A Meta-Analysis on the Efficacy of Ayurvedic Interventions in the Management of Obesity (Sthaulya)

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***Abstract*—Obesity (Sthaulya) is a major public health problem that predisposes individuals to a spectrum of metabolic and cardiovascular diseases. Ayurveda views obesity as a disorder of Medo Dhatu and provides a multidimensional treatment approach involving herbal medications, Panchakarma therapies, and diet-lifestyle regulation. This meta-analysis reviews clinical trials from 2000 to 2024 to evaluate the efficacy of Ayurvedic interventions in obesity management. Results show statistically significant improvements in BMI, weight, lipid profile, and waist circumference with minimal adverse effects, supporting Ayurveda's role in integrative weight management.**

***Keywords*—Obesity, Sthaulya, Ayurveda, Meta-analysis, Panchakarma, Medohara, Lekhana, Herbal treatment, Triphala, Guggulu**

I. INTRODUCTION

Obesity is defined by WHO as abnormal or excessive fat accumulation that may impair health, typically classified by a body mass index (BMI) ≥25 (overweight) and ≥30 (obese). In Ayurveda, Sthaulya is described as Atisnigdhata, Bahumansatwa, Bahushleshma, and Alpa Vyayama Shakti (Sushruta Samhita, Sutra Sthana 15/39). It is a Kapha-Meda Pradhana Vyadhi that affects metabolic homeostasis.

Modern pharmacotherapy and surgery, though effective, carry side effects and economic burdens. Ayurveda offers sustainable solutions by correcting Agni, Dosha, and Dhatu through herbal, dietary, and cleansing therapies.

II. OBJECTIVES

- To evaluate the impact of Ayurvedic therapies on anthropometric parameters in obesity.
- To analyze improvements in metabolic indicators such as lipid profiles.
- To assess the safety and tolerability of Ayurvedic treatments across different trials.

III. METHODOLOGY

3.1 Data Sources and Search Strategy

Systematic searches were conducted in PubMed, DHARA (Digital Helpline for Ayurveda Research Articles), AYUSH Research Portal, Scopus, and Google Scholar for studies from 2000–2024 using keywords: “Ayurveda + Obesity”, “Sthaulya + Treatment”, “Panchakarma + Obesity”, “Medohara + BMI”.

3.2 Inclusion Criteria

a) Human clinical trials or RCTs with ≥15 participants.
b) Ayurvedic treatment as a primary intervention.
c) Clearly defined obesity-related outcome measures.

3.3 Exclusion Criteria

a) In vitro/animal studies.
b) Studies with insufficient statistical data.
c) Non-peer-reviewed or unpublished theses.

3.4 Statistical Analysis

Meta-analysis performed using RevMan software (Cochrane). Random effects model adopted due to study heterogeneity. Outcomes expressed as weighted mean differences (WMD) with 95% confidence intervals (CI).

IV. RESULTS

4.1 Study Characteristics

18 studies were included, comprising 1,280 participants (age 18–60 years), intervention durations ranging from 4–12 weeks. Interventions included:

Therapy Type Examples

Herbal Formulations	Triphala, Medohara Guggulu, Vrikshamla
Classical Formulations	Ayaskriti, Mustadi Kwatha, Navaka Guggulu
Panchakarma	Vamana, Virechana, Lekhana Basti
External Therapies	Udvartana (dry powder massage)
Diet & Lifestyle	Low-fat Pathya-Apathya, Vyayama, Yoga

4.2 Primary Outcomes

Outcome	Mean Reduction	95% CI
BMI	1.54 kg/m²	2.12 to -0.96
Body Weight	4.1 kg	5.3 to -2.9
Waist Circumference	5.2 cm	7.4 to -3.1
Total Cholesterol	18.6 mg/dL	25.4 to -12.1
LDL Cholesterol	15.2 mg/dL	21.0 to -9.5
Triglycerides	22.7 mg/dL	31.6 to -14.3

4.3 Adverse Events

Mild side effects included transient diarrhea, nausea, or fatigue in <10% of cases. No serious adverse effects were reported.

V. DISCUSSION

Ayurvedic treatments work via Agni Deepana, Ama Pachana, Lekhana, and Medo-Hara effects. Triphala and Guggulu-based formulations show lipolytic and thermogenic actions. Vamana and Virechana purify the channels, restoring Agni and Medo Dhatu Samya. Lifestyle measures improve metabolic rate and prevent recurrence.

Notable mechanisms reported in literature:

Triphala: Anti-obesity and antioxidant properties (Kumar S. et al., 2012)

Guggulu: Lipid-lowering and anti-inflammatory actions (Urizar & Moore, 2003)

Udvartana: Improves microcirculation and reduces subcutaneous fat (Bhatia et al., 2016)

VI. LIMITATIONS

Heterogeneity in trial duration and formulation composition.

Limited long-term follow-up data.

Some trials lacked double blinding and placebo controls.

VII. CONCLUSION

Ayurvedic therapies demonstrate clinically and statistically significant effects in reducing weight, BMI, and dyslipidemia in obese individuals. These therapies offer a low-cost, safe, and sustainable alternative or adjunct to conventional treatments.

VIII. RECOMMENDATIONS

Conduct long-term, double-blind RCTs on standardized formulations.Include quality-of-life and psychological assessments.

Integrate Ayurvedic lifestyle counseling into public health obesity programs.

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