yielded a statistically significant, progresssive decrease in body weight (70.17 ± 10.42 kg at BT to 64.90 ± 9.08 kg at D60) and BMI (29.60 ± 3.41 kg/m² to 27.34 ± 3.24 kg/m²) along with a highly significant effect on all nine anthropometric measures (repeated-measures ANOVA, $p < 0.001$; partial $\eta^2$ ranging from 0.495 to 0.883). There was a decrease in waist circumference from 66.15 to 62.75 cm and pelvic circumferencee from 79.10 to 75.05 cm. There were statistically significant changes in all lipidss: HDL-cholesterol increased from 33.62 to 39.23 mg/dL, whereas there were decreases of 12.9, 5.9, 25.4, and 16.9 mg/dL in levels of LDL, VLDL, triglycerides, and total cholesterol, respectively (paired t-test, $p < 0.001$ for all changes). Analysis by Friedman test and Bonferroni-corrected Wilcoxon tests indicated the largest decrease in subjective symptoms such as Alasya (lethargy) and Chalasphikudarasthana (flabbiness)
**Conclusion:** The combination of Vamana Karma, followed by Pathya Ahara, Yoga, and Varunadi Kashaya, provided clinically and statistically significant improvement in anthropometric, subjective symptoms, and lipid parameters of Sthaulya and these results were sustained during 60-day follow-up period. Although these results are encouraging
**Keywords:** Sthaulya; Obesity; Vamana Karma; Panchakarma; Pathya Ahara; Yoga; Varunadi Kashaya; Body Mass Index; Lipid Profile; Ayurveda; Integrative Medicine; Medoroga

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## Introduction

Whereas obesity used to signify affluence until two decades ago, it now represents the most serious public health crisis of the new century. The World Health Organization categorises obesity as a chronic and recurrent disease and not merely a problem of appearance and life-style because excess body fat is now known to be an independent cause of cardiovascular disease, type 2 diabetes mellitus, some forms of cancer, osteoarthritis, and premature death. (1) Data on global obesity from the NCD Risk Factor Collaboration, as collated by the World Obesity Federation, suggest that about one billion people around the world are suffering from obesity, comprising 880 million adults and 159 million children and adolescents as of 2022, with the numbers tripling since 1975. (2,3) According to the National Family Health Survey (NFHS), India has experienced a doubling of the proportion of obese individuals from NFHS-4 to NFHS-5, where it currently stands at nearly 24% in females and 22.9% in males, with abdominal obesity being prevalent among 40% of women and 12% of men. (4,5,6). The above epidemiological transition has coincided with remarkable progress in the pharmacological treatment of obesity through incretin-based medications like semaglutide and tirzepatide that result in average weight loss of 13-21% in randomised studies. (7,8,9) However, these drugs are costly, lifelong in nature to maintain their benefits, and have side effects related to the stomach and weight gain after stopping them. As a result, there has been considerable attention to various traditional systems of medicine as well as holistic approach that can yield metabolic benefits in a cheap and safe way. (7,10) Ayurveda, one of the oldest existing systems of medicine, approaches obesity as Sthaulya, which is a Santarpanajanya Vikara (disease caused by over-nourishment), due to the imbalance of Meda Dhatu (fatty tissues) because of Kapha-predominant Medovaha Srotodushti (impairment of meda tissue flow channels) and Mandagni (reduced metabolism).(11) Classical texts —

Charaka Samhita, Sushruta Samhita, and Ashtanga Hridaya — describe Sthaulya among the Ashta Nindita Purusha (eight censurable constitutional types) and prescribe a structured therapeutic sequence combining Shodhana (bio-purificatory) procedures, principally Vamana Karma (therapeutic emesis) and Virechana (purgation), with Shamana (palliative) drug therapy, Pathya Ahara-Vihara (dietetic and lifestyle regulation), and Yoga.(11,12) This review takes as its clinical anchor a contemporary single-arm interventional thesis study that operationalised this classical sequence — Deepana-Pachana, Snehapana, Vamana Karma, Samsarjana Krama, followed by Pathya Ahara, Yoga (Sukshma Kriya and Suryanamaskar), and Varunadi Kashaya — and measured its efficacy against both subjective Ayurvedic symptom criteria and objective anthropometric and biochemical parameters over a 60-day observation period.

The purpose of this review is threefold: first, to situate Sthaulya/obesity within its full biomedical context — anatomy, physiology, pathophysiology, etiology, diagnosis, and conventional management; second, to present and critically interrogate the results of Vamana Karma followed by Pathya Ahara and Yoga as reported in the index clinical study, comparing them against the wider published Ayurvedic and integrative-medicine literature; and third, to identify the methodological gaps that must be addressed before such integrative protocols can be considered validated, generalisable therapeutic options.

## Historical Background

### Antiquity of the Concept of Obesity

References to excessive corpulence as an undesirable bodily state predate modern medicine by millennia. The term “Sthulani” appears even in the Shvetashvatara Upanishad (5/12), indicating that heaviness of body was recognised as a distinct human attribute in ancient Indian philosophical literature long before its systematic medical description.(11) Systematic clinical description, however, crystallises in the Brihatrayi (the three great classical compendia of Ayurveda).

### Classical Ayurvedic Descriptions

Charaka Samhita (Sutrasthana 21) enumerates Sthaulya among the Ashta Nindita Purusha and provides one of the earliest recorded pathophysiological models of obesity, attributing it to Beeja Swabhava (hereditary/constitutional factors), Kala (temporal/seasonal factors), and — most influentially — excessive intake of Guru (heavy), Madhura (sweet), and Sheeta (cold) Ahara together with Avyayama (physical inactivity) and Divaswapna (daytime sleep), acting upon a Kapha-predominant Prakriti.(11,12) Sushruta Samhita (Sutrasthana 15 and 24) offers a complementary formulation, describing Sthaulya as Rasa Nimittaja Vyadhi and explicitly stating that it is the result of vitiated Meda (Su.Su.24/13), with disruption of Medovaha Srotas as the central pathological event.(11). Madhava Nidana devotes a separate chapter to Medoroga, integrating the diagnostic criteria used in later clinical practice, while Ashtanga Hridaya and subsequent Nighantu and Chikitsa compilations (e.g., Medoroga Chikitsa Prakarana, 39th chapter; Medo Vriddhi, 74th chapter) elaborate the Pathya-Apathya (dietary do's and don'ts) and Shodhana-Shamana therapeutic protocol still followed today.(11)

### Historical Trajectory of Panchakarma and Vamana Karma

Vamana Karma, one of the five classical Shodhana (bio-purificatory) procedures (Panchakarma), was originally indicated for Kapha-predominant disorders in general; its extension to Sthaulya reflects the Ayurvedic principle of Samanya-Vishesha (treating like with like at the level of Dosha, even when contraindicated by Bala/Dosha status in the individual case) — a nuance that later commentators flagged as requiring careful patient selection, since several classical authorities caution against Vamana in markedly Atisthaulya (severe obesity) owing to concerns about the patient's capacity to tolerate the procedure.(11,13)

### Evolution of the Modern Concept of Obesity

In conventional medicine, obesity was, until the late twentieth century, largely regarded as a matter of individual energy-balance behaviour. The discovery of leptin in 1994 and the subsequent elaboration of adipose tissue as an active endocrine organ transformed obesity from a purely behavioural to a neuro-endocrine-metabolic disease construct.(14) The WHO's 1997/2000 obesity consultations formalised BMI-based classification, and the disease-model framing has since been reinforced by the 2013 American Medical Association resolution and subsequent clinical practice guidelines, culminating in the current era of highly effective incretin-based pharmacotherapy.(1,7) The convergence of these two historical trajectories — an ancient Ayurvedic Shodhana-based paradigm and a modern endocrine-metabolic paradigm — forms the intellectual backdrop against which the index clinical study should be interpreted.

## Anatomy, Physiology, and Pathophysiology

### Adipose Tissue as an Endocrine Organ

Adipose tissue is distributed in subcutaneous and visceral depots and is now recognised as a dynamic endocrine organ that secretes adipokines (leptin, adiponectin, resistin), pro-inflammatory cytokines (TNF-α, IL-6, MCP-1), and free fatty acids, all of which regulate systemic energy homeostasis, appetite signalling via the hypothalamic arcuate nucleus, and insulin sensitivity in liver, muscle, and adipose tissue itself.(15,16) In obesity, adipocyte hypertrophy, relative hypoxia, and macrophage infiltration (a shift toward the pro-inflammatory M1 phenotype) generate a state of chronic low-grade inflammation that impairs insulin-receptor substrate (IRS) signalling through serine phosphorylation mediated by JNK, IKKβ, and PKC pathways, producing systemic insulin resistance — the pathophysiological hinge linking obesity to type 2 diabetes, dyslipidaemia, and cardiovascular disease.(15,17,18) Leptin resistance, arising from impaired transport across the blood–brain barrier and downstream JAK-STAT signalling defects, blunts the normal satiety response despite elevated circulating leptin, perpetuating positive energy balance.(19,20)

### Ayurvedic Physiological Model: Agni, Meda Dhatu, and Medovaha Srotas

Ayurvedic physiology situates fat metabolism within the sequential Dhatu-Poshana (tissue-nourishment) cascade, in which Rasa Dhatu, processed by Dhatvagni at each successive level, ultimately nourishes Meda Dhatu. Sthaulya arises when Medodhatvagni Mandya (a weakened metabolic fire specific to fat tissue) permits

disproportionate, qualitatively abnormal accumulation of Meda while simultaneously starving other Dhatus (particularly Mamsa and later tissues) of adequate nourishment — the classical paradox of the obese patient being both over-nourished in fat and functionally malnourished in Bala (strength) and later Dhatus.(11,21) Concurrently, excess Meda mechanically and functionally obstructs the normal channels (Srotas) through which Vata moves; the resultant localised Vata vitiation stimulates Agni erratically, producing the paradoxical hyperphagia (Kshudra Atisara/excessive hunger) frequently seen clinically in Sthaulya patients, which in turn perpetuates the cycle of over-eating and further Meda accumulation.(11) Concomitantly, impaired Agni at multiple levels generates Ama (a toxic, incompletely metabolised product) that further obstructs Medovaha Srotas — a self-reinforcing pathological loop (Sanga type of Srotodushti) that is directly analogous, at a systems level, to the inflammatory–metabolic vicious cycle described in modern adipose-tissue biology.

**Comparative Pathophysiological Correlation**

A useful heuristic bridge between the two systems equates Kapha-Meda Dushti with the biomedical construct of adipocyte hypertrophy, chronic low-grade inflammation, and impaired lipid clearance; Medodhatvagni Mandya with impaired lipolytic/lipogenic enzymatic regulation and insulin resistance; and Ama with circulating pro-inflammatory mediators and dysfunctional metabolites. While this correlation is heuristically useful for framing research questions, it should not be over-interpreted as one-to-one biochemical equivalence, and this remains an important conceptual gap addressed later in this review (Section 13).

**Materials and methodology**

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**Etiology and Risk Factors**

**Conventional Risk Factors**

- Excess caloric intake relative to expenditure, particularly energy-dense, ultra-processed diets
- Sedentary behaviour and declining occupational/leisure physical activity
- Genetic and epigenetic predisposition (polygenic risk, rare monogenic syndromes)
- Endocrine contributors: hypothyroidism, Cushing's syndrome, polycystic ovarian syndrome
- Psychosocial factors: chronic stress, depression, disordered sleep, and certain psychotropic medications
- Socio-economic and environmental determinants: urbanisation, obesogenic food environments, and reduced active transport

Multiple bidirectional relationships complicate causal attribution: psychological distress both contributes to and results from obesity, and sleep disturbance similarly participates in a reinforcing cycle with adiposity and metabolic dysfunction.(22,23)

**Ayurvedic Etiological Framework (Nidana)**

Classical Nidana for Sthaulya centres on Ati Santarpana — excessive intake of Guru, Madhura, Sheeta, Snigdha Ahara — combined with Avyayama, Divaswapna, Achintana (lack of mental/physical exertion), Harsha Nitya (excessive contentment/lack of stress), and Beeja Swabhava (hereditary predisposition). The index thesis population reflected this classical profile empirically: patients demonstrated a predominance of Madhura Rasa and Guru Guna dietary patterns, sedentary lifestyles, Kapha-predominant Prakriti/Vikriti, Manda Agni, and Sthula Akriti, corroborating the classical Nidana model in a contemporary clinical sample.

**Demographic Profile Observed in the Index Study**

Among the 20 enrolled participants, the study population was predominantly female and concentrated in the younger adult age bracket (18–30 years), with a majority reporting sedentary occupations (student/office work), urban residence, graduate/post-graduate education, and middle socio-economic status. Kapha Dosha predominance, Vata-Kapha Prakriti, Medovaha Srotas and Mamsa-Medo Dushya involvement, and Sanga-type Srotodushti were the most frequent Ayurvedic diagnostic findings, and all cases were classified as Krichra Sadhya (difficult to cure), consistent with the chronic, relapsing character of obesity recognised in both systems of medicine.

**Clinical Features**

**Conventional Clinical Presentation**

- Progressive weight gain with increased BMI and waist/hip circumference
- Exertional dyspnoea and reduced exercise tolerance
- Excessive perspiration and heat intolerance
- Acanthosis nigricans, a cutaneous marker of underlying insulin resistance
- Joint pain/laxity, particularly of weight-bearing joints
- Menstrual irregularities and, in men, hypogonadism-related symptoms
- Psychosocial features: low self-esteem, social withdrawal, and mood disturbance

**Classical Ayurvedic Clinical Features (Lakshana) and Diagnostic Criteria Used in the Index Study**

Classical texts describe eight cardinal features of Sthaulya (Ati Sthaulya Lakshana), including Chalasphikodarastana (pendulous, flabby movement of buttocks, abdomen, and breast on exertion), Ayathopachaya (disproportionate tissue development), Anga-Sada (lassitude of limbs), Kshudra-Swasa (exertional breathlessness), Kshudra Atisara (excessive hunger), Swedadhikya (excessive sweating), Daurgandhya (foul body odour), and Alasya (lethargy). The index thesis operationalised five of these as graded (0–4) diagnostic and outcome criteria — Chalasphikudarasthana, Alasya, Dourbalya, Kshudraswasa, and Swedadhikya — allowing semi-quantitative tracking of symptom severity across the four study time points, an approach that mirrors, in principle, the use of patient-reported outcome measures in conventional obesity trials.

**Diagnostic Methods**

**Body Mass Index (BMI) and Its Classification**

BMI (weight in kilograms divided by height in metres squared) remains the most widely used screening tool

because of its simplicity, despite not directly measuring adiposity or fat distribution.(1,24) WHO and Asia-Pacific/Indian cut-offs differ materially because of the recognised propensity of South Asian populations to develop metabolic complications at lower absolute BMI values.(24,25)

**Table 1. WHO and Asian/Indian BMI Classification of Overweight and Obesity**

| Classification | WHO BMI (kg/m²) | Asian/Indian BMI (kg/m²) |
|---|---|---|
| Underweight | < 18.5 | < 18.5 |
| Normal | 18.5 – 24.9 | 18.5 – 22.9 |
| Overweight | 25.0 – 29.9 | 23.0 – 24.9 |
| Obese Class I | 30.0 – 34.9 | 25.0 – 29.9 |
| Obese Class II | 35.0 – 39.9 | ≥ 30.0 |
| Obese Class III | ≥ 40.0 | — |

The index study enrolled patients with BMI between 23.1 and 35 kg/m², reflecting the Asian-adjusted overweight-to-obese range and thereby appropriately targeting the population at greatest metabolic risk according to regional cut-offs.

**Anthropometric and Body-Composition Indices**

Waist circumference and waist–hip ratio provide more reliable prediction of cardiometabolic risk than BMI alone by capturing central/visceral adiposity.(24) Bio-impedance analysis, dual-energy X-ray absorptiometry (DEXA), and CT/MRI-based visceral fat quantification represent progressively more precise but more resource-intensive modalities used mainly in research settings.

**Biochemical and Metabolic Work-up**

Standard biochemical assessment includes a fasting lipid profile (total cholesterol, LDL, HDL, VLDL, triglycerides), fasting glucose/HbA1c, thyroid function, and, where indicated, liver function tests to screen for non-alcoholic fatty liver disease. The index thesis used the complete fasting lipid panel as its principal biochemical outcome measure, consistent with standard clinical practice for metabolic risk stratification in obesity.

**Ayurvedic Diagnostic Assessment**

Ayurvedic diagnosis integrates Ashtavidha Pariksha (eight-fold clinical examination: Nadi, Mala, Mutra, Jihva, Shabda, Sparsha, Druk, Akriti) with Dashavidha Pariksha (ten-fold constitutional assessment: Prakriti, Vikriti, Sara, Samhanana, Pramana, Satmya, Satva, Vaya, Vyayama Shakti, Aahar Shakti) and disease-specific evaluation of Dosha, Dushya, Srotas, Srotodushti, Udbhava Sthana, and Vyakta Sthana. In the index study, this comprehensive assessment identified Sthula Akriti, Kapha Vikriti, and Vata-Kapha Prakriti as the dominant constitutional pattern, providing a structured, reproducible diagnostic framework analogous in intent, if not in ontology, to conventional metabolic phenotyping.

Conventional Management

**Lifestyle Intervention**

First-line management remains structured caloric restriction (typically a 500–750 kcal/day deficit), increased physical activity (≥150 minutes/week of moderate-intensity exercise), and behavioural therapy, which together produce modest (3–5%) but clinically meaningful weight loss and reduce progression to type 2 diabetes.(1,26)

**Pharmacotherapy**

The pharmacological landscape has been transformed by GLP-1 and dual GIP/GLP-1 receptor agonists. In the STEP trials, semaglutide 2.4 mg weekly produced a mean weight change of −14.9% versus −2.4% with placebo at 68 weeks.(7) Head-to-head data (SURMOUNT-versus-STEP comparative trials) show tirzepatide superior to semaglutide, with mean weight reductions of −20.2% versus −13.7% at 72 weeks and correspondingly greater reduction in waist circumference (−18.4 cm versus −13.0 cm).(8,9) Older agents (orlistat, naltrexone-bupropion, phentermine-topiramate, liraglutide 3.0 mg) remain available but produce comparatively modest weight loss (5–10%).(27) Adverse effects of incretin-based therapy are predominantly gastrointestinal (nausea, vomiting, diarrhoea), and durability of benefit is contingent on continued treatment, with substantial weight regain typically observed after discontinuation.(7,10)

**Bariatric and Metabolic Surgery**

Bariatric surgery (sleeve gastrectomy, Roux-en-Y gastric bypass) remains the most effective and durable intervention for severe obesity (BMI ≥ 40, or ≥ 35 with comorbidity), producing sustained weight loss of 25–35% and marked improvement or remission of type 2 diabetes, though it carries peri-operative risk and requires lifelong nutritional follow-up.

Limitations Driving Interest in Integrative Approaches

Despite these advances, cost, accessibility, adverse-effect burden, and the need for indefinite pharmacological maintenance mean that most people with obesity worldwide do not have access to, or do not sustain, effective modern therapy. This treatment gap is the principal rationale offered in the literature — and in the index thesis itself — for evaluating structured, low-cost, integrative Ayurvedic protocols such as Vamana Karma with Pathya Ahara and Yoga.

**Ayurvedic Perspective**

**Therapeutic Rationale for Vamana Karma in Sthaulya**

Vamana Karma, classically indicated for Kapha-predominant disorders, is proposed to act in Sthaulya through Kapha-Meda Shamana (pacification of vitiated Kapha and Meda), Srotoshodhana (clearance of obstructed Medovaha Srotas), and secondary Agnideepana (rekindling of digestive-metabolic fire) once the obstructing Dosha-Dushya complex is eliminated.(11,28) The Samanya-Vishesha Siddhanta underlies the selection of emetic and Kapha-hara Vamanopaga Dravyas even though Sthaulya is not itself, in absolute terms, a pure Kapha Vriddhi condition — a therapeutic extension that several classical commentators and modern reviewers regard as requiring cautious patient selection given documented contraindication of Vamana in markedly severe (Atisthaulya) cases.(13,29)

**The Index Study Protocol**

The thesis protocol operationalised the classical sequence in a structured, reproducible manner across 20 patients recruited from a university teaching hospital (open-label,

single-arm design; treatment duration 30–35 days; total observation 60 days):

- Deepana-Pachana (3–5 days): Chitrakadi Vati and Amapachak Vati to kindle Agni prior to Shodhana
- Snehapana: internal oleation using Murchhita Go-Ghrita, prepared classically with Haritaki, Bibhitaki, Amalaki, Musta, Haridra, and Daruharidra as Kalka Dravyas, processed to attainment of standard Sneha Siddhi Lakshana (Phenashanti, Nirmalata, Gandha Parivartana, Varti-Sadrusha Kalka)
- Vamana Karma proper, assessed for Samyak Yoga using Laingiki, Maniki, and Antiki Shuddhi criteria (vomitus characteristics, bout/quantity counts, and symptomatic resolution)
- Samsarjana Krama (graded dietary reintroduction) to restore Agni safely after Shodhana
- Pathya Ahara: a structured low-Guru, low-Madhura diet (e.g., boiled Moong/Channa for breakfast, Jowar roti with seasonal vegetables for lunch)
- Yoga: Sukshma Kriya (10 minutes) and graded Suryanamaskar (starting at 2 rounds, progressively increased)
- Shamana Aushadhi: Varunadi Kashaya for maintenance and prevention of Sthaulya recurrence post-Shodhana

This design allowed the study to test the combined effect of Shodhana, Ahara, and Vihara rather than isolating any single modality — a pragmatic, real-world protocol consistent with classical Ayurvedic practice but one that, as discussed in Section 12, limits mechanistic attribution of the observed benefit to any one component.

**Rationale for Varunadi Kashaya and Yoga as Adjuncts**

Varunadi Kashaya is classically formulated with Medohara (fat-reducing) and Lekhana (scraping) properties intended to prevent recurrence after Shodhana; its constituent Saponins are reported in pharmacological literature to bind bile acids and cholesterol, thereby reducing enterohepatic cholesterol reabsorption — a proposed mechanism paralleling the lipid-lowering rationale of bile-acid-sequestrant pharmacotherapy.(30) Yoga, particularly Suryanamaskar, combines dynamic musculoskeletal exertion with coordinated breath control, and has independent evidence of Agnivardhana (enhancement of digestive-metabolic efficiency) and anthropometric benefit, discussed further in Section 12.

**Recent Advances and Emerging Technologies**

**Conventional/Biomedical Advances**

- Dual and triple incretin receptor agonists (GLP-1/GIP, GLP-1/GIP/glucagon) achieving weight loss approaching surgical benchmarks(8,9)
- Continuous glucose and metabolic monitoring integrated with digital health platforms for individualised titration of lifestyle and pharmacological therapy
- Endoscopic bariatric procedures (intragastric balloons, endoscopic sleeve gastroplasty) as intermediate-invasiveness options
- Microbiome-targeted interventions and precision-nutrition approaches informed by genomic and metabolomic profiling

**Emerging Research in Ayurvedic and Integrative Obesity Management**

- Systematic reviews and meta-analyses of yoga in overweight/obese adults, showing consistent benefit on glycaemic markers (HbA1c, HOMA-IR) and more variable but generally favourable effects on BMI and anthropometry(31,32,33)
- Molecular studies demonstrating that yoga-based lifestyle intervention modulates gene expression related to inflammation and oxidative stress in obese Indian adults(34)
- CCRAS multicentric trials evaluating standardised Ayurvedic formulations (e.g., Vyoshadi Guggulu with Haritaki Churna) for obesity and dyslipidaemia, providing larger-sample safety and efficacy data than single-centre thesis studies(35)
- Growing application of validated statistical frameworks (repeated-measures ANOVA, Friedman/Wilcoxon non-parametric testing with Bonferroni correction) within Panchakarma research, as exemplified by the index thesis, improving the methodological rigour with which Ayurvedic outcome data are analysed

Despite these advances, integrative obesity research remains constrained by the general absence of standardised, internationally accepted outcome measures for Ayurvedic constructs (e.g., grading of Alasya or Chalasphikudarasthana), which limits cross-study comparability and meta-analytic pooling.

**Critical Review of Published Literature: Results of Vamana Karma Followed by Pathya-Apathya in Sthaulya**

**Demographic and Clinical Profile of the Index Study Population**

The index single-arm thesis study (n = 20; Parul Institute of Ayurved, Parul University; open-label design; 30–35 days of treatment with 60-day total follow-up) enrolled predominantly young (18–30 years), female, urban, sedentary participants with BMI 23.1–35 kg/m², a demographic pattern that closely mirrors the NFHS-5 finding of disproportionately rising obesity among Indian women and younger urban cohorts.(4,5) Kapha-Vata Prakriti, Kapha Vikriti, Manda Agni, and Madhura-Rasa/Guru-Guna dietary predominance were near-universal findings, empirically corroborating the classical Nidana model of Sthaulya.

**Subjective Symptom Outcomes**

Table 2 summarises the severity distribution of the five graded subjective parameters across the four assessment points. All parameters showed a shift toward lower severity grades by Day 60, but the pattern and statistical robustness of improvement differed materially between symptoms.

**Table 2. Proportion of Patients with No/Least Severity Symptoms at Baseline (BT) versus Day-60 Follow-up (D60)**

| Subjective Parameter | % No/Least | % No/Least | Friedman $\chi^2$ (df = 3) | p-value |
|---|---|---|---|---|
| | Severity at BT | Severity at D60 | | |
| Chalasphikudarasthana (flabbiness) | 10.0% | 80.0% | 47.44 | < 0.001 |

| | | | | |
|---|---|---|---|---|
| Alasya (lethargy) | 25.0% | 100.0% | 46.01 | < 0.001 |
| Dourbalya (weakness) | 85.0% | 100.0% | 11.18 | 0.011 |
| Swedadhikya (excess sweating) | 35.0% | 100.0% | 33.49 | < 0.001 |
| Kshudraswasa (breathlessness) | 60.0% | 95.0% | 24.77 | < 0.001 |

Post-hoc Bonferroni-corrected Wilcoxon analysis revealed that Alasya improved significantly at every successive interval (BT-AV, AV-AT, AT-D60), indicating a smooth, continuous therapeutic trajectory, whereas Chalasphikudarasthana showed no significant early change (BT versus AV, $p = 0.157$) but highly significant later improvement, consistent with the biologically plausible expectation that visible reduction in tissue flabbiness lags behind the acute effects of Shodhana and instead accrues with sustained Pathya Ahara and Yoga during the follow-up phase. Dourbalya was the only parameter for which the overall Friedman test, though significant, did not survive pairwise Bonferroni correction at any interval — an important internal inconsistency suggesting either a genuinely small effect size for this symptom or inadequate statistical power ($n = 20$) to detect it at the corrected threshold. Swedadhikya and Kshudraswasa showed a distinctive biphasic pattern, with significant change concentrated in the AV-to-AT and AT-to-D60 intervals respectively, implying that active Shodhana and the subsequent Pathya-Yoga maintenance phase each contribute differentially to distinct symptom domains.

**Objective Anthropometric Outcomes**

Table 3 presents the descriptive statistics for the principal anthropometric parameters across the four time points, and Figure 1 depicts the corresponding weight and BMI trajectory.

**Table 3. Descriptive Statistics for Objective Anthropometric Parameters Across Assessment Time Points (n = 20, Mean ± SD)**

| Parameter | BT | AV | AT | D60 | RM-ANOVA F (df 3,57) | Partial $\eta^2$ |
|---|---|---|---|---|---|---|
| Body Weight (kg) | 70.17 ± 10.42 | 67.80 ± 10.00 | 66.40 ± 9.61 | 64.90 ± 9.08 | 140.19*** | 0.881 |
| BMI (kg/m²) | 29.60 ± 3.41 | 28.60 ± 3.26 | 28.12 ± 3.24 | 27.34 ± 3.24 | 143.57*** | 0.883 |
| Chest Circumference (cm) | 70.88 ± 33.56 | 69.69 ± 33.18 | 68.70 ± 33.08 | 66.85 ± 31.89 | 18.59*** | 0.495 |
| Waist Circumference (cm) | 66.15 ± 29.19 | 64.90 ± 28.89 | 63.68 ± 28.53 | 62.75 ± 28.32 | 95.00*** | 0.833 |
| Pelvic Circumference (cm) | 79.10 ± 36.77 | 77.55 ± 36.78 | 76.25 ± 36.49 | 75.05 ± 36.04 | 112.31*** | 0.855 |
| Mid-Arm Circumference RT (cm) | 26.53 ± 9.00 | 25.70 ± 8.86 | 25.03 ± 8.50 | 24.50 ± 8.40 | 43.20*** | 0.695 |
| Mid-Thigh Circumference RT (cm) | 47.59 ± 13.46 | 46.70 ± 13.22 | 45.85 ± 13.17 | 44.95 ± 12.87 | 84.66*** | 0.817 |

*** $p < 0.001$. *RM-ANOVA = one-way repeated-measures analysis of variance.*

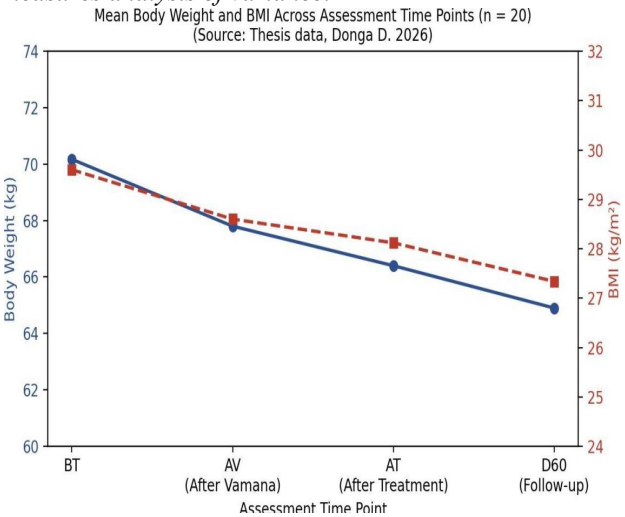


***Figure 1. Mean Body Weight and BMI Across Assessment Time Points (n = 20)***

Post-hoc Bonferroni-corrected paired t-tests confirmed that every pairwise interval comparison for weight, BMI, waist, and pelvic circumference reached significance ($p < 0.001$), with the single largest incremental reduction in weight occurring between AT and D60 relative to BT (mean cumulative difference 5.265 kg), indicating that benefit continued to accrue during the post-treatment Pathya-Yoga maintenance phase rather than plateauing immediately after Vamana Karma. Effect sizes were largest for weight and BMI ($\eta^2 \approx 0.88$) and for central adiposity measures (waist $\eta^2 = 0.833$; pelvis $\eta^2 = 0.855$), while chest circumference showed a comparatively modest, though still highly significant, effect ($\eta^2 = 0.495$) — a differential pattern consistent with the classical Ayurvedic expectation that Meda reduction is most pronounced in Madhyama Shareera (central trunk) regions where Kapha-Meda accumulation is greatest. Notably, for mid-arm and mid-thigh circumference, the AT-versus-D60 interval was not statistically significant after correction, suggesting a slower rate of peripheral (limb) fat reduction during follow-up compared with central adiposity.

**Lipid Profile Outcomes**

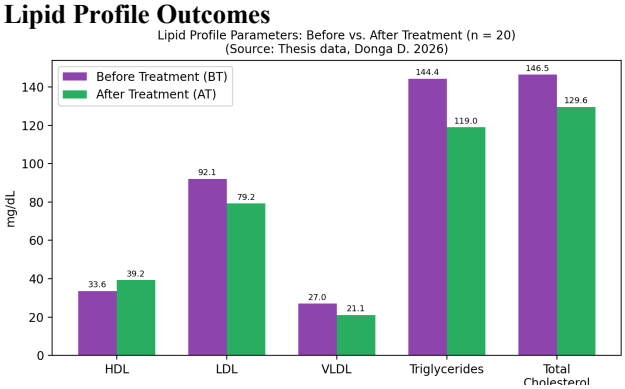


**Figure 2. Lipid Profile Parameters Before and After Treatment (n = 20) Table 4. Effect of Intervention on Lipid Profile (Paired t-test, BT vs. AT, n = 20)**

| Parameter | BT (Mean ± SD) | AT (Mean ± SD) | Mean Difference | t-value | p-value |
|---|---|---|---|---|---|
| HDL-Cholesterol (mg/dL) | 33.62 ± 4.14 | 39.23 ± 4.04 | +5.61 | −21.18 | < 0.001 |
| LDL-Cholesterol (mg/dL) | 92.13 ± 25.80 | 79.23 ± 22.58 | −12.91 | 7.64 | < 0.001 |
| VLDL-Cholesterol (mg/dL) | 27.02 ± 11.74 | 21.09 ± 9.01 | −5.93 | 6.76 | < 0.001 |
| Triglycerides (mg/dL) | 144.37 ± 47.28 | 119.00 ± 39.73 | −25.37 | 9.98 | < 0.001 |
| Total Cholesterol (mg/dL) | 146.53 ± 33.33 | 129.60 ± 31.40 | −16.93 | 6.24 | < 0.001 |

All five lipid parameters changed significantly in the favourable direction. The magnitude of HDL increase (~16.7% relative to baseline) and triglyceride reduction (~17.6% relative to baseline) is broadly comparable to, albeit smaller in absolute terms than, the lipid benefits reported with structured lifestyle intervention in conventional obesity trials, and considerably more modest than the metabolic improvements achieved with incretin-based pharmacotherapy.(7,26) This is an expected and clinically appropriate finding: the index intervention should be interpreted as a lifestyle-anchored, low-risk metabolic modulator rather than a substitute for pharmacotherapy in patients with severe dyslipidaemia.

**Comparison with Other Published Ayurvedic Studies on Sthaulya**

Table 5 situates the index study's findings within the broader published literature on Panchakarma-based management of Sthaulya.

**Table 5. Comparative Summary of Published Ayurvedic Clinical Studies on Sthaulya/Obesity**

| Study (First Author, Year) | Design / Sample | Intervention | Key Outcome |
|---|---|---|---|
| JAHM case report, 2021(37) | Single case (Atisthoulya) | Snehapana (Varunadi Ghrita) + Vamana with Madanphaladi Yoga | 7 kg weight reduction despite classical caution against Vamana in severe obesity |
| Alodaria et al., 2017(38) | Single case report | Snehana, Swedana, Vamana, Virechana, Basti, Udvartana + Varunadi Kwatha | 9.7 kg weight loss; BMI 37.51→34.34 |
| CCRAS multicentric trial(35) | Open-label, n = 306 | Vyoshadi Guggulu + Haritaki Churna (Shamana only, no Shodhana) | Clinically safe; efficacy in obesity and dyslipidaemia without Panchakarma |
| Agnimanthadi/Vashpa Svedana study(39) | Open-label, n = 80 (67 completers) | Agnimanthadi compound + Vashpa Svedana, 7 weeks + 2-month follow-up | Significant reduction in anthropometric and lipid parameters |

Cross-study comparison reveals a consistent qualitative signal — Vamana- and Shodhana-based protocols combined with dietary and lifestyle modification produce measurable weight and symptom reduction across heterogeneous small samples and case reports — but also exposes a critical methodological inconsistency: nearly all published Ayurvedic studies on Vamana Karma in Sthaulya, including the index thesis, are single-arm or single-case designs without concurrent control or comparator groups. This precludes any conclusion about effect size relative to no-treatment, placebo, or standard-of-care lifestyle intervention alone, and it introduces substantial risk of regression-to-the-mean and non-specific (Hawthorne, expectation, and natural-history) effects contributing to the observed improvement. Additionally, formulation heterogeneity (different Kalka Dravyas for Snehapana, different emetic Yogas, different Shamana Kashayas) across studies makes it difficult to attribute benefit to any single standardised protocol, a limitation shared with much of the broader Panchakarma literature.(35,36,37,38,39)

**Comparison with Yoga-Focused Biomedical Literature**

Independent systematic reviews of yoga in overweight/obese populations (30 RCTs, n = 2,689) report consistent benefit on glycaemic markers (HbA1c, HOMA-IR) but more heterogeneous and generally smaller effects on BMI directly, with benefit often contingent on yoga being combined with additional physical activity or dietary counselling.(31,32) This is directly consonant with the index thesis design, in which Yoga (Suryanamaskar, Sukshma Kriya) was deployed as one component of a multi-modal package rather than a stand-alone intervention — reinforcing the inference that the anthropometric benefit observed cannot be attributed to Yoga alone, and likely reflects the additive or synergistic effect of Shodhana, Ahara, and Vihara acting in combination, as the classical Ayurvedic model predicts but as the study design cannot statistically isolate.

- **Internal Consistency and Discrepancies Within the Index Study Itself**
- Dourbalya (weakness) showed a significant omnibus Friedman result but no individually significant pairwise interval — an inconsistency that should temper strong claims of "uniform" symptomatic benefit across all five subjective parameters.
- Mid-arm and mid-thigh circumference reductions were not statistically significant in the AT-to-D60 interval, in contrast to the continued significant reduction seen for weight, BMI, waist, and pelvis in the same interval — indicating that central adiposity responds more robustly and more durably to the Pathya-Yoga maintenance phase than peripheral limb adiposity.
- The thesis discussion notes that patients with higher baseline BMI showed better absolute improvement, a finding that, if replicated, would have direct implications for patient selection but which in a sample of only 20 is highly susceptible to regression-to-the-mean and should not be over-interpreted as a genuine dose-response or predictive biomarker at this stage.

**Research Gaps**

**Table 6. Key Research Gaps Identified from the Critical Review**

| Domain | Identified Gap |
|---|---|
| Study design | Absence of randomised, controlled, or even active-comparator arms across nearly all published Vamana-Sthaulya studies, including the index thesis, precluding causal attribution of benefit |
| Sample size / power | Typical sample sizes of 1–20 participants are inadequate to detect moderate effects for secondary/subjective parameters (e.g., Dourbalya) at corrected significance thresholds |
| Component isolation | Multi-modal protocols (Shodhana + Ahara + Yoga + Shamana) cannot distinguish the independent contribution of Vamana Karma from Pathya Ahara or |

| | |
|---|---|
| | Yoga; factorial or sequential-comparison designs are needed |
| Standardisation | Wide inter-study variation in Snehapana media, emetic Yoga, Kalka Dravyas, and Shamana Kashaya formulations limits reproducibility and meta-analytic pooling |
| Outcome harmonisation | No internationally validated, psychometrically tested instrument exists for grading Ayurvedic subjective parameters (e.g., Chalasphikudarasthana), limiting comparability with biomedical patient-reported outcome measures |
| Mechanistic evidence | Absence of molecular/biochemical correlates (adipokines, inflammatory markers, gut microbiome) linking Kapha-Meda Shamana concepts to measurable biological pathways |
| Follow-up duration | Most studies, including the index thesis (60 days total), have follow-up too short to establish durability of weight loss or recurrence rates beyond the well-documented high relapse rate seen in conventional obesity management |
| Comparative effectiveness | No head-to-head trials comparing Ayurvedic Shodhana-based protocols against structured lifestyle intervention or pharmacotherapy (e.g., GLP-1 agonists) using comparable outcome metrics |
| Safety reporting | Systematic, standardised adverse-event reporting for Vamana Karma (aspiration risk, electrolyte disturbance, contraindication management in Atisthoulya) is inconsistently documented across the published literature |

**Future Scope**

- Multi-centric, adequately powered randomised controlled trials comparing Vamana Karma + Pathya Ahara + Yoga against standard lifestyle advice and, where feasible, against pharmacotherapy, using pre-registered protocols and standardised outcome sets
- Sequential/factorial designs to isolate the individual contribution of Vamana Karma, Pathya Ahara, Yoga, and Shamana Aushadhi to the composite benefit observed
- Incorporation of biochemical and molecular markers (adipokines, inflammatory cytokines, insulin resistance indices, gut microbiome profiling) to establish mechanistic plausibility for Kapha-Meda Shamana concepts
- Extended follow-up (≥ 6–12 months) to assess durability of weight loss and recurrence of Sthaulya after Shodhana-based intervention
- Development and psychometric validation of standardised Ayurvedic patient-reported outcome instruments to enable cross-study and meta-analytic comparability
- Cost-effectiveness and implementation research examining the scalability of Panchakarma-based obesity management within resource-constrained public health systems, particularly relevant given the rising burden of obesity documented in NFHS-5 data
- Integrative-medicine trials exploring Ayurvedic Shodhana-Shamana protocols as adjuncts to, rather than substitutes for, evidence-based pharmacotherapy in appropriately selected patients

**Conclusion**

Obesity (Sthaulya) is a chronic, relapsing, multi-system disease of rapidly increasing global and Indian prevalence, for which conventional pharmacotherapy — while highly effective — remains expensive, adverse-effect prone, and dependent on indefinite continuation for sustained benefit. Ayurveda offers a classically coherent, biologically plausible, low-cost alternative framework centred on Vamana Karma, Pathya Ahara, and Yoga, and the index single-arm clinical study reviewed here provides encouraging, statistically robust evidence that this combined protocol produces significant reduction in body weight (70.17→64.90 kg), BMI (29.60→27.34 kg/m²), central and peripheral circumferences, and an unfavourable-to-favourable shift in lipid profile (HDL +5.6 mg/dL; triglycerides −25.4 mg/dL), together with meaningful relief of Ayurveda-specific subjective symptoms, with benefits sustained at 60-day follow-up.

However, these findings must be interpreted with appropriate caution. The absence of a control or comparator arm, the small sample size (n = 20), the multi-component nature of the intervention (precluding isolation of Vamana Karma's independent contribution), and the short overall observation period are significant limitations acknowledged even within the index thesis itself. The broader published Ayurvedic literature on Vamana Karma in Sthaulya consists predominantly of similarly small, uncontrolled studies and single case reports, meaning the qualitative consistency of positive findings across studies does not yet amount to high-certainty evidence by conventional evidence-hierarchy standards.

Take-home message: Vamana Karma followed by Pathya Ahara and Yoga represents a promising, safe, and mechanistically plausible integrative approach to the management of Sthaulya, supported by statistically significant anthropometric, biochemical, and symptomatic improvement in the available clinical data. Its promotion to a validated, guideline-level therapeutic recommendation, however, awaits confirmation through adequately powered randomised controlled trials with active comparators, standardised protocols, extended follow-up, and mechanistic biomarker correlation — research priorities that this review identifies as both necessary and, given the scale of the global obesity burden, urgent.

**References**

1. World Health Organization. Obesity and overweight [Internet]. Geneva: WHO; 2024 [cited 2026 Jul 19]. Available from: https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight
2. NCD Risk Factor Collaboration (NCD-RisC). Worldwide trends in underweight and obesity

from 1990 to 2022: a pooled analysis of 3663 population-representative studies with 222 million children, adolescents and adults. Lancet. 2024;403(10431):1027-50.
3. World Obesity Federation. Prevalence of obesity [Internet]. London: World Obesity Federation; 2024 [cited 2026 Jul 19]. Available from: https://www.worldobesity.org/about/about-obesity/prevalence-of-obesity
4. Kshatriya GK, Acharya SK. Prevalence of overweight and obesity among Indian adults: a secondary data analysis of National Family Health Survey rounds 4 and 5. Adv Ther. 2023.
5. Luhar S, Mallinson PAC, Clarke L, Kinra S. Trends in the socioeconomic patterning of overweight/obesity in India: a repeated cross-sectional study using nationally representative data. BMJ Open. 2018.
6. Singh A, et al. Abdominal obesity in India: analysis of the National Family Health Survey-5 (2019-2021) data. Lancet Reg Health Southeast Asia. 2023.
7. Wilding JPH, Batterham RL, Calanna S, et al. Once-weekly semaglutide in adults with overweight or obesity (STEP 1). N Engl J Med. 2021;384:989-1002.
8. Jastreboff AM, Aronne LJ, Ahmad NN, et al. Tirzepatide once weekly for the treatment of obesity (SURMOUNT-1). N Engl J Med. 2022;387:205-16.
9. Garvey WT, Frias JP, Jastreboff AM, et al. Tirzepatide as compared with semaglutide for the treatment of obesity. N Engl J Med. 2025.
10. Institute for Clinical and Economic Review. Semaglutide and tirzepatide for obesity: effectiveness and value; draft evidence report. Boston: ICER; 2025 Sep.
11. Charaka. Charaka Samhita, Sutrasthana, Ashtouninditiya Adhyaya 21. Sharma P, editor/translator. Varanasi: Chowkhamba Sanskrit Series; 1976. p.144-378.
12. Sushruta. Sushruta Samhita, Sutrasthana 15, 24. Varanasi: Chaukhambha Sanskrit Sansthan.
13. Yashvant K, et al. Overview of Sthaulya (obesity) management in Ayurveda. J Ayurveda Integr Med Sci. 2024.
14. Zhang Y, Proenca R, Maffei M, Barone M, Leopold L, Friedman JM. Positional cloning of the mouse obese gene and its human homologue. Nature. 1994;372:425-32.
15. Chandrasekaran S, et al. The signaling pathways in obesity-related complications. J Cell Commun Signal. 2024.
16. Goossens GH, Blaak EE. Unravelling the pathophysiology of obesity-related insulin resistance. Function. 2020;1(2):zqaa021.
17. Kang YE, et al. The roles of adipokines, proinflammatory cytokines, and adipose tissue macrophages in obesity-associated insulin resistance. Mediators Inflamm. 2016.
18. Boutari C, Mantzoros CS. Obesity, insulin resistance, and type 2 diabetes: associations and therapeutic implications. Metabolism. 2020.
19. Chandel S, et al. Leptin signaling and its relationship with obesity-induced insulin resistance: a bioinformatics-assisted review. Gene Expr. 2025.
20. Rabiee A, Hossain MA, Poojari A. Adipose tissue insulin resistance: a key driver of metabolic syndrome pathogenesis. Biomedicines. 2025;13(10):2376.
21. Wardle J, Chida Y, Gibson EL, Whitaker KL, Steptoe A. Stress and adiposity: a meta-analysis of longitudinal studies. Obesity (Silver Spring). 2011.
22. Vagbhata. Ashtanga Hridaya, Sutrasthana, Shodhanadi Samgraha Adhyaya. Varanasi: Chaukhambha Sanskrit Series.
23. Madhavakara. Madhava Nidana, Medoroga Nidana Adhyaya. Varanasi: Chaukhambha Surbharati Prakashan.
24. World Health Organization. Appropriate body-mass index for Asian populations and its implications for policy and intervention strategies. Lancet. 2004;363(9403):157-63.
25. Misra A, Chowbey P, Makkar BM, et al. Consensus statement for diagnosis of obesity, abdominal obesity and the metabolic syndrome for Asian Indians. J Assoc Physicians India. 2009.
26. Look AHEAD Research Group. Cardiovascular effects of intensive lifestyle intervention in type 2 diabetes. N Engl J Med. 2013.
27. American Diabetes Association. 8. Obesity and weight management for the prevention and treatment of diabetes: Standards of Care in Diabetes-2026. Diabetes Care. 2026;49(Suppl 1):S166-S181.
28. Charaka. Charaka Samhita, Sutrasthana 23 (Vamana Vidhi). Varanasi: Chaukhambha Sanskrit Pratishthan.
29. Sharma R, et al. Vamana karma in Atisthoulya (severe obesity): a case report. J Ayurveda Holist Med. 2021.
30. Sharma PV. Dravyaguna Vijnana (Saponin-containing Medohara Dravyas). Varanasi: Chaukhambha Bharati Academy.
31. Caldwell AE, et al. The impact of yoga on components of energy balance in adults with overweight or obesity: a systematic review. Obes Sci Pract. 2022;8(4):437-53.
32. Author(s). Impact of yoga on cardiometabolic health in adults with overweight or obesity: a systematic review and meta-analysis of randomized controlled trials. PLOS Glob Public Health. 2026.
33. Caner N, Yüce G. The impact of yoga practices on body composition and vital signs in children and adolescents with obesity: a systematic review and meta-analysis. [Journal]. 2025.
34. Yadav R, et al. Transcriptional modulation of inflammation and aging in Indian obese adults following a 12-week yoga-based lifestyle

intervention: a randomized controlled trial. Front Physiol. 2022.
35. Central Council for Research in Ayurvedic Sciences. Effect of Vyoshadi Guggulu and Haritaki Churna in the management of Sthaulya with special reference to hyperlipidaemia: a multicentric open-label study. New Delhi: CCRAS.
36. Bahute PD, et al. Management of Sthoulya (obesity) through Vamana Karma - a case study. Int J Health Sci Res. 2020;10(7):xx-xx.
37. Author(s). Vamana Karma in Atisthoulya (severe obesity) - a case report. J Ayurveda Holist Med (JAHM). 2021.
38. Alodaria NP, et al. Ayurvedic management of Sthaulya (obesity): a case report. J Ayurveda Integr Med Sci. 2017;4:350-5.
39. Author(s). A clinical study on the role of Agnimanthadi compound and Vashpa Svedana in the management of Sthaulya (obesity). AYU. 2013;34(1).
40. Donga D. A clinical study to evaluate the efficacy of Vamana Karma followed by Pathya Ahara and Yoga in the management of Sthaulya [MD thesis]. Vadodara: Parul University, Parul Institute of Ayurved; 2026.