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AYURVEDIC MANAGEMENT OF OBESITY AND DYSLIPIDAEMIA: A CLINICAL REVIEW OF ANATOMICAL AND METABOLIC CHANGES

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ABSTRACT

Background and Objectives: Obesity and lipid disorders are growing global health concerns that are often linked to metabolic dysfunction and cardiovascular diseases. Ayurveda, the traditional system of medicine, provides a unique perspective on obesity, conceptualising it as *Medoroga* or *Sthoulya*, mainly resulting from the imbalance of *Kapha-Vata dosha* and *Medo Dhatu* (fat tissue). This review aims to evaluate the anatomical outcomes of Ayurvedic therapies in the management of obesity and dyslipidaemia, enabling a comparative analysis of treatment modalities and highlighting changes in fat distribution, body composition, and anthropometric parameters, as supported by clinical evidence.

Methods: A systematic search was done using PubMed, Scopus, the AYUSH Research Portal, and Google Scholar. Included clinical trials, observational studies, and case reports involving human participants that reported anatomical changes after Ayurvedic interventions. Both indexed and non-indexed articles from peer-reviewed or editorially reviewed Ayurvedic journals, if they reported outcomes like BMI, waist circumference, skinfold thickness, or fat distribution, were considered. Excluded studies that were limited to biochemical outcomes, animal models, or non-Ayurvedic treatments.

Qualitatively grouped anatomical outcomes into categories of body composition, fat distribution, and anthropometric measures. **Results:** A total of 25 studies were included, demonstrating favourable reductions in anatomical parameters such as BMI, body girth, and skinfold thickness following Ayurvedic interventions. **Discussion:** The evidence shows the potential of Ayurvedic therapies including herbal formulations, Panchakarma procedures, and dietary changes in improving body parameters related to obesity and dyslipidaemia. However, further high-quality, standardized clinical studies are required. No meta-analysis was conducted due to methodological variability.

KEYWORDS: Obesity, lipid disorders, *Medoroga*, *Sthoulya*, Ayurvedic anatomy.

INTRODUCTION

According to the World Health Organisation (WHO), overweight and obesity are defined as abnormal or excessive fat accumulation on the body that poses a relative risk to health. A body mass index (BMI) greater than 25 is classified as overweight, while a BMI over 30 is considered obese. In 2019, it was estimated that 5 million deaths from non-communicable diseases (NCDs) were attributed to higher-than-optimal BMI. The prevalence of obesity is rising around the world among both adults and children. From 1990 to 2022, the global rate of obesity in children and adolescents aged 5 to 19 years increased four times, from 2% to 8%. Among adults aged 18 years and above, this rate is more than doubled, rising from 7% to 16%.[1]

Obesity and dyslipidaemia result from the combined influence of factors such as sedentary lifestyle, unhealthy dietary habits, genetic predisposition, hormonal imbalances, underlying medical conditions, and long-term use of certain medications. Environmental factors, including urbanisation and chronic stress, also contribute significantly to their development and progression.

In Ayurvedic literature, these conditions correspond to *Medoroga* or *Sthoulya*, which are further described as *Santarpanajanya Vyadhi* (diseases caused by over-nourishment) in the *Charaka Samhita*, whereas *Acharya Sushruta* points out that poorly managed *Atisthoulya* can lead to severe health complications and premature mortality. Patho physiologically, *Medoroga* or *Sthoulya* occurs when the *Kapha* and *Vata doshas* become aggravated. It is also a result of impaired *Jataragni* (digestive and metabolic fire), which in turn leads to *Mandaagni* and causes improper conversion of *Ahara Rasa* (nutrient essence) into healthy

Dhatus. This faulty metabolism promotes excessive accumulation of *Medo Dhatu* (fat tissue). Subsequently, aggravated *Kapha* causes *Medo Dhatu Vriddhi* (increase in fat tissue) upon continued consumption of specific *Kaphakara Nidanas* (causative factors). Moreover, the *Ama* formation (toxic metabolic by-products) further blocks *Srotas* (circulatory channels), affecting the flow and function of *Rasa* and *Rakta*, leading to *Uttarottara Dhatu Dusthti*, worsening lipid imbalance. In addition, the impaired *Medo Dhatvagni* disrupts lipid metabolism, contributing to dyslipidaemia.

Ayurveda, the traditional system of medicine, offers a holistic and sustainable way to manage metabolic disorders such as obesity and dyslipidaemia by balancing doshas, enhancing *Agni*, and cleansing body channels through appropriate diet (*Ahara*), lifestyle (*Vihara*), and *Panchakarma* therapies. Scientific studies increasingly support the effectiveness of Ayurvedic interventions, making it a promising solution for managing these metabolic disorders.

This paper aims to evaluate the anatomical outcomes of Ayurvedic interventions in obesity and dyslipidaemia, specifically changes in body composition, fat distribution, and anthropometric parameters, and to identify gaps in the existing clinical evidence.

METHODOLOGY

This review explores the anatomical and metabolic outcomes of Ayurvedic interventions in the management of obesity and dyslipidaemia. A systematic search was conducted across databases, including PubMed, Scopus, AYUSH Research Portal, and Google Scholar. Included clinical trials, observational studies, case series and case studies involving human participants if they reported anatomical outcomes. The outcome considered included changes in BMI, waist circumference, skinfold thickness, body fat percentage, or body composition following Ayurvedic therapies. Both indexed and non-indexed journals were considered, provided they were peer-reviewed or editorially reviewed and published in English.

Studies focusing solely on biochemical or physiological outcomes, animal studies, and those involving non-Ayurvedic therapies were excluded. Search was performed using the terms like the combinations of "*Ayurveda*", "obesity", "dyslipidaemia", "*Medoroga*", "*Sthoulya*", "BMI", "body fat", and "anatomical outcomes" and Titles and abstracts were screened for relevance. Full texts reviewed to assess eligibility. Moreover, the key data were extracted, including intervention type, sample size, duration, and anatomical/metabolic findings.

Finally, qualitative (narrative) synthesis was performed after data extraction, and the results were grouped based on similarities in anatomical and metabolic outcomes.

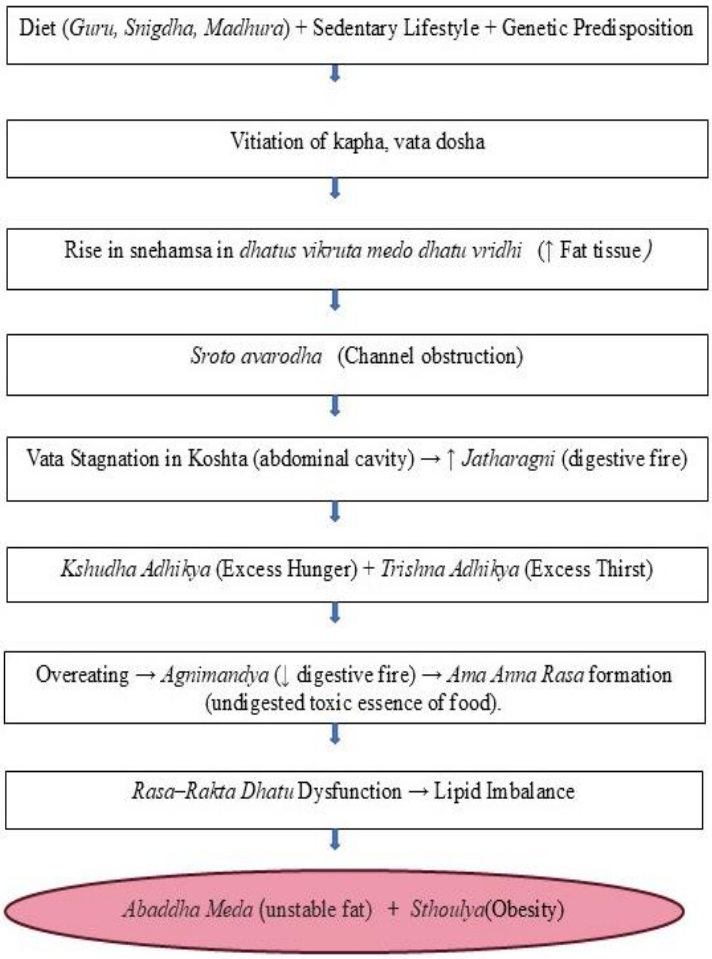
Concept of Obesity and Dyslipidaemia in Ayurveda

Obesity is a complex metabolic disorder marked by the excessive accumulation of adipose tissue within fat cells, which eventually contributes to an increased risk of cardiovascular diseases, diabetes and other metabolic disorders. Ayurveda, the traditional Indian system of medicine, provides a unique and holistic view of obesity, referred to as *Medoroga* or *Sthoulya*, described as the excessive deposition of *Medo Dhatu* (fat tissue), especially in the abdomen, buttocks, breasts, and neck. This leads to increased body weight, lethargy, and diminished physical activity.[2]

Medoroga primarily occurs due to the vitiation of *Kapha Vata doshas*, along with impairment of *Medo Dhatvagni*. Excessive intake of *Kapha* aggravating food, such as heavy, oily, and sweet items, combined with a sedentary lifestyle and genetic predisposition**,** increases *Snehamsa* in *Dhatus.* This results in *Vikruta Medo Dhatu Vridhi* (increase in fat tissue) and *Sroto Avarodha* (obstruction of bodily channels), which in turn obstruct the *Gati* (movement) of *Vayu* in the *Koshta* (abdominal cavity) due to the hindrance of passage by *Medas* (fatty tissues). The obstructed *Vata* in the *Koshta* intensifies *Jatharagni* (digestive fire)**,** which initially leads to increased appetite *(Kshudha)* and thirst *(Trishna).*

However, if continued to consume food excessively under these imbalanced conditions eventually weakens *Agni*, leading to *Agnimandya* (diminished digestive fire) and formation of *Ama Anna Rasa* (undigested toxic essence of food). This *Ama* further disrupts the normal flow and function of *Rasa and Rakta Dhatus*, leading to lipid imbalance and metabolic dysfunction. This progression matches with the pathogenesis of dyslipidaemia and obesity,[3] which Ayurveda describe as the emergence of *Abaddha Meda* (unstable fat) and *Medoroga*.[4]

Pathogenesis of Obesity/ Dyslipidaemia



Anatomical impact of Obesity on the body[5]

 Cardiovascular system: Associated with hypertension in ~75% of patients, obesity increases the risk of coronary artery disease, congestive heart failure, and pulmonary embolism.

 Cerebrovascular system: Haemodynamic stress from obesity elevates the risk of stroke and cerebrovascular damage.

 Respiratory system: Reduced lung capacity increases susceptibility to respiratory infections, asthma, and obstructive sleep apnoea (OSA). In OSA, fat deposition in the neck, pharynx, and tongue narrows the airway.

 Liver: Non-alcoholic fatty liver disease (NAFLD) and hepatic steatosis are elevated by obesity, progressing to fibrosis, cirrhosis, and potentially liver failure.

 Endocrine–Metabolic system: Elevated BMI and waist circumference are strongly linked to type 2 diabetes, which in turn affects multiple organ systems.

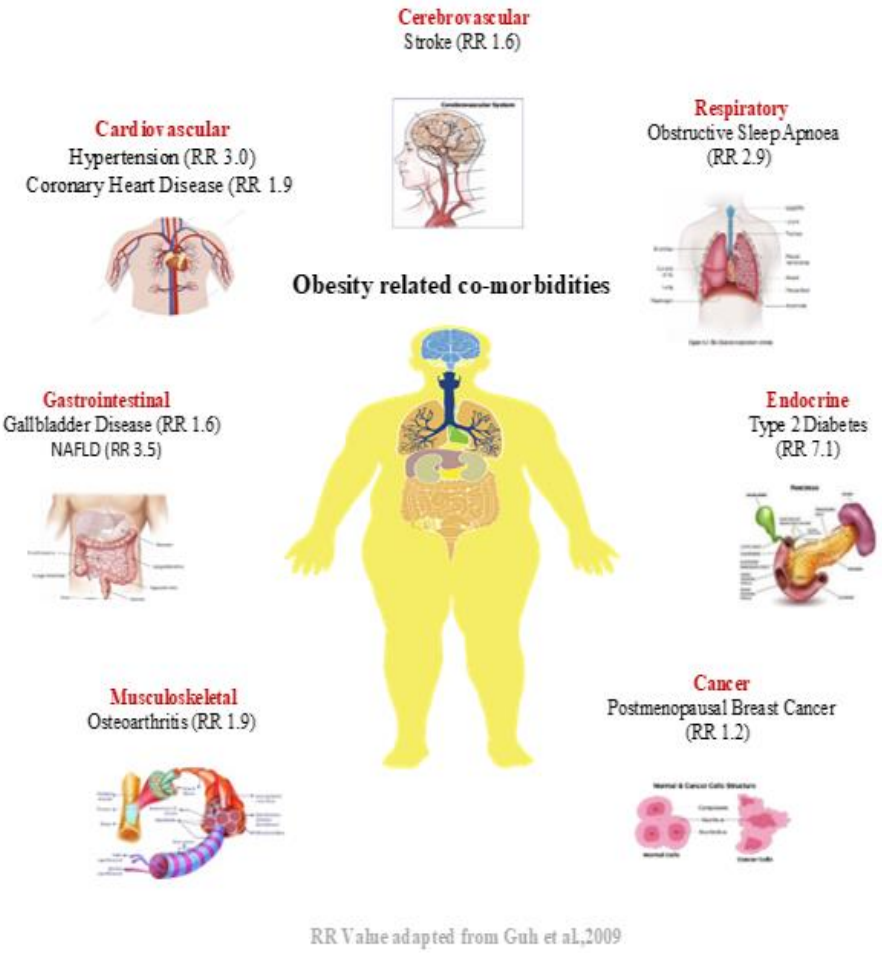
 Renal system: Obesity-related hypertension, diabetes, and heart failure increase the risk of chronic kidney disease.

 Oncology: Higher incidence of post-menopausal breast, endometrial, ovarian, colorectal, oesophageal, renal, pancreatic, and prostate cancers. Severe obesity increases cancer-specific mortality by ~52% in men and 62% in women.

 Musculoskeletal system: Excess weight accelerates wear and tear of weight-bearing joints, contributing to osteoarthritis and increasing the need for joint replacement.

 Gastrointestinal system: Raises risk of gastroesophageal reflux disease (GERD), oesophagitis, and, in some cases, oesophageal cancer.

 Other conditions: Includes stress urinary incontinence, infertility (often due to PCOS), and intertriginous skin fold rashes.



RR Value adapted from Guh et al.,2009

Summary of Clinical Evidence from Reviewed Studies

Title*	Ayurvedic Intervention	Anatomical Outcome(s)	Lipid Profile (mg/dl)
Rioux et al., 2014[6]	Ayurvedic diet, activity, and lifestyle modification with self-monitoring (3–9 months)	Weight ↓ 6% (9 month), BMI 33.2→31.2 kg/m², Body fat 43.18%→39.36%	
Rioux et al., 2019[7]	Comprehensive diet, activity & lifestyle modification (Ayurvedic medicine + yoga therapy), 9 months	Weight 205.1→184.9 lbs, BMI 33.2→31.3 kg/m² Body fat 43.2%→39.4% WC 112.4→103.2 cm, HC 121.4→115.7 cm, WHR 0.91→0.89	
Ishwarayya et al., 2022[8]	Administered *Vrikshamla* 2 g/day × 60 days	Weight ↓ 70→64 kg; BMI ↓ 32.2→29.2 kg/m²; Chest ↓ 80→75 cm; Abdomen ↓ 70→65 cm; Waist ↓ 70→65 cm; Mid-arm ↓ 27→24 cm; Mid-thigh ↓ 50→45 cm; Mid-calf ↓ 27→25 cm	TC ↓ 260→210 TG ↓ 180→140 HDL ↑ 45→50 LDL ↓ 180→145
Bhoyar & Deshpande, 2021[9]	*Dadimashtaka Churna (rukshana, pachana) + Triphalaghruta (accha snehapana) + Sarvanga Snehana & Swedana with Nirgundi Oil + Nirgundi patra bashpa sweda + Triphala, Trivrutta, Kutaki Kwatha, Aragwadh, Manuka phant, Eranda Sneha (Virechana)*	Weight ↓ 73.1→70 kg	TC ↓ 179→173.4 TG ↓ 169→121.2; HDL ↓ 50.48→45.50; LDL ↑ 94.72→103.66; VLDL ↓ 33.80→24.24; TC/HDL = 3.54; LDL/HDL ↑ 1.87→2.27
Pardhekar et al., 2024[10]	*Udvartana* with Vacha Churna; *Peti* Swedana with *Nirgundi* & *Dashmoola Kwath* for 15 days; *Tryushnadi Guggulu* for 1 month; *Pathya–Apathya* regimen	Weight ↓ 73.1→70 kg	TC ↓ 179→173.4; TG ↓ 169→121.2; HDL ↓ 50.48→45.50; LDL ↑ 94.72→103.66; VLDL ↓ 33.80→24.24; TC/HDL = 3.54; LDL/HDL ↑ 1.87→2.27
Shradha & Faisal, 2023[11]	100 ml fresh coconut shell decoction B/D,	Weight ↓ 71.93 → 70.16 kg;	TC ↓ 244.35 → 222.53 TG ↓ 198.88

	A/F with *Jeeraka* as *Anupana*	BMI ↓ 26.55 → 25.91 kg/m²	→ 187.54 HDL ↓ 47.82 → 45.09 LDL ↓ 156.54 → 142.31
Thatte et al., 2015[12]	16 Therapeutic enemas (*Basti)*+ specific diet & lifestyle regimen (32 days)	Weight ↓ 83.5 → 81.5 kg; BMI ↓ 34.44 → 33.22 kg/m²; WHR ↓ 1.00 → 0.93, Mid-arm ↓ 34 → 32.75 cm; Abdominal. cc ↓ 109.12 → 102.51 cm	
Chandake et al., 2024[13]	*Tryushnadya churna* 1gm BD vs placebo (both with Ayurveda diet chart & yoga protocol)	<u>P value</u> Weight <0.001; BMI <0.001; WC 0.21; WHR 0.29; BFI 0.49; SFT 0.17	TC 0.673; TG0.06; HDL 0.361; LDL 0.621
Singh et al., 2015[14]	*Vaitarana Basti* for 16 days + Ayurvedic oral medicines *(Triphalaguggulu* 500 mg BD, *Dashmoolkwath* 40ml BD, *Panchakolachurna* 3g BD, *Triphalachurna* 5g HS)	Weight 78 → 75 kg	TC 210 → 190; TG 256 → 192; HDL 50 → 48; LDL 108.8 → 123.6; VLDL 51.2 → 38.4
Rohini et al., 2020[15]	1. *Pachana – Takrarishta* 2. *Udwartana – Triphala, Musta, Punarnava* 3. *Swedana* 4. *Sadyavamana – Madanaphal Pippali churna, Yastimadhu, Vacha, Pippali, Saindhava* with honey 5. *Rukshana – Haritaki* & *Kutaki churna* internal administration 6. *Basti – Erandamooladi Niruha Basti* with *Gomutra* (3 days) + *Dashamoolasiddha taila Matra Basti* (1 day)	Weight 83 → 74 kg; BMI 33.2 → 29.6 kg/m²; Chest girth 99.5 → 97.5 Abdo. girth 90.5 → 86 Hip girth 105 → 101	TC 167 → 175 TG 168 → 112 HDL 35 → 56

Patil et al., 2024[16]	*Pachana Aushadhi* for 7 days + *Lekhana Basti* for 21 days	Weight 112.8 →101.3kg; BMI 41.1 → 37.1 kg/m²; Chest cc 114 → 108 cm; Abdo. cc 117 → 102 cm; Mid-arm cc: Right 33 → 29 cm, Left 34 → 30 cm; Mid-thigh cc: Right 60 → 56 cm, Left 57 → 53 cm; Waist cc 114 → 109 cm; Hip cc 133 → 129 cm	
Sharma et al., 2018[17]	Group 1 (Obesity): *Vyoshadi Guggulu* 3 × 500 mg tablets twice daily + *Haritaki Churna* 3 g twice daily with lukewarm water for 12 weeks. Group 2 (Dyslipidemia): *Vyoshadi Guggulu* 2 × 500 mg tablets thrice daily + *Haritaki Churna* 3 g twice daily with lukewarm water for 12 weeks.	BMI, waist circumference, hip circumference, waist–hip ratio ($p < 0.001$)	Lipid profile ($p = 0.003$, $p < 0.005$ significant)
Kumar et al., 2012[18]	*Arjuna* powder 5 g twice daily × 3 weeks, followed by *Arogyavardhini Vati* 500 mg twice daily × 4 weeks		Total cholesterol: 236.4 ± 15.1 → 213.2 ± 14.7 LDL-C: 162.9 ± 12.8 → 148.3 ± 10.4 mg/dL Triglycerides: 219.9 ± 26.9 → 198.1 ± 21.5 HDL-C: 39.9 ± 4.1 → 43.1 ± 3.2 mg/dL
Bhatted et al., 2022[19]			Decline % in Dyslipidaemia Index
	1. *Vamana* with *Madanphal*		77.8
	2. *Shaman* with *Haridra Dwaya Churna*		14.3
	3. *Triphala* decoction		75
	4. *Basti* with *Triphala* decoction		41.7
	5. *Yavadi* Roti + Yoga		44.4

	6. *Pathya–Apathya*		+33.3
	7. *Musta Churna*		94.7
Patel B, Kamble SB, Vyas HA, Vyas MK, Chinthala R. (2018)[20]	*Takra-Siddha Yavagu* with *Shyamaka* (gruel prepared with buttermilk) and *Udvartana (Yava, Bajara, Kulatha)* for 30 days	Weight: 88 → 82 kg; BMI: 38.08 → 35.49 kg/m²	TC: 223 → 147 TG: 111 → 66 HDL: 48 → 43 mg/dL; VLDL: 22 → 13 mg/dL; LDL: 153 → 91 mg/dL
Shetty SK, Shivakumar, Tripaty TB. (2017)[21]	Group A: *Yavamalaka Choorna* 6 g BD with warm water, 30 min before food, for 2 months; Group B: *Shuddha Guggulu Vati* 3 g TDS daily with warm water before food	Weight: 69.28 → 67.6 kg BMI: 28.37 → 27.50 kg/m²	
Megha Nautiyal, Arun Gupta, Neha Yadav (2022)[22]	*Deepana*, *Pachana* with *Chitrakadi Vati* (3 days); *Snehapana* with *Mahatriphaladya Ghrita* (6 days); *Swedana* & *Abhyanga* with *Tila Taila*; *Virechana* with *Phalatrikadi Kwatha Yoga*; *Samsarjana Krama*	Weight: 79 → 72 kg; BMI: 28.7 → 26.1 kg/m²	TC: 216 → 191 TG: 428.6 → 168.5 VLDL: 86% → 34%
Dr. Dheeraj Kumar Tyagi, Shivakumar (2017)[23]	*Udwarthana*, *Parisheka*, *Shamana Aushadhis*, *Ahara & Vihara* (10 days)	Wt: 94 → 88 kg; BMI: 42 → 39 kg/m²; Chest C: 113 → 107 cm; AC: 119 → 112 cm; Mid arm C (Rt): 36 → 34 cm;(Lt): 35 → 33 cm; Mid-thigh C (Rt): 62 → 59 cm;(Lt): 60 → 59 cm; WC: 118 → 113 cm; HC: 127 → 121 cm	
Dr. Nidhi Sharma (2018)[24]	1. *Udvartan (Triphala powder)* 2. *Panchkola & Vidanga Paneeyam* (whole day) 3. Cap *Nirmeda* – 4 TDS 4. *Triphala* & *Kutki* powder -HS 5. *Medoghnayavagu* (breakfast) 6. *Kledoghna Peya* (dinner)	Wt: 154 → 134 kg	

Bahatkar & Dhaskat (2023)[25]	1. *Sarwanga Udvartan – Kolkulthadi Churna* 2. *Petisweda (Dashmool Kwath)* 3. *Katibasti (Sahachara Taila)* 4. *Erandmuladi Basti* 5. *Yoga (Surya Namaskar, Paschimottanasana, Kapalbhati)* 6. Physiotherapy	Wt: 86 → 80 kg; BMI: 38.22 → 35.55 kg/m²; CC: 112 → 100 cm; AC: 110 → 105 cm; Mid Arm C- R: 32 → 29 cm; L: 32 → 30 cm; Mid-Thigh C- R: 50 → 47 cm; L: 52 → 48 cm; WC: 100 → 95 cm; HC: 125 → 120 cm;	TC: 219 → 150 mg/dl; HDL: 50 → 49 mg/dl; LDL: 80 → 77 mg/dl; TG: 100 → 80 mg/dl
Fadnavis et al. (2024)[26]	*Sasneha Haridra Gana Udvartana; Swedana (Nirgundi Kwath); Gomutradi Asthapana Basti*	Wt: 58.5→52.8 kg; BMI: 25.4→22.9 kg/m²; TSFT: 12.8→11 mm; WC: 70→68 cm; HC: 82→79 cm	
Deshpande & Sarganacharya (2021)[27]	*Udwartana, Shodhana, Shamana, Ahara, Vihara*	Wt: 86.5→81.1 kg; BMI: 38.4→36 kg/m²; AC: 115→110 cm; MAC-R: 34→30 cm; MAC-L: 35→31 cm; MTC-R: 62→57 cm; MTC-L: 63→59 cm; WC: 116→109 cm; HC: 135→129 cm;	TC: 212→180 mg/dl; HDL: 50.1→84.3 mg/dl; LDL: 132.2→115.1 mg/dl TG: 199.3→150.1 mg/dl; VLDL: 45.2→25.3 mg/dl
Mahesh Raju et al. (2017)[28]	*Udwartana & Bhaspa Sweda*; Internal medicines; Yoga, *Pranayama;* Physiotherapy; *Pathyahara*; *Sarvanga Uthsadana (Brihat Saindavadi Taila) & Bhaspa Sweda; Sadyo Virechana*	Wt: 93.6→86.5 kg; BMI: 42.12→38.96 kg/m²; AC: 118→107 cm; MAC-R: 33→30 cm; MAC-L: 34→31 cm; MTC-R: 60→58 cm; MTC-L: 57→55 cm; WC: 115→110 cm; HC: 133→128 cm; WHR: 0.86→0.85	
Mudgal et al. (2021)[29]	*Vamana Yoga (Madanphala* 5 g, *Indrayava* 3 g, *Saindhava* 2 g, *Vacha* 1 g*)* with *Yastimadhu Phanta*	BMI: 42.2→39.8 kg/m²; Weight: 122→115 kg; SFT – Pectoral: 30→28 mm; Mid-axillary: 31→30mm Abdominal: 80→75 mm; Triceps: 39→37 mm; Biceps: 32→30 mm; Supra-scapular: 48→47 mm; Supra-iliac: 45→44	

		mm	
Mandalkar et al. (2015)[30]	Gp-A: *Tryushnadhya Lauha Vati*; Gp-B: *Navaka Guggulu*	Wt: 74→69.7 kg; BMI: 33.79→32.42 kg/m²; WHR: 0.87→0.86;	TC: 176.5→157.9 mg/dl; HDL: 46.4→45.5 mg/dl; TG: 97.1→83.8 mg/dl
Gupta et al. (2016).[31]	Gp-A: *Varunadi Kashaya* (8 wks); Gp-B: *Medohara Guggulu* (8 wks)	Gp-A p-values: Wt < 0.0001; BMI = 0.0442; WHR = 0.0773. Gp-B p-values: Wt = 0.2235; BMI = 0.0442; WHR = 0.9047	

* Relevant studies shown anatomical changes after Ayurvedic treatment modalities

RESULT

A total of 25 studies were reviewed, covering both obesity and dyslipidaemia interventions in Ayurveda. The compiled data show consistent improvements in anthropometric and biochemical parameters. The pooled average percentage change across studies (excluding NA values) were as follows;

Anthropometric parameters

- Mean weight reduction: 8.4%
- Mean BMI reduction: 7.5%
- Waist circumference reduced by 6%, hip circumference by 4.6%
- WHR improved by 2.3%

Lipid profile

- Total cholesterol and LDL decreased by ~11–13%
- Triglycerides and VLDL by ~21%
- HDL showed a mean increase of 5.7%

Across the studies, significant reductions were observed in weight, BMI, waist and hip circumferences, WHR, total cholesterol, LDL, triglycerides, and VLDL. HDL levels showed a modest but clinically relevant increase. The percentage change was calculated based on available pre- and post-intervention values from each study. Interventions combining *Udwarthana*, internal herbal preparations, *Panchakarma* therapies, and lifestyle modifications generally produced greater improvements in both anthropometric and lipid profile outcomes compared to single-modality interventions.

Parameter	Mean Baseline	Mean post-intervention	Mean % Change	Direction of Change
Weight	-	-	–8.4%	↓
BMI	-	-	– 7.5%	↓
Waist Circumference	-	-	–6.0%	↓
Hip Circumference	-	-	–4.6%	↓
Waist–Hip Ratio	-	-	–2.3%	↓
Total Cholesterol	-	-	–11.0%	↓
LDL	-	-	–13.0%	↓
Triglycerides	-	-	–21.0%	↓
VLDL	-	-	–21.0%	↓
HDL	-	-	+5.7%	↑

DISCUSSION

The analysis of multiple clinical studies demonstrates that Ayurvedic interventions ranging from herbal formulations and Panchakarma therapies to lifestyle modifications and yoga consistently yield positive effects on anthropometric measures (body weight, BMI, body circumferences) and lipid profile parameters. These anatomical improvements suggest a direct influence of Ayurvedic therapies on body composition and abnormal fat distribution.

Procedures such as *Udvartana*, *Basti*, *Virechana*, and internal administration of *Shamana Aushadhis*, particularly *Guggulu* formulations, when combined with Ayurvedic diet and lifestyle regimens, were frequently associated with notable reductions in body weight, girth measurements, and skinfold thickness. Moreover, the lipid profile parameters including Total Cholesterol, LDL, VLDL, HDL Triglycerides showed significant post-intervention improvements in several studies.

Despite these encouraging findings, some limitations were evident. Considerable variability in interventions arising from diverse combinations of *Panchakarm*a procedures, herbal formulations, and lifestyle regimens poses challenges for standardization and comparability. In addition, most of the studies were of short duration and could not captured the long-term sustainability of effects. Furthermore, a substantial proportion comprised case studies or non-randomized trials with small sample sizes, which reduces generalizability and increases the risk of bias.

High-quality, adequately powered, and standardized clinical trials are required to further evaluate the anatomical changes associated with Ayurvedic interventions for obesity and

dyslipidaemia. No meta-analysis was conducted in this review due to methodological heterogeneity. The evidence base remains limited by potential publication bias, inconsistent measurement methods, and variability in intervention protocols. This review received no external funding.

CONCLUSION

The present review of 25 clinical studies demonstrates that Ayurvedic interventions including *Panchakarma* procedures such as *Udvartana*, *Basti*, and *Virechana*, along with herbal formulations (particularly *Guggulu* preparations), specific dietary regimens, and lifestyle modifications with yogic practices consistently produced clinically relevant reductions in anatomical parameters like weight, BMI, waist and hip circumferences, and waist–hip ratio, while improving lipid profiles.

Notably, multi-modality approaches integrating external therapies with internal medications and *pathya–apathya* guidance yielded more pronounced results than single interventions. The observed improvements in anthropometric measures and biochemical parameters reflect the potential of Ayurveda to address both anatomical changes and metabolic disturbances associated with obesity and dyslipidaemia.

However, the evidence base is constrained by methodological variability, short intervention durations, small sample sizes, and the predominance of case studies or non-randomized designs, which limit generalizability. No meta-analysis was conducted due to heterogeneity in interventions and outcome measures. While these findings support the clinical utility of Ayurveda in managing obesity and dyslipidaemia, further high-quality, standardized, and long-term randomized controlled trials are essential to validate these outcomes and establish evidence-based treatment protocols.

In conclusion, Ayurvedic therapies, when applied judiciously, provide a holistic, preventive, and potentially sustainable approach to managing obesity and associated lipid disorders.

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