

दृष्टि तशंगणा

e-magazine by AYUSH Department, Uttarakhand Govt



आयुष एवं आयुष शिक्षा विभाग
उत्तराखण्ड

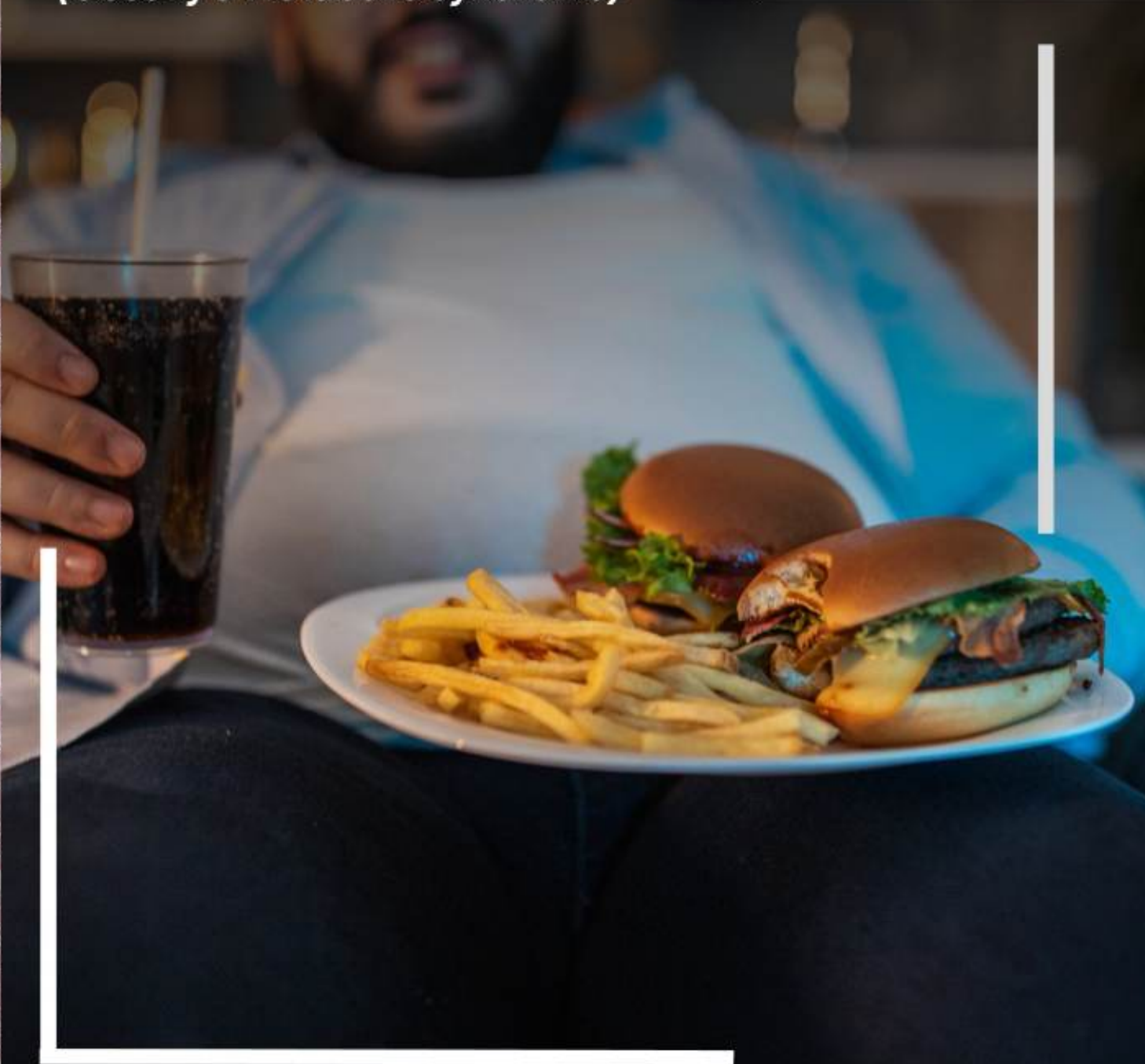


August, 2026

VOL. 14



**Special Edition On
Sthoulya-Medoroga
(Obesity & Metabolic Syndrome)**





आयुर्तरंगिणी

ई-मैगजीन के पाठकों के लिए
मंत्री, आयुष एवं आयुष शिक्षा का संदेश

प्रिय पाठकों,

हमारे लिए यह अत्यंत हर्ष एवं संतोष का विषय है कि “आयुर्तरंगिणी” ई-मैगजीन के माध्यम से उत्तराखण्ड राज्य में आयुष चिकित्सा पद्धतियों, जनस्वास्थ्य से जुड़े महत्वपूर्ण विषयों तथा आयुष विभाग की विभिन्न जनकल्याणकारी गतिविधियों को प्रभावी रूप से जनसामान्य तक पहुँचाया जा रहा है। यह पत्रिका आयुष के वैज्ञानिक, व्यावहारिक एवं जनोपयोगी स्वरूप को समाज के समक्ष प्रस्तुत करने का एक सशक्त माध्यम बनकर उभर रही है।

भारत की प्राचीन चिकित्सा परंपरा में आयुर्वेद को जीवन विज्ञान का दर्जा प्राप्त है। आयुर्वेद केवल रोगोपचार तक सीमित नहीं, बल्कि स्वास्थ्य संरक्षण एवं संतुलित जीवनशैली के माध्यम से रोगों की रोकथाम पर भी बल देता है। वर्तमान समय में अनियमित दिनचर्या, असंतुलित एवं अत्यधिक आहार, शारीरिक निष्क्रियता, मानसिक तनाव एवं बदलती जीवनशैली के कारण स्थूल्य एवं मेदोरोग जैसी समस्याएँ निरंतर बढ़ रही हैं। इनके कारण मधुमेह, उच्च रक्तचाप एवं अन्य चयापचयी विकारों का जोखिम भी बढ़ता है। ऐसे में आयुर्वेद की निवारक एवं उपचारात्मक अवधारणाएँ अत्यंत प्रासंगिक सिद्ध होती हैं।

“आयुर्तरंगिणी” का यह विशेषांक “स्थूल्य-मेदोरोग (Obesity & Metabolic Syndrome)” विषय पर आधारित है। इसमें स्थूल्य एवं मेदोरोग की आयुर्वेदिक अवधारणा, निदान, उपचार, पथ्य-अपथ्य, आहार-विहार, व्यायाम, पंचकर्म तथा आधुनिक जीवनशैली के संदर्भ में आयुर्वेद की उपयोगिता को सरल एवं वैज्ञानिक दृष्टिकोण से प्रस्तुत किया गया है। यह विशेषांक स्वास्थ्य जागरूकता बढ़ाने, स्वस्थ जीवनशैली के प्रति जनसामान्य को प्रेरित करने तथा आयुर्वेद के समग्र दृष्टिकोण को समाज तक पहुँचाने का एक सराहनीय प्रयास है।

मुझे विश्वास है कि यह विशेषांक विद्यार्थियों, शोधकर्ताओं, चिकित्सकों, स्वास्थ्यकर्मियों तथा आम नागरिकों के लिए समान रूप से उपयोगी एवं ज्ञानवर्धक सिद्ध होगा। मैं इसके प्रकाशन से जुड़े सभी अधिकारियों, विशेषज्ञों, लेखकों एवं सहयोगियों को हार्दिक बधाई एवं शुभकामनाएँ देता हूँ तथा आशा करता हूँ कि “आयुर्तरंगिणी” भविष्य में भी आयुष के प्रचार-प्रसार, जनजागरूकता एवं स्वस्थ समाज के निर्माण में अपनी महत्वपूर्ण भूमिका निभाती रहेगी।

मदन कौशिक

(मंत्री, आयुष एवं आयुष शिक्षा,
उत्तराखण्ड)



आयुर्तरंगिणी

ई-मैगजीन के पाठकों के लिए

सचिव, आयुष एवं आयुष शिक्षा की कलम से

प्रिय पाठकों,

रंजना राजगुरु (आई०ए०एस)
(सचिव, आयुष एवं आयुष शिक्षा विभाग,
उत्तराखंड शासन)

"आयुर्तरंगिणी" ई-मैगजीन के इस विशेषांक के प्रकाशन पर मुझे अत्यंत प्रसन्नता हो रही है। यह पत्रिका केवल ज्ञान के आदान-प्रदान का माध्यम नहीं, बल्कि आयुष के सिद्धांतों, वैज्ञानिक दृष्टिकोण एवं जनस्वास्थ्य से जुड़े महत्वपूर्ण विषयों को समाज तक प्रभावी रूप से पहुँचाने का एक सशक्त प्रयास है।

माननीय आयुष एवं आयुष शिक्षा मंत्री जी के कुशल नेतृत्व एवं मार्गदर्शन में राज्य में आयुष सेवाओं को अधिक सुदृढ़, सुलभ एवं जनकेंद्रित बनाने की दिशा में निरंतर कार्य किया जा रहा है। राष्ट्रीय आयुष मिशन के अंतर्गत विभिन्न योजनाओं, जनजागरूकता कार्यक्रमों एवं नवाचारों के माध्यम से स्वास्थ्य सेवाओं के विस्तार एवं गुणवत्ता संवर्धन हेतु उल्लेखनीय प्रयास किए जा रहे हैं।

"आयुर्तरंगिणी" का यह विशेषांक "स्थूल्य-मेदोरोग (Obesity & Metabolic Syndrome) Special Edition" विषय पर आधारित है। वर्तमान समय में अनियमित दिनचर्या, असंतुलित आहार, शारीरिक निष्क्रियता, मानसिक तनाव तथा बदलती जीवनशैली के कारण स्थूल्य एवं मेदोरोग की समस्याएँ निरंतर बढ़ रही हैं। इनके साथ मधुमेह, उच्च रक्तचाप एवं अन्य चयापचयी विकारों का जोखिम भी बढ़ता जा रहा है। ऐसे परिदृश्य में आयुर्वेद अपनी समग्र, निवारक एवं स्वास्थ्यवर्धक अवधारणाओं के माध्यम से इन समस्याओं के प्रभावी प्रबंधन तथा स्वास्थ्य संरक्षण का सशक्त मार्ग प्रस्तुत करता है।

इस विशेषांक में स्थूल्य एवं मेदोरोग की आयुर्वेदिक अवधारणाओं, रोगों के कारणों, निदान, रोकथाम, पथ्य-अपथ्य, आहार-विहार, औषधीय प्रबंधन एवं पंचकर्म चिकित्सा की उपयोगिता पर विशेष रूप से प्रकाश डाला गया है। साथ ही आधुनिक जीवनशैली के संदर्भ में आयुर्वेद की प्रासंगिकता एवं स्वस्थ जीवनशैली के महत्व को सरल एवं वैज्ञानिक दृष्टिकोण से प्रस्तुत किया गया है, जिससे पाठकों को स्वास्थ्य संरक्षण, वजन प्रबंधन एवं रोग-निवारण संबंधी व्यवहारिक एवं उपयोगी जानकारी प्राप्त होगी।

मुझे विश्वास है कि यह विशेषांक विद्यार्थियों, चिकित्सकों, शोधकर्ताओं एवं सामान्य जनमानस के लिए समान रूप से उपयोगी एवं ज्ञानवर्धक सिद्ध होगा। मैं सभी पाठकों से अपेक्षा करता हूँ कि वे इस ज्ञानवर्धक प्रयास से जुड़ें तथा आयुष की उपयोगिता, स्वस्थ जीवनशैली एवं स्वास्थ्य संरक्षण के संदेश को जन-जन तक पहुँचाने में अपना महत्वपूर्ण योगदान प्रदान करें।



आयुर्तरंगिणी

ई-मैगजीन के पाठकों के लिए

अपर सचिव, आयुष एवं आयुष शिक्षा की कलम से

प्रिय पाठकों,

डॉ. विजय कुमार जोगदण्डे (आई०ए०एस)
(अपर सचिव, आयुष एवं आयुष शिक्षा विभाग,
उत्तराखंड शासन)

"आयुर्तरंगिणी" के इस विशेषांक को आपके समक्ष प्रस्तुत करते हुए मुझे अत्यंत हर्ष का अनुभव हो रहा है। यह प्रयास आयुष के विविध आयामों, स्वास्थ्य संबंधी उपयोगी जानकारीयों तथा जनस्वास्थ्य से जुड़े महत्वपूर्ण विषयों को एक मंच पर लाने का एक सार्थक माध्यम है।

मैं इस अवसर पर माननीय आयुष एवं आयुष शिक्षा मंत्री जी के दूरदर्शी नेतृत्व एवं सतत प्रेरणा तथा सचिव महोदया, आयुष एवं आयुष शिक्षा विभाग के मार्गदर्शन एवं सहयोग के प्रति हार्दिक आभार व्यक्त करता हूँ, जिनके निरंतर समर्थन से आयुष सेवाओं के विस्तार, जनजागरूकता एवं जनकल्याण से जुड़े अनेक महत्वपूर्ण प्रयास सफलतापूर्वक संचालित हो रहे हैं।

इस विशेषांक का विषय "स्थूल्य-मेदोरोग (Obesity & Metabolic Syndrome) Special Edition" वर्तमान समय की स्वास्थ्य आवश्यकताओं के अनुरूप अत्यंत प्रासंगिक है। इसके अंतर्गत स्थूल्य एवं मेदोरोग की आयुर्वेदिक अवधारणाओं, रोगोत्पत्ति, निदान, निवारण एवं प्रबंधन के साथ-साथ पथ्य-अपथ्य, आहार-विहार, दिनचर्या, व्यायाम, जीवनशैली प्रबंधन, औषधीय उपचार तथा पंचकर्म चिकित्सा की उपयोगितापर विशेष सामग्री प्रस्तुत की गई है, जो स्वास्थ्य संरक्षण, वजन प्रबंधन एवं रोग-निवारण के व्यावहारिक पहलुओं को सरल एवं वैज्ञानिक रूप में स्पष्ट करती है।

मुझे विश्वास है कि यह विशेषांक चिकित्सकों, विद्यार्थियों, शोधकर्ताओं, स्वास्थ्यकर्मियों तथा सामान्य जनमानस सभी के लिए समान रूप से लाभकारी एवं ज्ञानवर्धक सिद्ध होगा। मैं सभी पाठकों से आग्रह करता हूँ कि वे इस विशेषांक का अध्ययन करें तथा आयुर्वेद के सिद्धांतों, संतुलित आहार एवं स्वास्थ्यवर्धक जीवनशैली को अपने दैनिक जीवन में अपनाकर स्वस्थ समाज के निर्माण में सहभागी बनें।

इस प्रकाशन से जुड़े सभी अधिकारियों, विशेषज्ञों, लेखकों एवं सहयोगियों को हार्दिक शुभकामनाएँ एवं बधाई।



Inauguration of AYUSH Setu Portal

Directorate of Ayurveda & Unani Services Uttarakhand





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Directorate of Ayurveda & Unani Services Uttarakhand





वसुधा तं गणा

e-magazine by AYUSH Department, Uttarakhand Govt

August, 2026

(विशेषांक)

“स्थौल्य एवं मेदो-रोग”

{Obesity & Metabolic Syndrome Related Disorders }



Evaluation of *Lagenaria siceraria* (Lauki) in Dyslipidemia (Medodushti): Phytochemical Mechanisms, Classical Ayurvedic Insights, and Clinical Perspectives

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Abstract

Dyslipidemia (Medodushti) is a key component of Metabolic Syndrome (Santarpanotha Vikara), characterized by altered lipid sub-fractions and increased cardiovascular vulnerability. *Lagenaria siceraria* (Mol.) Standley, commonly known as Lauki or Alabu, has emerged as a promising dietary agent (Pathya Ahara) for lipid regulation. This review synthesizes classical Ayurvedic concepts of Alabu with contemporary phytochemical and pharmacological evidence. *Lagenaria siceraria* exerts lipid-lowering and anti-atherogenic effects through intestinal bile acid sequestration, inhibition of adipogenesis, reduction of oxidative stress, and enhancement of endogenous antioxidant systems. Incorporating standardized, non-bitter *L. siceraria* fruit into primary health initiatives offers a cost-effective, preventive strategy against lifestyle-induced metabolic disorders.

Keywords: *Lagenaria siceraria*, Lauki, Dyslipidemia, Medoroga, Medodushti, Metabolic Syndrome, Pathya Ahara.

1. Introduction

Dyslipidemia plays a pivotal pathophysiological role in the progression of non-communicable diseases (NCDs), including atherogenic cardiovascular disease, Type 2 Diabetes Mellitus, and Non-Alcoholic Fatty Liver Disease (NAFLD/MASLD). In modern clinical practice, managing lipid abnormalities relies primarily on statins and lifestyle modifications. However, long-term pharmacological interventions may present limitations regarding patient tolerance and adherence.

In Ayurvedic medicine, dyslipidemia is understood through the lens of Medoroga or Medodushti—a state of impaired bio-transformation (Dhatvagni Mandya) leading to the buildup of unrefined Meda Dhatu and metabolic toxins (Ama) (Charaka Samhita, 2020). *Lagenaria siceraria* (Family: Cucurbitaceae), known traditionally as Alabu or Lauki, is widely prescribed in classical texts as a therapeutic vegetable (Shaka Varga) to clear microchannel obstruction (Srotorodha) and regulate body weight (Saeed et al., 2022).

2. Ayurvedic Conceptual Mapping: Alabu in Medoroga

Classical texts, including the Charaka Samhita and Sushruta Samhita, classify Alabu under Shaka Varga (vegetable group) (Sushruta Samhita, 2018). Its pharmacological properties (Rasa Panchaka) explain its metabolic actions:

- **Rasa (Taste):** Kashaya (Astringent) and Madhura (Sweet).
- **Guna (Qualities):** Laghu (Light) and Ruksha (Dry).
- **Virya (Potency):** Sheeta (Cooling).
- **Vipaka (Post-Digestive Effect):** Katu (Pungent).
- **Karma (Therapeutic Action):** Kapha-Pitta Shamaka, Bhedana (mild laxative), Mootrala (diuretic), and Hrdaya (cardiotonic).



In the pathogenesis of Sthoulya and Medoroga, accumulated Kapha and Ama block the Medovaha Srotas. The Ruksha and Laghu attributes of Lauki counteract the heavy (Guru) and unctuous (Snigdha) characteristics of excess Meda Dhatu. Furthermore, its Katu Vipaka enhances metabolic throughput at the cellular level (Dhatvagni), facilitating the clearance of circulating lipid intermediates without aggravating Pitta.

3. Phytochemistry and Pharmacological Mechanisms

Phytochemical analyses reveal that *Lagenaria siceraria* fruit is rich in dietary fiber, vitamins (B-complex, C), minerals (potassium, sodium), and bioactive secondary metabolites (Rahman, 2003). Key mechanisms include:

- **Flavonoids and Polyphenols:** Act as potent free-radical scavengers, reducing lipid peroxidation and protecting low-density lipoproteins (LDL) from oxidative modification (Deshpande et al., 2008).
- **Saponins and Plant Sterols:** Inhibit cholesterol absorption in the gut and promote fecal sterol excretion (Ghule, 2006).
- **Soluble Fiber and Pectin:** Form a viscous gel in the gastrointestinal tract, binding bile acids and forcing hepatic conversion of endogenous cholesterol into bile salts (Rahman, 2003).
- **Choline and Lipotropic Factors:** Support hepatic fat metabolism and lipid transport, guarding against intrahepatic lipid accumulation.

4. Review of Experimental & Preclinical Evidence

Extensive preclinical investigations validate the lipid-modulating capacity of *L. siceraria*:

- **Hyperlipidemic Models:** Oral administration of *L. siceraria* fruit extracts significantly decreased serum Total Cholesterol (TC), Triglycerides (TG), and Low-Density Lipoprotein Cholesterol (LDL-C) while increasing High-Density Lipoprotein Cholesterol (HDL-C) in both Triton-induced (Mohale et al., 2008) and high-fat diet-induced hyperlipidemic rats (Ghule, 2006). Similar hypolipidemic and antioxidant efficacy has been demonstrated using seed extracts (Katare et al., 2014).
- **Atherosclerosis and Endothelial Protection:** Research indicates that *L. siceraria* exhibits potent anti-atherosclerotic potential, preventing arterial fatty streak formation in high-fat diet-induced hyperlipidemic animal models (Prajapati et al., 2010).
- **Cardiometabolic Protection:** Treatment with fruit juice attenuated isoproterenol-induced cardiotoxicity by restoring myocardial lipid profiles and maintaining endogenous antioxidant enzymes like Superoxide Dismutase and Catalase (Upaganlawar & Balaraman, 2012).
- **Insulin Resistance:** Fruit powder supplementation has been shown to improve dexamethasone-induced dyslipidemia and insulin resistance in rats, highlighting its broader impact on metabolic syndrome parameters (Mali et al., 2012).



5. Clinical Application & Safety Considerations

Human Clinical Efficacy

Human clinical trials evaluating *L. siceraria* fruit juice supplementation (200 mL daily) have demonstrated statistically significant reductions in serum TG, TC, and LDL-C over a 90-day protocol (Puri, 2012).

For practical clinical application in dyslipidemic patients, it can be incorporated as:

- **Fresh Fruit Juice:** 100–200 mL of raw extract consumed once daily in the morning on an empty stomach.
- **Dietary Preparation (Pathya Ahara):** Steamed or lightly cooked vegetable dishes prepared with minimal saturated fat and digestive spices.

CRITICAL SAFETY WARNING: CUCURBITACIN TOXICITY

While *Lagenaria siceraria* is broadly safe, bitter bottle gourd must never be consumed. Bitterness signals elevated levels of Cucurbitacins, highly cytotoxic triterpenoids (Saeed et al., 2022). Ingestion of bitter juice causes severe gastrointestinal ulceration, hematemesis, hypotension, and acute vascular collapse (Sharma et al., 2012). Clinicians must educate patients to taste a small piece of raw gourd prior to extraction; any bitter fruit must be discarded immediately.

6. Public Health and Translational Roadmap

Integrating *Lagenaria siceraria* as an evidence-based Pathya intervention provides a cost-effective strategy for NCD prevention:

- **Lifestyle Counseling at Primary AYUSH Health Centers:** Educating patients on the daily dietary inclusion (Dinacharya) of Lauki.
- **Community Awareness Programs:** Disseminating guidelines regarding proper preparation methods and safety warnings against bitter gourd toxicity.
- **Integrative Research Frameworks:** Conducting pragmatic clinical trials combining standard lifestyle advice with standardized Alabu preparations to measure long-term cardiovascular outcomes.

7. Conclusion

Lagenaria siceraria represents an accessible, scientifically validated therapeutic vegetable for managing dyslipidemia and metabolic dysfunction. Its dual action—clearing Srotorodha via Ruksha-Laghu Guna and regulating systemic lipid parameters through antioxidant and phytosterol mechanisms—makes it an ideal component of integrative Medoroga protocols. Promoting non-bitter Lauki as a routine dietary intervention offers a scalable avenue for public-centered metabolic health management.

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Madhumeha Associated with Obesity – Ayurvedic Perspective of Type 2 Diabetes Mellitus

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Introduction

Type 2 Diabetes Mellitus (T2DM) is a chronic metabolic disorder characterized by hyperglycaemia, insulin resistance and progressive impairment of insulin secretion. Obesity, sedentary lifestyle, excessive calorie intake and unhealthy dietary patterns are major risk factors. From an Ayurvedic perspective, obesity-associated T2DM can be understood through the concepts of Prameha/Madhumeha, Sthaulya, Kapha, Meda Dushti, Agnimandya, Kleda and Srotodusti.

Excessive intake of Madhura (sweet), Guru (heavy), Snigdha (unctuous) and Picchila (slimy) foods, overeating, lack of physical activity and excessive daytime sleeping may promote Kapha and Meda accumulation. The process can be broadly understood as: Kapha Vriddhi → Meda Vriddhi/Dushti → Agnimandya → Kleda accumulation → Srotodusti → Prameha

This may be conceptually correlated with:

Obesity → adipose tissue dysfunction → insulin resistance → impaired glucose metabolism → T2DM.

This is a conceptual correlation and not a direct equivalence between Ayurvedic and modern disease classifications.

Nidana (Etiological Factors)

Ayurveda gives considerable importance to improper diet and lifestyle in Prameha. Acharya Charaka states:

Acharya Vagbhata states:

"आस्यासुखं स्वप्नसुखं दधीन्न ग्राम्यौदकानूपरसाः पयांससा
नवान्नपानं गुडवैकृतं च प्रमेहेहेतुः कफकृच्च सखमा॥"

(Charaka Samhita, Chikitsa Sthana 6/4)

Sedentary comfort, excessive sleeping, curd, milk, newly harvested grains and jaggery preparations are described among the causative factors. In the context of obesity associated with T2DM, these can be understood in relation to excessive calorie intake, sweet and carbohydrate-rich foods, physical inactivity and excess body weight. Thus, Apathyanimitaja Prameha provides a useful Ayurvedic framework for understanding lifestyle-associated diabetes.

Role of Kapha, Meda and Kleda

Kapha, Meda and Kleda are important factors in the pathogenesis of Prameha. Charaka states

"मेदश्च मांसं च शरीरजं च क्लेदं कफो बस्तिगतं प्रदृष्य
करोति मेहान् समुदीर्णमुष्णैस्तानेव पित्तं परिदूष्य चापि॥५॥"

(Charaka Samhita, Chikitsa Sthana 6/5)

Vitiated Kapha affects Meda, Mamsa and Kleda and contributes to Prameha. In obesity associated diabetes, Meda Dushti and Kleda accumulation are particularly relevant, while Pitta and Vata may participate as the disease progresses.

Thus:

Kapha + Meda + Kleda + Agni dysfunction → Prameha

Sthula Pramehi

Charaka specifically describes the obese and strong Prameha patient:

“स्थूलाः प्रमेही बलवान्नहैकाः कृशस्तथैकाः परदबुलश्च
सम्बन्धं तत्र कृशस्य कायं संशोधनं दोषबलाधकस्य॥”

(Charaka Samhita, Chikitsa Sthana 6/15)

Charaka differentiates between Sthula-Balavan and Krisha-Paridurbala Prameha patients. The Sthula Pramehi has considerable conceptual relevance to the obese phenotype of T2DM, although it should not be considered an exact diagnostic equivalent.

Ayurvedic management is individualized according to Prakriti, Bala, Dosha, Agni, Meda, age and disease stage.

Sushruta's Perspective

Acharya Sushruta differentiates Sahaja Prameha from Apathyanimittaja Prameha. The latter is associated with improper diet and lifestyle and is described in individuals who are predominantly Sthula, Bahvashi, Snigdha and accustomed to Shayyāsana-Svapna. This classical description shows a conceptual similarity with the modern risk profile of obesity-associated T2DM, where excessive food intake, sedentary behaviour and excess adiposity are important contributors.

Samprapti and Role of Agni

Agni is fundamental to digestion and metabolism. In obesity, excessive food intake, inappropriate diet and physical inactivity may disturb Jatharagni and Dhatvagni, leading to impaired Meda metabolism and Kleda accumulation. Therefore, maintaining appropriate Agni is an important therapeutic objective.

Ayurvedic Chikitsa Siddhanta

Management should be individualized according to Prakriti, Dosha, Bala, Agni, obesity, glycaemic status and associated conditions.

Nidana Parivarjana

The first step is avoidance of causative factors, including excessive sweets, calorie-dense foods, overeating, heavy and oily foods, sedentary behaviour, daytime sleeping and lack of exercise.

Apatarpana and Exercise

In a Sthula-Balavan Pramehi with Kapha-Meda predominance, appropriate Apatarpana measures may be considered. Charaka states:

“क्लेदश्च मेदश्च कफश्च वृद्धः प्रमेहेतुः प्रसमीक्ष्य तस्मात्
वैद्येन पूर्वं कफपित्तजेषु मेहेषु कार्याण्यपतर्पणानि ॥५१॥”

Charaka Samhita, Chikitsa Sthana 6/51

Dietary Management

Diet should emphasize Yava (barley), Mudga (green gram), suitable old grains, vegetables, fibre-rich foods and appropriate protein, with controlled portions. Sweets, refined carbohydrates, fried foods, processed foods, sugar-sweetened beverages and unnecessary snacking should be minimized.

मेदोरोग : आयुर्वेद की दृष्टि से कारण, लक्षण एवं उपचार

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प्रस्तावना

आयुर्वेद में "मेदोरोग" का अर्थ है शरीर में **मेद धातु (वसा)** का असामान्य रूप से बढ़ जाना। आधुनिक चिकित्सा विज्ञान में इसे मुख्यतः **मोटापा (Obesity)** के रूप में जाना जाता है। आज की बदलती जीवनशैली, असंतुलित भोजन, शारीरिक श्रम की कमी तथा मानसिक तनाव के कारण मेदोरोग तेजी से बढ़ रहा है। यह केवल सौंदर्य की समस्या नहीं है, बल्कि अनेक गंभीर रोगों जैसे मधुमेह, उच्च रक्तचाप, हृदय रोग, फैटी लिवर और जोड़ों के रोगों का प्रमुख कारण भी बन सकता है।

आयुर्वेद के अनुसार जब शरीर में **कफ दोष** तथा **मेद धातु** की अत्यधिक वृद्धि हो जाती है और शरीर की अग्नि (पाचन शक्ति) विकृत हो जाती है, तब मेदोरोग उत्पन्न होता है।

मेदोरोग के कारण (निदान)

आयुर्वेद में मेदोरोग के अनेक कारण बताए गए हैं। प्रमुख कारण निम्नलिखित हैं—

1. अनुचित आहार

- अत्यधिक मीठे, तले हुए एवं चिकनाईयुक्त पदार्थों का सेवन।
- बार-बार भोजन करना।
- अधिक मात्रा में घी, मक्खन, मिठाई एवं फास्ट फूड का सेवन।
- आवश्यकता से अधिक भोजन करना।

2. शारीरिक श्रम का अभाव

3. दिन में सोना

आयुर्वेद में दिन में अधिक सोने को कफ एवं मेद वृद्धि का प्रमुख कारण माना गया है।

4. मानसिक कारण

- तनाव
- चिंता
- अवसाद

5. आनुवंशिक कारण

कुछ व्यक्तियों में मोटापा परिवार से मिलने वाली प्रवृत्ति के कारण भी हो सकता है।

6. अग्निमाण्ड जब पाचन शक्ति कमजोर हो जाती है, तब भोजन ठीक प्रकार से नहीं पचता और अतिरिक्त मेद बनने लगता है।

मेदोरोग के लक्षण

आयुर्वेद में निम्नलिखित लक्षण बताए गए हैं—

- शरीर में अत्यधिक चर्बी का जमा होना।
- पेट एवं कमर का बढ़ जाना।
- थोड़े कार्य में ही सांस फूलना।
- अधिक पसीना आना।
- अत्यधिक भूख एवं प्यास लगना।
- शरीर में आलस्य एवं भारीपन।
- शीघ्र थकान होना।
- चलने-फिरने में कठिनाई।
- घुटनों एवं कमर में दर्द।
- खरटि आना।
- नींद अधिक आना।



मेदोरोग की आयुर्वेदिक रोग-उत्पत्ति (सम्प्राप्ति)

आयुर्वेद के अनुसार अत्यधिक गुरु (भारी), स्निग्ध (चिकनाईयुक्त), मधुर (मीठा) भोजन तथा व्यायाम की कमी से कफ दोष बढ़ता है। इससे जठराग्नि विकृत हो जाती है और अतिरिक्त मेद का निर्माण होने लगता है। यह अतिरिक्त मेद धीरे-धीरे शरीर के विभिन्न भागों में जमा होकर शरीर का भार बढ़ा देता है तथा अन्य धातुओं के पोषण में बाधा उत्पन्न करता है।

मेदोरोग के उपद्रव

यदि समय पर उपचार न किया जाए तो निम्न समस्याएँ उत्पन्न हो सकती हैं—

- मधुमेह
- उच्च रक्तचाप
- हृदय रोग
- फैटी लिवर
- गठिया
- घुटनों का दर्द
- स्लीप एपनिया
- बाइपास की समस्या
- मानसिक तनाव एवं आत्मविश्वास में कमी

आयुर्वेदिक उपचार

1. निदान परिवर्तन

रोग उत्पन्न करने वाले कारणों का त्याग करना सबसे पहला उपचार है।

- तैलीय भोजन कम करें।
- मिठाइयाँ कम लें।
- जंक फूड से बचें।
- दिन में सोने से बचें।
- नियमित व्यायाम करें।

2. औषधि

वैद्य की सलाह के अनुसार निम्न औषधियाँ उपयोग की जा सकती हैं—

- त्रिफला चूर्ण
- त्रिकटु चूर्ण
- गुग्गुलु योग (जैसे त्रिफला गुग्गुलु, नवक गुग्गुलु आदि)
- पुनर्नवा
- विडंग
- मुस्ता
- चित्रक
- लौह आधारित कुछ योग (आवश्यकता अनुसार)

3. पंचकर्म चिकित्सा

रोगी की प्रकृति एवं स्थिति के अनुसार—

- उद्वर्तन (औषधीय चूर्ण से शरीर की मालिश)
- वमन
- विरेचन
- बस्ती

जैसी पंचकर्म विधियाँ लाभकारी हो सकती हैं।



आहार (पथ्य)

मेदोरोग में निम्न आहार उपयोगी माने गए हैं—

- जौ
- पुराना गेहूँ
- कोदो, साँवा एवं अन्य मोटे अनाज
- मूंग दाल
- हरी सब्जियाँ
- करेला
- लौकी
- परवल
- पालक
- पपीता
- अमरुद
- सेब
- नींबू
- छाछ

पर्याप्त मात्रा में पानी पीना भी लाभकारी है।



अपथ्य

इन पदार्थों से बचना चाहिए—

- मिठाइयाँ
- चीनी
- कोल्ड ड्रिंक
- बर्गर
- पिज्जा
- अत्यधिक चावल
- तली हुई वस्तुएँ
- अत्यधिक घी एवं मक्खन
- शराब
- धूम्रपान

योग एवं प्राणायाम

मेदोरोग में निम्न योगासन उपयोगी माने जाते हैं—

- सूर्य नमस्कार
- त्रिकोणासन
- भुजंगासन
- पवनमुक्तासन
- नौकासन
- धनुरासन

प्राणायाम—

- कपालभाति
- अनुलोम-विलोम
- भास्त्रिका (उपयुक्त होने पर)
- भ्रामरी

जीवनशैली (विहार)

- प्रतिदिन 45-60 मिनट तेज चाल से चलें।
- योग एवं प्राणायाम करें।
- पर्याप्त नींद लें।
- तनाव कम करें।
- देर रात तक जागने से बचें।
- भोजन निश्चित समय पर करें।
- भोजन अच्छी तरह चबाकर करें।

रोकथाम

- संतुलित आहार लें।
- नियमित व्यायाम करें।
- वजन की समय-समय पर जांच करें।
- अधिक भोजन से बचें।
- मानसिक तनाव कम रखें।
- पर्याप्त नींद लें।

Sthaulya with Hypertension & Cardiovascular Risk: An Ayurvedic Review

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Introduction

Sthaulya (obesity) is an important metabolic disorder described in Ayurveda and is characterized by excessive accumulation of Meda Dhatu along with impairment of normal metabolism. In the present era, obesity has become increasingly common because of sedentary habits, excessive calorie intake, irregular dietary patterns, stress and inadequate physical activity. It is also closely associated with hypertension, dyslipidaemia, insulin resistance and an increased risk of cardiovascular disease.

From an Ayurvedic point of view, Sthaulya is not merely an increase in body weight. It represents an imbalance in Dosha, Agni, Meda Dhatu and Srotas, which can gradually affect the normal functioning of the body. When obesity is accompanied by hypertension and other cardiovascular risk factors, a comprehensive approach addressing both metabolic and lifestyle-related factors becomes particularly important.

Sthaulya and Hypertension

Hypertension is frequently associated with obesity, particularly when obesity is accompanied by physical inactivity, insulin resistance and metabolic abnormalities. Ayurveda does not describe hypertension as an exact one-to-one equivalent of a modern disease entity. However, several Ayurvedic concepts may help explain its pathogenesis.

Vyana Vayu has an important role in the movement and circulation of Rasa and Rakta throughout the body. Disturbance of Vyana Vayu, together with Kapha-Meda aggravation and Srotorodha, may adversely influence normal circulation. Therefore, in an obese individual, excessive Meda accumulation, impaired Agni and obstruction of the normal pathways of circulation may be considered important factors contributing to cardiovascular and circulatory disturbances.

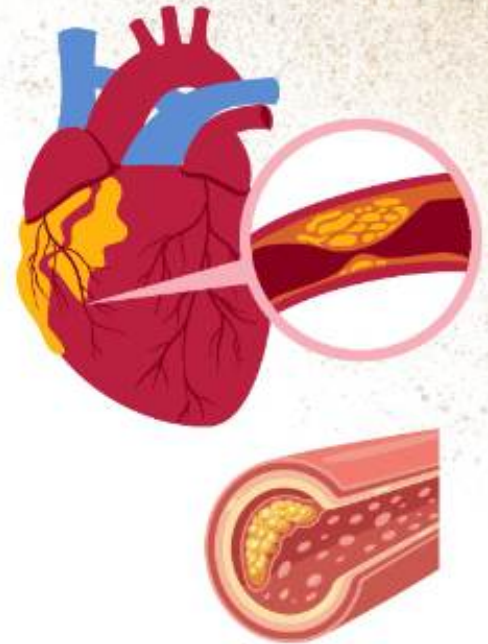


Cardiovascular Risk in Sthaulya

Obesity is an established risk factor for cardiovascular disease. Persistent excess body fat may be associated with hypertension, abnormal lipid levels, insulin resistance, chronic low-grade inflammation and reduced physical activity. These factors can act together and gradually increase cardiovascular risk.

From an Ayurvedic perspective, the combination of Kapha aggravation, Meda Vriddhi, Agnimandya and Srotorodha provides a holistic framework for understanding the Ayurvedic Understanding of Sthaulya

Thus, Sthaulya should be considered not simply as an excess-weight condition but as a systemic metabolic disturbance that may influence multiple organs and physiological processes.



Ayurvedic Approach to Management

Management of Sthaulya should begin with Nidana Parivarjana, that is, identification and avoidance of the factors responsible for the condition. Dietary and lifestyle modification are therefore central to management.

Dietary Modification

Food should be taken according to the individual's digestive capacity and energy requirements. Excessive intake of sweet, oily, heavy and highly processed foods should be avoided. Appropriate portions of vegetables, whole grains, pulses and other fibre-rich foods can be incorporated into the diet.

The aim should not be extreme restriction but sustainable dietary correction that improves digestion and supports gradual weight reduction.

Physical Activity

Regular Vyayama is one of the most important measures in the management of Sthaulya. Exercise helps control body weight, improves metabolic health and supports cardiovascular fitness.

The intensity and duration should be individualized. In patients with hypertension, cardiac disease or significant cardiovascular risk, exercise should be initiated cautiously and according to clinical status.

Lifestyle Modification

Ayurveda places considerable importance on daily routine and healthy habits. Avoiding excessive daytime sleep, prolonged sitting, overeating and physical inactivity can be particularly beneficial in Sthaulya.

Adequate sleep, stress management and regularity in meals and daily activities can further support metabolic health.

Ayurvedic Therapeutic Measures

Depending on the patient's Prakriti, Dosha, Agni, Bala, age and associated conditions, an Ayurvedic physician may consider measures such as Langhana, Deepana-Pachana and appropriate Shamana therapies.

Selected Shodhana procedures may be considered in suitable individuals after proper assessment. However, Panchakarma should not be undertaken indiscriminately, particularly in individuals with uncontrolled hypertension, established cardiovascular disease or other significant comorbidities.

Snoring- An Early Clinical Marker of Obesity and Metabolic Syndrome

"A sound that disturbs the night may be a warning that protects your future health."



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Introduction

Snoring is one of the most common sleep-related complaints worldwide. It is often dismissed as a harmless habit, a source of family jokes, or simply an inevitable consequence of aging. While occasional snoring may occur during a common cold or after physical exhaustion, habitual snoring should never be ignored. Increasing evidence indicates that persistent snoring is frequently associated with obesity, metabolic syndrome, and obstructive sleep apnea (OSA)- conditions that significantly increase the risk of cardiovascular disease, diabetes mellitus, stroke, and reduced quality of life.

The global prevalence of obesity has risen dramatically over the past few decades due to sedentary lifestyles, unhealthy dietary habits, stress, inadequate sleep, and reduced physical activity. Parallel to this obesity epidemic, the prevalence of habitual snoring and sleep-disordered breathing has also increased. Today, clinicians recognize snoring not merely as a nighttime nuisance but as a valuable clinical indicator of underlying metabolic dysfunction.

From an Ayurvedic perspective, the growing burden of Sthoulya (obesity) and Medoroga reflects disturbances in Agni, Kapha Dosha, and Meda Dhatu. These derangements affect multiple physiological systems, including respiration and sleep. Thus, snoring may be viewed as one of the manifestations of systemic imbalance rather than an isolated symptom.

Understanding Snoring

Snoring is the harsh or vibrating sound produced when airflow through the upper airway becomes partially obstructed during sleep. As the muscles of the throat relax, the tongue, soft palate, and surrounding tissues narrow the airway. Air passing through this narrowed passage causes these tissues to vibrate, generating the characteristic snoring sound.

Although almost everyone snores occasionally, habitual snoring is more common among:

- Individuals with obesity
- Middle-aged and elderly adults
- Men (though post-menopausal women are also at increased risk)
- Smokers
- Alcohol consumers
- Individuals with nasal obstruction or deviated nasal septum
- People with enlarged tonsils or adenoids
- Those with a family history of sleep-disordered breathing

Not all snoring is dangerous, but persistent, loud snoring- particularly when accompanied by pauses in breathing- requires medical attention.

Why Obesity Leads to Snoring

Obesity is the single most important modifiable risk factor for habitual snoring and obstructive sleep apnea.

Several mechanisms explain this relationship:

1. Fat Deposition Around the Upper Airway

Excess adipose tissue accumulates around the neck, tongue, and pharyngeal structures, narrowing the upper airway and increasing its tendency to collapse during sleep.

2. Increased Neck Circumference

A larger neck circumference exerts external pressure on the airway. Individuals with thicker necks are more likely to experience airway obstruction during sleep.

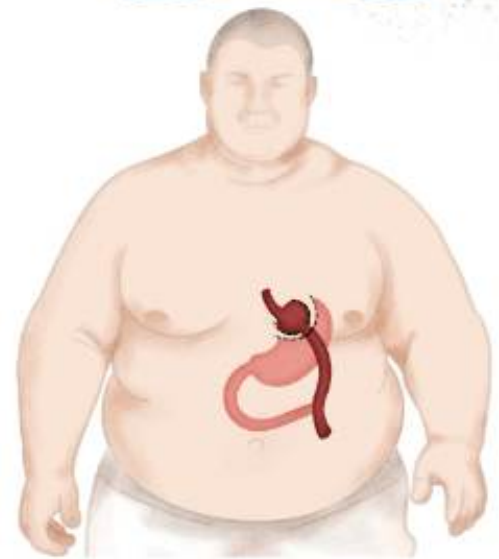
3. Reduced Lung Volume

Abdominal obesity restricts diaphragmatic movement and decreases lung expansion. Reduced lung volume diminishes the stabilizing effect on the upper airway, making collapse more likely.

4. Chronic Low-Grade Inflammation

Obesity is characterized by persistent systemic inflammation. Inflammatory mediators contribute to swelling and dysfunction of upper airway tissues, further increasing airway resistance.

These changes collectively transform simple snoring into a spectrum of sleep-disordered breathing that may eventually progress to obstructive sleep apnea.



Snoring and Obstructive Sleep Apnea

Snoring is often the earliest symptom of **Obstructive Sleep Apnea (OSA)**.

OSA occurs when the upper airway repeatedly collapses during sleep, temporarily stopping breathing for several seconds. These episodes may occur dozens or even hundreds of times during the night. Each interruption lowers blood oxygen levels, forcing the brain to briefly awaken the individual to restore normal breathing. Although these awakenings are often unnoticed, they fragment sleep and prevent adequate rest.

Common symptoms include:

- Loud habitual snoring
- Witnessed pauses in breathing
- Choking or gasping during sleep
- Morning headaches
- Dry mouth on waking
- Excessive daytime sleepiness
- Difficulty concentrating
- Poor memory
- Mood disturbances
- Reduced work productivity

Untreated OSA significantly increases the risk of hypertension, arrhythmias, myocardial infarction, stroke, insulin resistance, and sudden cardiovascular events.



Snoring and Metabolic Syndrome: An Invisible Connection

Metabolic syndrome represents a cluster of interconnected metabolic abnormalities that substantially increase cardiovascular risk. It includes:

- Central obesity
- Hypertension
- Elevated fasting blood glucose
- High triglycerides
- Reduced HDL cholesterol

Several studies have demonstrated that habitual snoring is independently associated with metabolic syndrome. The relationship is complex and bidirectional.

Repeated airway obstruction produces intermittent hypoxia (periodic reduction in blood oxygen), leading to:

- Increased oxidative stress
- Chronic systemic inflammation
- Activation of the sympathetic nervous system
- Elevated cortisol levels
- Endothelial dysfunction
- Insulin resistance

These changes impair glucose metabolism and lipid regulation, creating a vicious cycle where obesity worsens snoring, and poor-quality sleep further aggravates metabolic dysfunction.

Thus, snoring may represent one of the earliest visible signs of an otherwise silent metabolic disorder.

Impact on Overall Health

Ignoring habitual snoring may have consequences extending far beyond disturbed sleep.

Persistent sleep-disordered breathing has been associated with:

- Type 2 diabetes mellitus
- Hypertension
- Coronary artery disease
- Stroke
- Cardiac arrhythmias
- Fatty liver disease
- Depression and anxiety
- Impaired cognitive performance
- Reduced immunity
- Increased risk of road traffic and workplace accidents due to daytime sleepiness

Therefore, evaluating snoring provides an opportunity for early identification of individuals at risk for multiple chronic diseases.

The Ayurvedic Perspective

Ayurveda describes **Sthoulya** as one of the eight undesirable bodily constitutions (*Ashta Nindita Purusha*). Classical texts emphasize that excessive accumulation of **Meda Dhatu** impairs bodily function and predisposes individuals to numerous disorders.

The principal contributing factors include:

- Excessive consumption of sweet, oily, heavy foods
- Lack of exercise
- Daytime sleeping
- Psychological stress
- Sedentary habits
- Overnutrition (*Santarpana*)

These factors aggravate **Kapha Dosha**, weaken **Jatharagni**, disturb **Medodhatvagni**, and promote abnormal accumulation of fat tissue.

Although classical Ayurvedic texts do not describe snoring as a separate disease, the pathophysiological concepts provide a logical explanation. Excessive Kapha, Meda accumulation, and obstruction of bodily channels (*Srotorodha*) can interfere with normal respiratory function during sleep. Thus, habitual snoring in obese individuals may be understood as one manifestation of systemic imbalance.

Lifestyle Modification: The First Line of Prevention

Fortunately, snoring associated with obesity is often reversible.

Simple lifestyle measures can produce remarkable improvements.

Weight Reduction

Even a modest weight loss of 5–10% significantly reduces airway obstruction and improves sleep quality.

Healthy Diet

A balanced diet emphasizing vegetables, fruits, whole grains, lean proteins, and adequate hydration helps control body weight and metabolic health while avoiding excessive intake of refined carbohydrates, sugary beverages, and processed foods.

Regular Physical Activity

At least 150 minutes of moderate-intensity exercise per week improves weight management, insulin sensitivity, cardiovascular fitness, and sleep quality.

Sleep Hygiene

Maintaining regular sleep timings, avoiding electronic devices before bedtime, and ensuring adequate sleep duration improve overall sleep architecture.

Avoid Alcohol and Smoking

Alcohol relaxes throat muscles and worsens snoring. Smoking causes airway inflammation and swelling, increasing resistance to airflow.

Sleeping Position

Many individuals snore predominantly while sleeping on their back. Side sleeping helps maintain airway patency and may reduce snoring.

Ayurvedic Preventive Measures

Ayurveda emphasizes prevention through healthy living.

Important measures include:

- Following **Dinacharya** (daily regimen)
- Practicing regular **Vyayama** (exercise)
- Consuming **Laghu** and easily digestible foods
- Avoiding overeating
- Restricting excessive daytime sleep
- Maintaining proper digestive fire (*Agni*)

Under the supervision of qualified Ayurvedic physicians, therapies such as **Langhana**, **Lekhana**, **Udvartana**, and selected **Panchakarma** procedures may be incorporated into individualized management plans for obesity.

When Should You Seek Medical Advice?

Medical consultation is recommended if snoring is:

- Loud and persistent
- Associated with pauses in breathing
- Accompanied by excessive daytime sleepiness
- Present along with obesity or hypertension
- Associated with morning headaches
- Causing impaired work performance or poor quality of life

Timely evaluation may include sleep assessment, metabolic screening, and, where indicated, polysomnography to diagnose obstructive sleep apnea.

Public Health Perspective

Obesity and metabolic syndrome have become major public health challenges affecting both developed and developing nations. Increasing urbanization, reduced physical activity, unhealthy eating habits, and prolonged screen time have contributed to an alarming rise in these disorders, even among young adults.

Recognizing snoring as a simple, observable clinical marker provides healthcare professionals with an excellent opportunity for early screening. Community awareness campaigns, school health programs, workplace wellness initiatives, and routine health check-ups should include education regarding the significance of habitual snoring.

Early recognition allows timely intervention, preventing progression to severe metabolic disease and reducing healthcare costs.

Conclusion

Snoring should no longer be viewed merely as an irritating nighttime sound. It is often the body's early warning system, signalling the presence of obesity, metabolic syndrome, or obstructive sleep apnea. Persistent snoring reflects much more than disturbed sleep—it may indicate underlying metabolic and cardiovascular risk.

The encouraging news is that many of these risks are preventable. Weight management, healthy nutrition, regular physical activity, adequate sleep, and early medical evaluation can substantially improve both sleep quality and long-term health outcomes.

Ayurveda complements this approach by emphasizing balanced diet, disciplined lifestyle, proper digestion, and individualized management of **Sthoulya**. Integrating these principles with modern preventive strategies offers a holistic pathway toward healthier sleep and healthier lives.

As healthcare professionals and individuals alike, we should begin to listen carefully— not only to the sound of snoring, but also to the important message it may be conveying. Recognizing this seemingly ordinary symptom at the right time may help prevent extraordinary health consequences in the future.

BIOCHEMICAL AND PHARMACOLOGICAL MECHANISM OF UDVARTANA THERAPY IN THE MANAGEMENT OF ADIPOSITY (STHAULYA): A Contemporary Review

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ABSTRACT

High body mass index (BMI) and metabolic syndrome in today's era present major escalating global health challenges. In the Traditional Indian medicines paradigm Sthaulya (obesity) represents a pathological metabolic state triggered by an imbalance in Medho dhatu (fat tissue metabolism) and a sluggish state of Dhatvagni (tissue specific metabolic fire). In this paper we analyse how Ruksha Udvartan by simple dry massage in reverse direction can induces localised thermogenesis, lipolysis and improved lymphatic clearance making it a valuable strategy for targeted adipose tissue reduction and establish it as highly reliable, non invasive therapeutic protocol for metabolic syndrome.

Introduction:

Clinical Scope of Sthaulaya

Within ancient text obesity is categorised as a *Santarpan Janya Vyadhi* which is born by metabolic over nutrition and channel stagnation which leads to the systemic distribution of non functional, unregulated adipose tissue which causes *Avarana* in the *Srotas* i.e. obstruction in the body's micro channels.

Udvartan

In *Ayurvedic* classical text *Acharya Vangbhattacharya* defines its primary actions as three distinct physiological outcomes

1. *Kaphahara*- mitigation of vitiated *Kapha*
2. *Medasaha Pravilayanam*- liquefaction and mobilisation of stagnant fat (*Meda*)
3. *Sthrikaranam Anganam*- enhancing muscular tone and core physical stability.

The whole procedure is meticulously executed across in three main phases *Purva*, *Pradhana* and *Paschat Karma* to optimize cellular absorption and mechanical breakdown of body fat.





Purv Karma

Patient selection- Anthropometric markers like BMI, waist-hip ratio, skinfold thickness recorded

Material thermogenesis- The selected raw herbs e.g. Triphala or Kolakullatthadi Churna gently dry heated in a pan this allows enhancing the natural Ruksha properties by lowering the moisture content of the herbal powder.

Pradhan karma

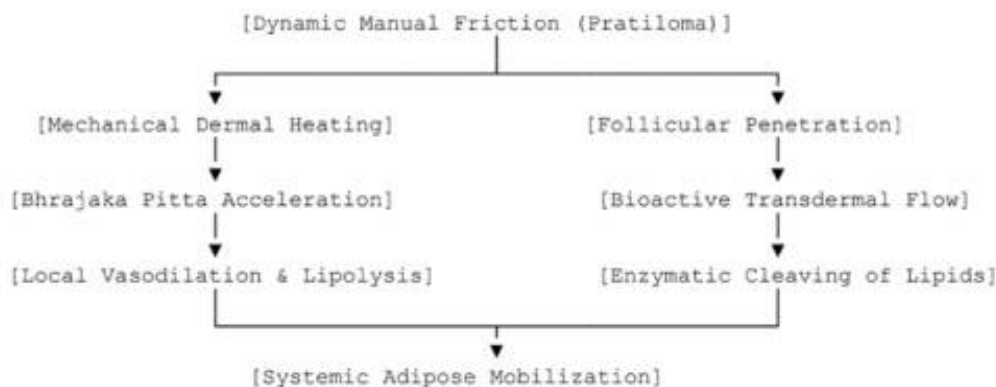
Anatomical positioning- Patient is massage is seven standard massage position while *Udvartan* to ensuring uniform coverage for about 30-35 min. Herbal powder massaged manually in upward frictional strokes i.e. *Pratiloma Gati*, the force is directed against natural direction of hair follicles to maintain high friction and optimal deep dermal stimulation

[Distal Areas (Limbs / Extremities)] —————> Upward High-Pressure Stroke —————> [Proximal Areas (Torso / Heart)]

Paschat karma

Patient is advised to rest briefly before undergoing transfer to *Bashpa Swedana*. afterwards and gently scrape off the powder from the body afterwards luke warm water is administered to clear all the residual impurities

Dual-Pathway Mode of Action (Mechanism) The clinical efficacy of *Udvartana* relies on two interlinked pathways



1. Mechanical Pathway (Thermogenesis & Lymph Drainage)

- **Stimulation of Bhrajaka Pitta:** The intense skin friction directly excites the nerve endings and metabolic elements of the epidermis (*Bhrajaka Pitta*). This generates real, measurable physical heat over the targeted fat deposits.
- **Triglyceride Mobilization:** The localized rise in tissue temperature speeds up cellular metabolism in the subcutaneous fat layers. This triggers lipolysis, breaking down stored dense triglycerides into free fatty acids that enter the bloodstream for elimination.
- **Lymphatic and Cellulite Clearance:** Upward physical pressure increases the flow rate of the superficial lymphatic system. It manually forces stagnant interstitial fluids back into the central circulation, reducing cellulite and tissue swelling.

2. Chemical Pathway (Pharmacological Scraping - *Lekhana*)

- **Srotoshodhana (Channel Clearance):** The dry, fine particles act as natural sponges. They absorb extra moisture (*Kleda*) and oily toxins (*Ama*) secreted by the skin glands, clearing away micro-channel blockages.
- **Follicular Bioavailability:** The heat generated by friction dilates the hair follicles and sweat pores. This allows the active plant chemicals (like polyphenols and bitter glycosides) to pass through the skin barrier, where they directly inhibit fat-storing enzymes (Adipogenesis).

• Specialized Formulations and Bio-Chemical Targets

Name of Formulation	Herbal Composition Highlights	Primary Physiological Target Action
Triphala Churna	<i>Emblica officinalis, Terminalia chebula, Terminalia bellirica</i>	High tannin and vitamin C content acts as a powerful tissue toner, encouraging cellular tightening.
Kolakulaththadi Churna	<i>Ziziphus mauritiana, Macrotyloma uniflorum, Dolichos biflorus</i>	Heavy concentration of warming compounds that break down deep-seated, stubborn fat pockets.
Trikatu Churna	<i>Zingiber officinale, Piper nigrum, Piper longum</i>	Rich in piperine and gingerols, which dilate blood vessels and boost local fat-burning metabolic rates.

Proven Clinical and Anthropometric Efficacy

Peer-reviewed clinical evaluations prove that a consistent, systematic application of Udvartana for a minimum of 14 consecutive days yields measurable health improvements:

- **Reduction in Girth Metrics:** Patients display significant reductions in waist, hip, and mid-thigh circumferences.
- **Lipid Downregulation:** Serum testing confirms lower circulating levels of Low-Density Lipoproteins (LDL) and systemic Triglycerides.
- **Enhanced Skin Firmness:** Unlike sudden surgical fat removal, this therapy prevents sagging skin by toning and tightening the underlying muscle layers.

Conclusion

Udvartana is a scientifically verifiable, highly structured external metabolic treatment. It works by combining physical kinetic energy with natural plant biochemistry to clear blocked circulatory pathways and break down fat cells safely.

To achieve permanent results in treating obesity, this therapy should be combined with targeted changes in diet (Pathya Ahara) and regular physical exercise (Vyayama).

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Polycystic Ovarian Syndrome and Its Association with Obesity:

An Integrative Perspective through Ayurveda

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Abstract

Polycystic Ovarian Syndrome (PCOS) is one of the most prevalent endocrine disorders affecting women of reproductive age, characterised by ovulatory dysfunction, hyperandrogenism, and polycystic ovarian morphology. Obesity, particularly central adiposity, is a major determinant of disease severity and contributes significantly to insulin resistance, chronic inflammation, and reproductive dysfunction. Although PCOS is not explicitly described in classical Ayurvedic literature, its etiopathogenesis and clinical manifestations closely resemble conditions arising from **Kapha-Medo Dushti**, **Agnimandya**, **Āma**, and **Ārtava Duṣṭi**. Ayurveda offers a holistic understanding by emphasising correction of impaired metabolism, restoration of Doṣhic equilibrium, and normalisation of reproductive physiology. This article explores the scientific relationship between obesity and PCOS while correlating the condition with Ayurvedic principles and classical references.

Keywords: Polycystic Ovarian Syndrome, Obesity, Insulin Resistance, Ayurveda, *Medoroga*, *Ārtava Duṣṭi*, *Kapha*.

Introduction

Polycystic Ovarian Syndrome affects approximately 8–20% of women of reproductive age worldwide, depending on diagnostic criteria. It is a multifactorial disorder involving genetic susceptibility, endocrine dysfunction, metabolic disturbances, and environmental influences. Nearly 50–80% of women with PCOS are overweight or obese, making obesity one of the strongest modifiers of disease progression. Excess adiposity aggravates insulin resistance, stimulates ovarian androgen production, and perpetuates chronic low-grade inflammation, thereby creating a vicious metabolic cycle.

Ayurveda recognises health as a state of equilibrium of Doṣa, Agni, Dhātu, and Mala. Disturbance in these physiological principles due to faulty diet and sedentary lifestyle forms the basis of many metabolic disorders, including conditions analogous to PCOS.

Obesity and Pathophysiology of PCOS

Obesity, especially visceral obesity, plays a central role in the pathogenesis of PCOS. Adipose tissue functions as an active endocrine organ secreting adipokines, inflammatory cytokines, leptin, and resistin, which interfere with insulin signalling pathways. Hyperinsulinemia enhances luteinizing hormone-mediated androgen synthesis by ovarian theca cells while simultaneously reducing hepatic synthesis of sex hormone-binding globulin, increasing circulating free testosterone.



Elevated androgen levels arrest follicular maturation, resulting in chronic anovulation and characteristic polycystic ovarian morphology. Furthermore, oxidative stress and systemic inflammation contribute to endothelial dysfunction and increase long-term risks of type 2 diabetes mellitus, dyslipidemia, hypertension, and cardiovascular disease.

Ayurvedic Perspective

Although PCOS is not mentioned as a distinct disease entity, its clinical features correspond with disorders involving **Kapha**, **Meda**, **Vāta**, and **Ārtava**. The primary pathological sequence begins with **Agnimandya**, leading to formation of **Āma**, accumulation of **Meda Dhātu**, obstruction of **Srotas**, and impairment of ovarian function. According to *Acharya Charak*, physical inactivity, excessive daytime sleep, and **Kapha**-promoting diets enhance **Meda** accumulation, which closely parallels modern concepts of obesity-induced metabolic dysfunction.

Obstruction of **Srotas** results in abnormal accumulation of **Doṣas** and impaired tissue nourishment. In PCOS, this concept can be interpreted as disruption of ovarian microcirculation.

Samprapti (Probable Pathogenesis)

Excessive intake of **Guru**, **Snigdha**, **Madhura Ahara**, lack of physical activity, psychological stress, and irregular dietary habits cause **Kapha** and **Meda Vriddhi**. **Agnimandya** leads to incomplete digestion and formation of **Āma**, which obstructs **Ārtavavaha Srotas**. Vitiating **Apāna Vāta**, unable to perform its physiological functions because of **Kapha**-induced obstruction, results in irregular menstruation, anovulation, and infertility. Thus, the disease represents a combined pathology of **Kapha-Medo Dushti**, **Āma**, **Srotorodha**, and **Apāna Vāta Vaigunya**.

Therapeutic Implications

Management should primarily focus on correcting metabolic dysfunction rather than merely treating menstrual irregularities. **Nidāna Parivarjana** remains the first therapeutic principle. **Langhana**, **Lekhana**, and **Kapha-Medohara** interventions improve metabolic efficiency and reduce adiposity.

Ayurvedic formulations possessing **Deepana**, **Pachana**, and **Lekhana** properties may improve insulin sensitivity and lipid metabolism. Panchakarma procedures such as **Udvartana**, **Vamana** (where indicated), and **Basti** can be selected according to the patient's constitution and disease stage. Weight reduction through individualised dietary planning and regular physical activity significantly improves ovulation, menstrual regularity, and fertility outcomes.

Yoga practices including **Surya Namaskara**, **Baddha Konasana**, **Bhujangasana**, and **Pranayama** enhance insulin sensitivity, reduce stress-induced neuroendocrine disturbances, and improve overall reproductive health.

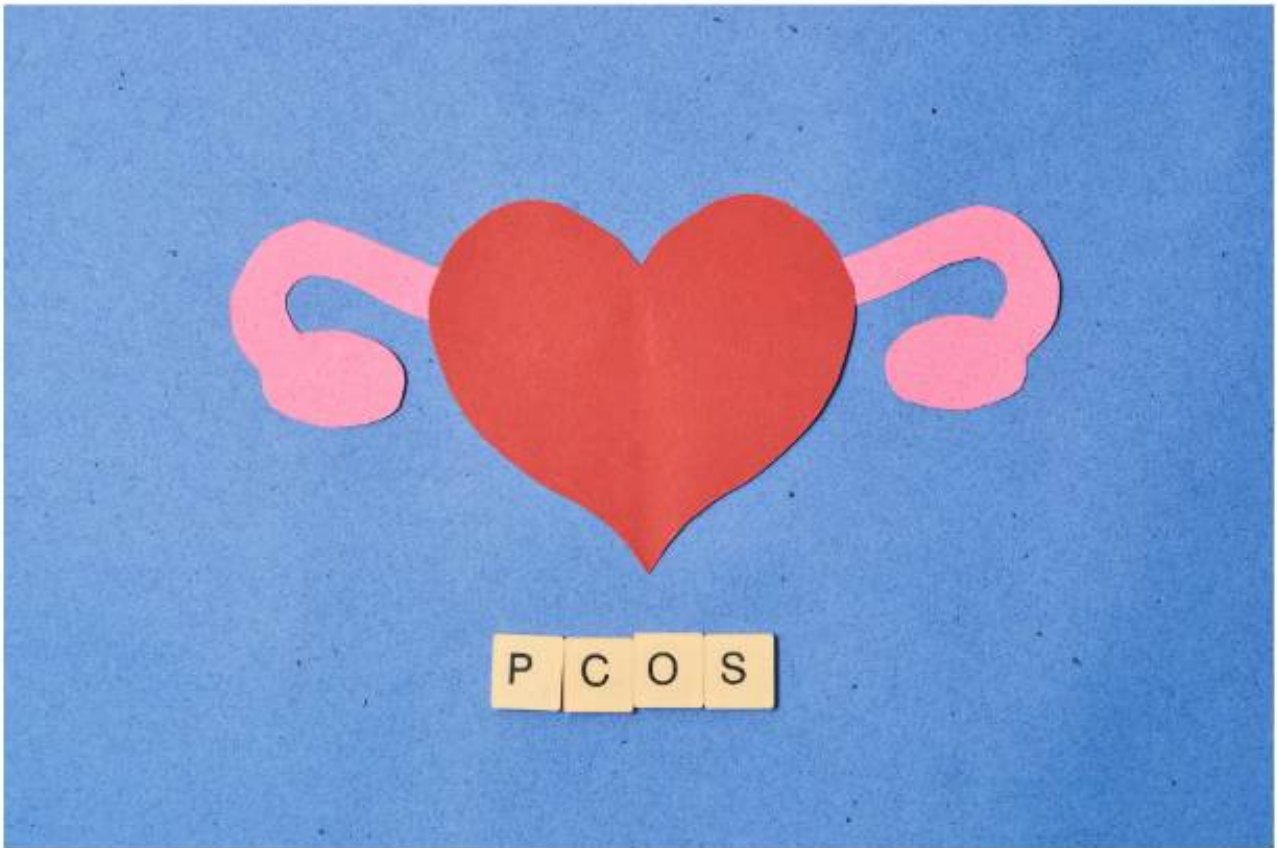
Integrative Scientific Evidence

Recent biomedical studies demonstrate that a reduction of merely 5-10% of body weight restores ovulation in many obese women with PCOS. Lifestyle modification remains the first-line intervention recommended by international endocrine societies. Interestingly, Ayurvedic principles emphasising dietary regulation, regular exercise (**Vyayama**), proper sleep, and digestive correction mirror these contemporary recommendations. The Ayurvedic concept of restoring **Agni** before disease-specific treatment aligns with current understanding that improvement in insulin sensitivity forms the cornerstone of PCOS management.



Conclusion

Polycystic Ovarian Syndrome represents a complex interaction between endocrine, metabolic, inflammatory, and reproductive abnormalities, with obesity serving as a pivotal pathogenic factor. Ayurvedic principles provide a comprehensive framework by integrating concepts of **Agnimandya**, **Kapha-Medo Dushti**, **Āma**, **Srotorodha**, and **Apāna Vāta** dysfunction. Rather than focusing solely on ovarian pathology, Ayurveda addresses the systemic metabolic imbalance responsible for disease manifestation. Integrating evidence-based lifestyle interventions with classical Ayurvedic therapeutic principles may offer a safe, holistic, and sustainable strategy for long-term management of PCOS, particularly in obese women. Future multicentric clinical trials incorporating Ayurvedic interventions with standardized biomedical outcomes are warranted to strengthen the evidence base for integrative management.



ROLE OF YOGA AND PRANAYAMA IN THE MANAGEMENT OF OBESITY

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Abstract

Obesity is a chronic multifactorial disorder characterized by excessive accumulation of body fat, resulting from an imbalance between energy intake and energy expenditure. It is a major public health concern associated with increased morbidity and mortality due to metabolic, cardiovascular, and musculoskeletal disorders. Although dietary modification and physical exercise remain the primary treatment strategies, yoga and pranayama have emerged as effective complementary therapies for obesity management. Yoga combines physical postures, breathing techniques, meditation, and relaxation to improve physical fitness, metabolic function, and psychological well-being. Pranayama regulates breathing patterns, reduces stress, enhances autonomic balance, and supports healthy metabolic function. Scientific evidence suggests that regular practice of yoga and pranayama reduces body weight, body mass index (BMI), waist circumference, body fat percentage, and improves insulin sensitivity, lipid profile, and quality of life. This review highlights the mechanisms, benefits, and evidence supporting the role of yoga and pranayama in the management of obesity.

Keywords: Obesity, Yoga, Pranayama, Body Mass Index, Weight Management.

Introduction

Obesity is defined as excessive or abnormal fat accumulation that adversely affects health. According to the World Health Organization (WHO), obesity has reached epidemic proportions worldwide and is a major risk factor for non-communicable diseases such as type 2 diabetes mellitus, hypertension, coronary artery disease, dyslipidemia, non-alcoholic fatty liver disease, and certain cancers. The prevalence of obesity continues to rise due to sedentary lifestyles, unhealthy dietary habits, psychological stress, and reduced physical activity.

While conventional management focuses on calorie restriction, exercise, pharmacotherapy, and bariatric surgery, long-term weight maintenance remains difficult. Therefore, complementary approaches that address both physical and psychological factors have gained increasing attention. Yoga and pranayama provide a holistic intervention by improving energy expenditure, metabolic regulation, stress management, and behavioral control, making them valuable adjuncts in obesity management.

Role of Yoga in Obesity

Yoga is an ancient discipline originating in India that integrates physical postures (asanas), breathing techniques, relaxation, and meditation. Unlike conventional exercise, yoga emphasizes harmony between the body and mind while promoting physical and mental health.

Regular yoga practice contributes to weight management through multiple physiological mechanisms. It increases muscular strength and flexibility, improves posture, enhances endurance, and increases energy expenditure. Improved muscle mass contributes to a higher basal metabolic rate, enabling the body to burn more calories even at rest.



Yoga also improves circulation, oxygen delivery, and digestive function, supporting efficient metabolism. One of the major advantages of yoga in obesity is its ability to reduce chronic stress. Psychological stress stimulates cortisol secretion, which promotes abdominal fat accumulation, increases appetite, and contributes to emotional eating. Yoga lowers cortisol levels by activating the parasympathetic nervous system, thereby reducing stress-related overeating. The meditative component of yoga also enhances mindfulness, helping individuals recognize hunger and satiety signals and avoid excessive food intake.

Several yoga postures have demonstrated particular benefits in obesity management. Surya Namaskar is a dynamic sequence involving multiple muscle groups that improves cardiovascular fitness and burns calories. Tadasana, Trikonasana, and Virabhadrasana improve balance, posture, and lower-limb strength. Bhujangasana, Dhanurasana, Shalabhasana, and Naukasana strengthen the abdominal muscles, improve core stability, and stimulate digestive organs. Twisting postures such as Ardha Matsyendrasana enhance digestion and improve flexibility of the spine.



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VAJARASANA



BHUJANGASANA

Role of Pranayama in Obesity

Pranayama refers to the conscious regulation of breathing and is considered an essential component of yoga. Controlled breathing influences respiratory efficiency, autonomic nervous system activity, and psychological well-being.

Stress is an important contributor to obesity because it increases cortisol secretion, leading to fat accumulation and increased appetite. Pranayama promotes parasympathetic dominance while reducing sympathetic overactivity, resulting in decreased stress, anxiety, and emotional eating. Improved autonomic balance also contributes to better cardiovascular health and metabolic regulation.

Among various breathing techniques, **Kapalabhati** is widely recommended for obesity management. It involves forceful exhalation with passive inhalation, strengthening abdominal muscles, stimulating digestive organs, and increasing metabolic activity. Although Kapalabhati alone does not directly burn large numbers of calories, regular practice supports weight management by improving digestion and metabolic efficiency.

Conclusion

Yoga and pranayama represent safe, economical, and effective complementary interventions for the management of obesity. Their benefits extend beyond weight reduction by improving metabolic health, insulin sensitivity, cardiovascular function, respiratory efficiency, and psychological well-being. Yoga enhances muscular strength, flexibility, energy expenditure, and mindfulness, while pranayama reduces stress, balances autonomic nervous system activity, and promotes emotional stability. Scientific evidence supports their role in reducing body weight, BMI, waist circumference, and obesity-related risk factors when practiced regularly. Incorporating yoga and pranayama into comprehensive obesity management programs can improve long-term adherence, reduce obesity-related complications, and enhance overall quality of life. Therefore, these traditional practices should be encouraged as valuable adjuncts to conventional treatment strategies for obesity.

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स्वस्थ जीवनशैली द्वारा मोटापा (स्थौल्य) का निवारण: एक आयुर्वेदिक दृष्टिकोण

डॉ. अभिषेक कुमार सिद्धार्थ

एम.डी. अध्येता,

पंचकर्म विभाग, हिमालयीय आयुर्वेदिक मेडिकल कॉलेज एवं अस्पताल, देहरादून
उत्तराखंड आयुर्वेद विश्वविद्यालय

आधुनिक स्वास्थ्य विज्ञान में मोटापे को प्रायः केवल अतिरिक्त कैलोरी या शारीरिक वसा के संचय के रूप में देखा जाता है। हालांकि, प्राचीन आयुर्वेदिक ज्ञान इसका एक अत्यंत व्यापक एवं सूक्ष्म दृष्टिकोण प्रस्तुत करता है। चरक संहिता जैसे शास्त्रीय ग्रंथों में मोटापे को स्थौल्य या मेदोरोग के अंतर्गत वर्गीकृत किया गया है और इसे आठ अष्टौ निन्दित पुरुष में से एक माना गया है।

आयुर्वेद केवल वजन मापने वाले पैमाने पर ध्यान केंद्रित करने के बजाय स्थौल्य को एक गंभीर चयापचयी (मेटाबोलिक) असंतुलन के रूप में पहचानता है, जहाँ मंद अग्नि के कारण आम का निर्माण होता है और मेद धातु की असामान्य वृद्धि होती है।

संप्राप्ति : स्थौल्य की उत्पत्ति कैसे होती है?

“मेदसाऽऽवृत्तमार्गत्वाद्वायुः कोष्ठे विशेषतः । चरन् सन्धुक्ष्यत्यग्निमाहारं शोषयत्यपि॥५॥

तस्मात् स शीघ्रं जरयत्याहारं चातिकाङ्क्षति विकारांश्चाश्नुते घोरान्
काश्चित्कालव्यतिक्रमात्॥६॥

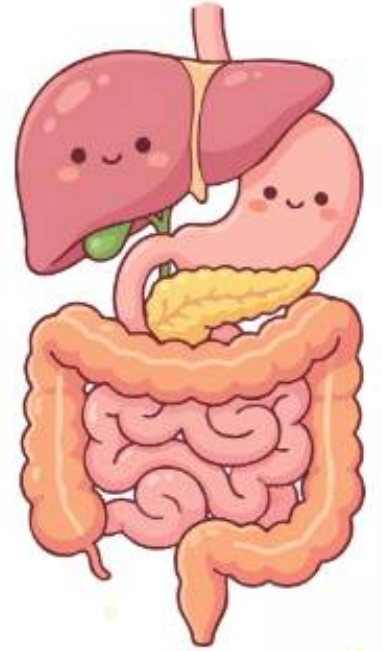
एतावुपद्रवकरौ विशेषादग्निमारुतौ । एतौ हि दहतः स्थूलं वनदावो वनं यथा॥७॥

मेदस्यतीव्र संवृद्धे सहसैवानिलादयः । विकारान् दारुणान् कृत्वा नाशयन्त्याशु जीवितम्॥८॥

मेदोमांसातिवृद्धत्वाच्चलस्फिगुदस्तनः । अयथोपचयोत्साहो नरोऽतिस्थूल उच्यते॥९॥

इति मेदस्विनां दोषा हेतवो रूपमेव च निर्दिष्टं,॥१०॥” (Ch. Su. 21/10)

चरक संहिता (सूत्रस्थान, अध्याय 21 - अष्टौनिन्दित्यय अध्याय) के इन श्लोकों में अतिस्थूल व्यक्ति में रोग की उत्पत्ति और उसके गम्भीर परिणामों का वर्णन करते हुए कहा गया है कि जब शरीर में अत्यधिक मेद बढ़ जाता है, तो वह वायु के मार्गों को अवरोध कर देता है, जिससे वायु बाहर न जाकर कोष्ठ (पाचन तंत्र) में ही घूमती रहती है और जठराग्नि को अत्यधिक प्रदीप्त करके खाए गए भोजन को शीघ्रता से पचा देती है। इसके कारण व्यक्ति को बार-बार अधिक भूख लगती है और यदि भोजन मिलने में थोड़ा भी विलंब हो जाए तो वह भयंकर रोगों से ग्रस्त हो जाता है; यह तीव्र अग्नि और प्रकुपित वायु मिलकर अतिस्थूल व्यक्ति को ठीक उसी प्रकार अंदर से नष्ट करने लगते हैं जैसे जंगल की आग (दावाग्नि) पूरे वन को जलाकर भस्म कर देती है। मेद की अत्यधिक वृद्धि होने पर वात आदि दोष सहसा उग्र होकर प्राणघातक रोग उत्पन्न करते हैं, और मेद तथा मांस की अत्यधिक वृद्धि के कारण जिसके नितम्ब, पेट और स्तन हिलते हुए प्रतीत हों, जिसका शरीर असमान रूप से बढ़ा हुआ हो तथा जिसमें शारीरिक उत्साह की कमी हो, वही व्यक्ति वास्तव में 'अतिस्थूल' कहलाता है।



मोटापे के मूल कारण (निदान) बहुआयामी हैं, जिनमें आहार, व्यवहार और मानसिक कारक शामिल हैं:

- आहारज हेतु (आहार संबंधी त्रुटियाँ): गुरु (पचने में भारी), शीत (ठंडे), स्निग्ध (चिकने) और मधुर (मीठे) पदार्थों का अत्यधिक सेवन।
- विहारज हेतु (जीवनशैली संबंधी कारक): व्यायाम न करना (अव्यायाम), दिन में सोना (दिवास्वप्न) और लंबे समय तक गतिहीन (सेडेंटरी) जीवनशैली।
- मानसिक हेतु: मानसिक तनाव, भावनात्मक रूप से अधिक खाना और मानसिक शांति का अभाव।

जब अग्नि मंद हो जाती है, तो भोजन का पाचन सुचारु रूप से नहीं होता। इससे आम का निर्माण होता है जो शरीर के सूक्ष्म स्रोतों (स्रोतांसि) को अवरोध कर देता है। परिणामस्वरूप, केवल मेद धातु को ही अत्यधिक पोषण मिलता है, जबकि अन्य धातुएँ जैसे अस्थि और मांस पोषण से वंचित रह जाती हैं।



निवारक रणनीति: जीवनशैली प्रबंधन के मुख्य स्तंभ

स्थूल्य की रोकथाम और प्रबंधन के लिए आयुर्वेद दैनिक जीवनशैली में सुधार के माध्यम से शरीर के आंतरिक संतुलन को पुनर्स्थापित करने पर बल देता है।

1. आहार नियम (आहार संबंधी निर्देश)

जब भोजन का सेवन सजगता और नियमपूर्वक किया जाता है, तो वह औषधि के रूप में कार्य करता है।

- लंघन और दीपन आहार पर ध्यान दें: सुपाच्य और हल्के अनाज जैसे पुराना जौ (यव), बाजरा/महुआ और मूँग की दाल (मुद्ग) का सेवन करें।
- उष्ण एवं ताजा भोजन: अग्नि को प्रदीप्त करने और स्रोतों के अवरोध को दूर करने के लिए दिनभर गुनगुना जल (उष्णोदक) पिएँ।
- विरुद्ध आहार से बचें: भारी डेयरी उत्पाद, ठंडे पेय, प्रसंस्कृत (प्रोसेस) चीनी और गहरे तले हुए खाद्य पदार्थों का सीमित प्रयोग करें।
- सजग खान-पान (मात्राशितीय): वास्तविक भूख लगने पर ही खाएं और दो मुख्य भोजनों के बीच कम से कम 4 से 6 घंटे का अंतर रखें।

2. विहार (दैनिक एवं ऋतुचर्या)

दिनचर्या का पालन करने से चयापचय (मेटाबोलिज्म) दुरुस्त रहता है।

- शारीरिक सक्रियता (व्यायाम): अपनी क्षमता के अनुसार नियमित मध्यम व्यायाम करने से मांसपेशियाँ मजबूत होती हैं और अत्यधिक मेद का क्षय होता है।
- दिवानिद्रा (दिवास्वप्न) से बचें: दिन में सोने से कफ दोष अत्यधिक बढ़ता है और चयापचय प्रक्रिया धीमी हो जाती है।
- उद्वर्तन (सूखा हर्बल पाउडर मसाज): त्रिफला या कुलत्थ जैसे जड़ी-बूटियों के चूर्ण से शरीर का उद्वर्तन करने से कफ कम होता है, स्रोत खुलते हैं और त्वचा का स्तर सुधरता है।

3. शास्त्रीय औषधीय सहायता (औषधि)

विशेषज्ञ के परामर्श अनुसार, पारंपरिक जड़ी-बूटियाँ और योग चयापचयी संतुलन में महत्वपूर्ण भूमिका निभाते हैं।

औषधि	मुख्य कार्य
गुग्गुलु (कॉमिफोरा मुकुल)	अतिरिक्त वसा पर लेखन (स्क्रैपिंग/छीलने का) प्रभाव
त्रिफला	पाचन, आंतों की सफाई और विषैले तत्वों को बाहर निकालने में सहायक
वृक्षाम्ल (गार्सिनिया इंडिका)	वसा चयापचय और भूख को संतुलित करने में मददगार
कोसने जल के साथ शहद	प्रातःकाल सेवन करने पर यह एक उत्कृष्ट प्राकृतिक लेखन द्रव्य है

4. योग, प्राणायाम एवं ध्यान (योग साधना)

केवल आहार और विहार ही नहीं, बल्कि योग का नियमित अभ्यास मेदोधातु को संतुलित करने और चयापचय (मेटाबोलिज्म) को प्रदीप्त करने में अत्यधिक प्रभावशाली है। योग केवल शारीरिक व्यायाम नहीं है, बल्कि यह शरीर और मन के बीच संतुलन स्थापित करता है।

प्रमुख योग आसन (आसन)

मोटापे के निवारण और पेट की चर्बी को कम करने के लिए निम्नलिखित आसन विशेष रूप से उपयोगी हैं:

- सूर्य नमस्कार (12 चक्र): यह पूरे शरीर के लिए एक उत्कृष्ट सर्वांग व्यायाम है, जो रक्त संचार को बढ़ाता है, मांसपेशियों को मजबूत करता है और वसा को तेजी से कम करने में मदद करता है।
- त्रिकोणासन एवं कटिचक्रासन: कमर और पार्श्व (कमर के किनारों) की जमा चर्बी को कम करने तथा रीढ़ की हड्डी को लचीला बनाने में सहायक हैं।
- धनुरासन एवं भुजंगासन: जठराग्नि को तीव्र करते हैं, उदर (पेट) के आंतरिक अंगों की मालिश करते हैं और पाचन तंत्र को सुचारु बनाते हैं।
- पश्चिमोत्तानासन एवं पादहस्तासन: पेट के निचले हिस्से के खिंचाव के लिए और कफ दोष को शांत करने के लिए उत्तम हैं।

प्राणायाम एवं शोथन क्रियाएँ (प्राणायाम)

श्वसन क्रियाओं के माध्यम से शरीर में प्राण वायु का संचार होता है, जिससे कोशिकीय स्तर पर वसा का क्षय (ऑक्सीकरण) होता है।

अभ्यास / प्राणायाम	क्रिया और लाभ
कपालभाति (शोधन क्रिया)	पेट की मांसपेशियों का तीव्र संकुचन जठराग्नि को प्रदीप्त करता है और कफ तथा मेद का क्षय करता है।
भस्त्रिका प्राणायाम	शरीर में ऑक्सीजन का स्तर बढ़ाता है, चयापचय दर (BMR) को तेज करता है और विषैले तत्वों (आम) को बाहर निकालता है।
अनुलोम-विलोम / नाड़ी शोधन	तंत्रिका तंत्र को शांत करता है, वात और पित्त दोष को संतुलित करता है और मानसिक तनाव को दूर करता है।
सूर्यभेदन प्राणायाम	शरीर में आंतरिक ऊष्मा पैदा करता है, जिससे अतिरिक्त वसा के पिघलने में मदद मिलती है।

मानसोपचार एवं ध्यान (तनाव प्रबंधन)

अत्यधिक तनाव या मानसिक अशान्ति के कारण शरीर में कोर्टिसोल हार्मोन का स्तर बढ़ता है, जो मोटापे (तनाव-जनित मोटापा) का एक प्रमुख कारण है:

- भ्रामरी प्राणायाम एवं ॐ उच्चारण: मानसिक शांति प्रदान करते हैं और भावात्मक रूप से अधिक खाने (Emotional Eating) की प्रवृत्ति पर रोक लगाते हैं।
- योग निद्रा: शरीर को गहरा विश्राम देती है, जिससे नींद की गुणवत्ता में सुधार होता है और चयापचय प्रक्रिया संतुलित रहती है।

निष्कर्ष

मोटापे से बचाव का तात्पर्य अत्यधिक कठोर परहेजों या अल्पकालिक उपायों से नहीं है; यह संतुलन बनाए रखने की एक निरंतर प्रक्रिया है। दिनचर्या के सिद्धांतों को अपनाकर, अग्नि को प्रदीप्त रखकर, योग अभ्यास और पौष्टिक आहार का चयन करके स्थूल्य को इसके मूल से रोका जा सकता है। इन पारंपरिक जीवनशैली आदतों को अपनाना दीर्घकालिक स्वास्थ्य, ऊर्जा और कल्याण की कुंजी है।

Non-Alcoholic Fatty Liver Disease (NAFLD / MASLD) in Ayurvedic Perspective: A Comprehensive Clinical Approach

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INTRODUCTION

In contemporary global medicine, Non-Alcoholic Fatty Liver Disease (NAFLD)—recently reclassified as Metabolic Dysfunction-Associated Steatotic Liver Disease (MASLD)—has emerged as a silent epidemic. Closely linked with metabolic syndrome, insulin resistance, obesity (Sthoulya), and dyslipidemia, MASLD represents a spectrum of liver damage ranging from simple steatosis to non-alcoholic steatohepatitis (NASH), fibrosis, and cirrhosis, all occurring in the absence of significant alcohol consumption.

While modern science relies primarily on lifestyle modifications, weight loss, and management of comorbid metabolic factors, Ayurveda offers a profound, root-cause-oriented framework. By understanding MASLD through the lens of Agni, Srotas, and Dosha imbalance—specifically focusing on Medoroga (disorders of fat metabolism) and Yakrit Vikara—Ayurvedic medicine provides targeted therapeutic strategies to halt and reverse hepatic steatosis.

1. Pathophysiology: Correlating MASLD with Ayurvedic Concepts

To treat MASLD effectively using Ayurvedic principles, one must map its pathogenesis -Samprapti to classical Ayurvedic pathology.

A. The Role of Agni and Ama

At the core of metabolic dysfunction is Jatharagni Maandya, followed by Dhatvagnimaandya. When ingested food and nutrients are improperly digested due to impaired Agni, an endogenous toxin known as Ama is produced. This toxic, undigested metabolic byproduct circulates throughout the body and mixes with the Rasa Dhatu - the circulating nutrient plasma.

B. Rasadushti and Medovaha Srotorodha

In MASLD, vitiated Rasa and Mamsa dhatus, heavily laden with Ama, reach the Yakrit, which is considered the Moola of the Raktavaha Srotas and a critical seat of Pachaka Pitta and Ranjaka Pitta. The excessive production of unrefined lipid tissue (Medas) clogs the micro-channels -Srotorodha, specifically the Medovaha Srotas.

C. The Progression to Steato-hepatitis and Fibrosis

As Medas accumulates beyond physiological capacity, it undergoes abnormal transformation due to compromised tissue metabolism. This leads to Medovridhhi and the stagnation of aggravated Kapha and Pitta doshas within the hepatic parenchyma.



2. Etiology (Nidana) of Hepatic Steatosis

The clinical etiology of MASLD aligns almost identically with the classical Ayurvedic causes of Sthoulya and Santarpana Nidana:

Category	Etiological Factors
Ahara (Dietary)	Heavy, oily/greasy, cold, sweet foods; processed foods, refined sugars, trans fats, excessive dairy.
Vihara (Lifestyle)	Physical inactivity, prolonged daytime sleeping, sedentary work habits.
Manasika (Mental)	Chronic stress, mental lethargy, suppressed emotions.

3. Clinical Presentation (Lakshana)

Sign/Symptom	Description
Alasya / Angamarda	General lethargy, fatigue, and body aches due to channel blockage.
Udaragourava	Sensation of heaviness, fullness, or discomfort in the abdomen.
Digestive Issues	Aruchi (loss of appetite), Ajeerna (indigestion), and sour eructations.
Metabolic Markers	Obesity, central adiposity, acanthosis nigricans, elevated lipid profile.

4. Ayurvedic Management Principles (Chikitsa Sutra)

The management of MASLD requires a multi-pronged approach aimed at restoring Agni, clearing Srotorodha, pacifying Kapha and Pitta, and nourishing the liver parenchyma.

A. Shodhana Chikitsa

For patients with sufficient physical strength, classical detoxification is the gold standard for clearing deep-seated Ama and stubborn lipid accumulation, such as Virechana and Basti.

B. Shamana Chikitsa (Palliative Medications)

Herb/Formulation	Therapeutic Action
Bhumyamlaki	Hepatoprotective, anti-inflammatory, protects from oxidative stress.
Guggulu	Lekhana Karma -Scraping agent; lowers cholesterol and triglycerides.
Kutaki	Pitta-clearing, detoxifies the liver, stimulates bile flow.
Punarnava	Diuretic, anti-inflammatory, relieves hepatic congestion.
Guduchi	Immunomodulator, corrects tissue-level metabolism.

5. Dietary Protocol (Pathya) and Lifestyle Modifications (Vihara)

Medicine alone cannot cure metabolic disorders without disciplined adherence to wholesome diet and routines.

Pathya (Dietary Guidelines)

Emphasize light, warm, and fresh foods (barley, red rice, millets). Incorporate metabolic spices (ginger, black pepper, cumin, turmeric, garlic). Include bitter and astringent greens (bitter melon, fenugreek). Avoid heavy dairy, refined flour, and deep-fried snacks.

Vihara (Lifestyle Guidelines)

Daily aerobic exercise or yoga. Avoid daytime sleeping. Practice stress management via meditation.

Conclusion

Non-Alcoholic Fatty Liver Disease is fundamentally a disorder of impaired metabolism and channel obstruction rooted in Medoroga. By restoring Agni, eliminating Ama, clearing Srotas, and implementing disciplined dietary regimens, Ayurveda provides a robust, scientific roadmap to hepatic health.

Clinical Efficacy of Panchakarma Modalities in the Management of Sthaulya (Obesity):

A Comprehensive Review of Udvartana, Lekhana, Vamana, and Virechana

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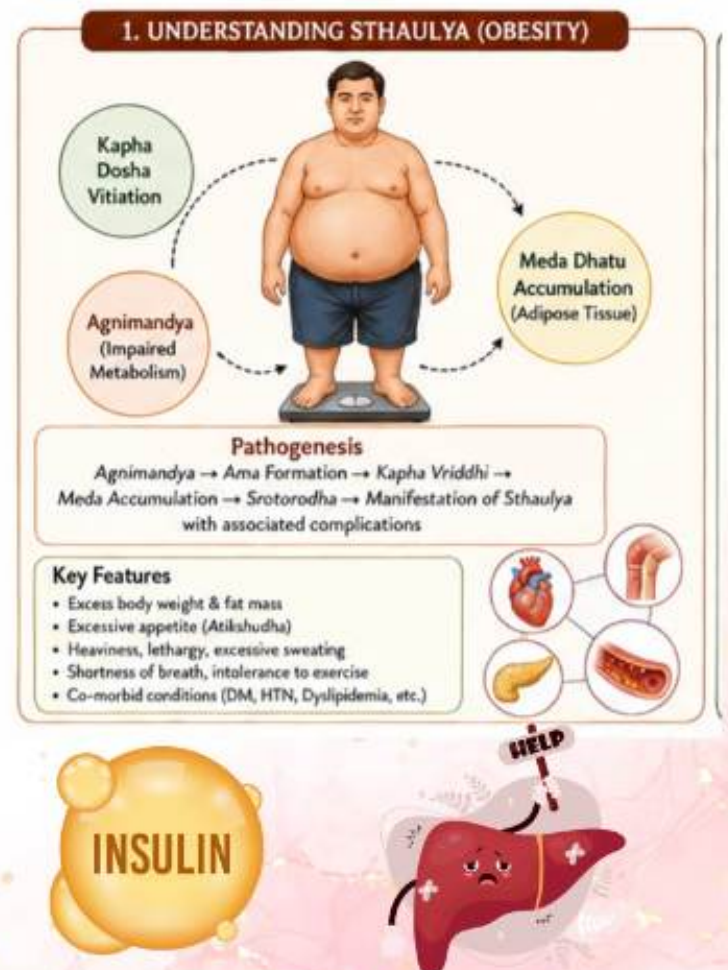
Abstract

Sthaulya (obesity) is a chronic, relapsing metabolic disorder characterized by the pathological accumulation of Meda Dhatu (adipose tissue) and the vitiation of Kapha Dosha, leading to profound Srotorodha (channel obstruction) and Dhatvagnimandya (metabolic impairment). Due to the Bahudosha (excessively aggravated doshas) nature of the disease, palliative care (Shamana) alone is often clinically insufficient. This article evaluates the critical role of specific Panchakarma (bio-purificatory) and Upakarma (ancillary) interventions—namely Udvartana, Lekhana, Vamana, and Virechana—in the systematic eradication of morbid Doshas and the restoration of metabolic homeostasis. By examining the clinical protocols and pharmacodynamics of these therapies, this paper provides a standardized framework for the rigorous clinical management of obesity.

Introduction

In classical Ayurvedic pathophysiology, Sthaulya is classified as a Santarpanottha Vikara (disease of over-nutrition). The fundamental pathogenesis involves a paradoxical state: the hyper-functioning of Jatharagni (gastric fire) combined with the severe hypo-functioning of Meda Dhatvagni (tissue-level metabolic fire). This results in the relentless conversion of nutritional essence into Apakva Meda (immature adipose tissue), which obstructs the microcirculation, depriving deeper tissues of nourishment.

When Doshas are abundantly vitiated (Bahudosha Avastha), conservative dietary restrictions and oral medications fail to penetrate the deeper cellular levels. In such clinical scenarios, Shodhana (purificatory therapies) combined with targeted Bahiparimarjana (external therapies) becomes mandatory. The therapeutic goal is Samprapti Vighatana—breaking the pathogenic chain by physically expelling the vitiated Kapha, scraping away the stagnant Meda, and clearing the Srotas to re-establish proper neuro-endocrinal and metabolic signaling.



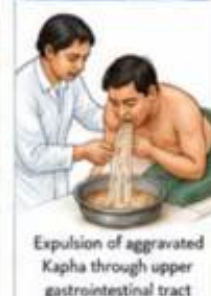
Dry powder massage for
Kapha-Meda vilayana
& lipohysis

Benefits

- Reduces subcutaneous fat
- Improves circulation
- Enhances metabolism
- Tones skin & muscles

- Eliminates Kapha
- Lightens body
- Improves respiration
- Enhances Agni

Vamana (Therapeutic Emesis)



4.1 Procedural Rationality in Obesity

Prior to Vamana, meticulous Snehana (internal oleation) and Svedana (sudation) are required. In the context of Sthaulya, internal oleation is a delicate clinical challenge due to the pre-existing abundance of Sneha (unctuousness) in the patient. Therefore, Ruksha or Ushna Sneha, such as Sarshapa Taila (mustard oil) or specifically medicated Guggulutiktaka Ghrita, are preferred over plain ghee to prevent further Kapha aggravation.

4.2 Mechanism of Action

The administration of Vamaka dravyas (emetics like Madanaphala) stimulates the vagus nerve and the emetic center in the medulla oblongata. From an Ayurvedic perspective, the Ushna, Tikshna, Sukshma (subtle), and Vyavayi (rapidly spreading) properties of the emetic formulation permeate the cellular level (Srotas). They physically detach the morbid Kapha and Apakva Meda from their sites of adhesion, bringing them back to the stomach (Amashaya) via the centrifugal force created by Udana Vata, where they are systematically expelled. This profound clearing of the upper gastrointestinal tract immediately lifts the suppression on the metabolic fire.

5. Virechana Karma: Metabolic Reset and Agni Restoration

Following the expulsion of Kapha through Vamana, Virechana Karma (therapeutic purgation) is essential to eliminate morbid Pitta, regulate the lower gut environment, and permanently correct the tissue-level metabolic fires (Dhatvagnis).

5.1 The Application of Tikshna Virechana

In robust, obese patients with severe Srotorodha, mild purgatives are ineffective. Clinical success requires Tikshna Virechana (strong purgation). Formulations selected for this stage must possess simultaneous purgative and scraping (Lekhana) properties to aggressively mobilize stored lipids and recalibrate the hepato-biliary system.

Potent polyherbal compounds, such as Abhayadi Modaka, are highly indicated in this phase. The synergistic action of such aggressive formulations ensures profound Doshanulomana (downward movement of doshas). By thoroughly evacuating the small intestine and colon, Virechana significantly reduces the toxic load (Ama), decreases circulating inflammatory markers, and optimizes liver function. The liver, being the primary organ for lipid metabolism, functions optimally post-Virechana, resulting in a dramatic improvement in Meda Dhatvagni.



6. Discussion: The Synergistic Clinical Impact

The standalone application of oral scraping drugs often yields temporary results in obesity management, as the morbid environment (Koshtha and Srotas) remains unpurified. The strategic sequential application of Panchakarma creates a synergistic therapeutic cascade: Udvartana prepares the physical terrain, breaking down subcutaneous fat and enhancing peripheral vascular permeability.

Vamana strikes at the anatomical root of the disease, eliminating the massive reserve of Kledaka Kapha that dampens metabolism. Virechana resets the systemic metabolic fire and optimizes hepato-biliary lipid processing.

Lekhana Basti acts as a sustained intervention to manage Vata, continuously scrape residual Meda, and prevent the recurrence of adiposity.

This multi-pronged approach not only ensures significant anthropometric reductions (BMI, waist-hip ratio) but also actively mitigates the cardiovascular and endocrinological complications (Upadhravas) associated with Sthaulya.



Conclusion

The management of Sthaulya demands a rigorous, protocol-driven clinical approach. The integration of Udvartana, Lekhana Basti, Vamana, and Virechana represents a highly sophisticated method of metabolic correction. By physically eliminating the structural channel obstructions and reigniting the biological fire at both the gastric and tissue levels, these Panchakarma modalities offer a permanent, deeply structural resolution to obesity, far surpassing the efficacy of conservative palliative management.

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Ayurvedic Management of Lifestyle-Related Metabolic Disorders: A Systematic Review

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Abstract

Background: Lifestyle-related metabolic disorders, including metabolic syndrome, type 2 diabetes mellitus (T2DM), dyslipidemia, obesity, hypertension, and non-alcoholic fatty liver disease (NAFLD), represent a significant and growing global health burden. Ayurveda provides a holistic approach to their management through dietary regulation, lifestyle modification, Panchakarma therapies, and herbal formulations. However, clinical evidence regarding their effectiveness remains dispersed and requires systematic synthesis.

Objective: To systematically assess and synthesize the available clinical evidence regarding the efficacy and safety of Ayurvedic interventions for the management of lifestyle-related metabolic disorders.

Methods: A literature search was conducted across electronic databases, including PubMed and Google Scholar, along with Ayurveda-focused peer-reviewed journals. Randomized controlled trials, cohort studies, and systematic reviews evaluating Ayurvedic interventions for lifestyle-related metabolic disorders were considered. Relevant data were extracted and synthesized narratively.

Results: Of the 100 studies screened for eligibility, 12 met the predefined inclusion criteria. The available evidence indicated potential benefits of selected Ayurvedic interventions in improving glycemic control, lipid profiles, anthropometric parameters, blood pressure, and liver function measures. However, substantial heterogeneity was observed in study designs, interventions, outcome measures, and methodological quality.

Conclusion: Available clinical evidence suggests that Ayurvedic interventions may have beneficial effects as adjunctive approaches in the management of lifestyle-related metabolic disorders. Nevertheless, further well-designed, standardized, and multicenter randomized controlled trials are warranted to establish their efficacy, safety, and clinical applicability.

Keywords: Ayurveda; Lifestyle disorders; Metabolic syndrome; Systematic review

Introduction

Lifestyle-related metabolic disorders are driven by unhealthy dietary habits, sedentary behavior, chronic stress, and environmental factors, contributing substantially to global morbidity and mortality [1,2]. Conditions such as metabolic syndrome, T2DM, dyslipidemia, obesity, hypertension, and NAFLD are now recognized as major non-communicable diseases (NCDs) worldwide [3,4].

Despite advances in pharmacotherapy, long-term disease control remains suboptimal, prompting interest in integrative and preventive healthcare models [5]. Ayurveda, the traditional medical system of India, emphasizes metabolic regulation, individualized therapy, and lifestyle discipline, aligning closely with contemporary preventive medicine principles [6].

Objectives

To systematically assess, evaluate, and synthesize the available clinical evidence regarding the efficacy and safety of Ayurvedic interventions in the management of lifestyle-related metabolic disorders.



Methods

Eligibility Criteria (PICOS)

- Population: Adults diagnosed with metabolic syndrome, type 2 diabetes mellitus (T2DM), dyslipidemia, obesity, or non-alcoholic fatty liver disease (NAFLD).
- Interventions: Ayurvedic herbal formulations, Panchakarma therapies, and Ayurvedic lifestyle interventions, including *Dinacharya* and *Ritucharya*.
- Comparators: Placebo, conventional standard care, lifestyle modification alone, or no intervention.
- Outcomes: Glycemic parameters, lipid profile, anthropometric measures, blood pressure, liver function parameters, and reported safety outcomes.
- Study Design: Randomized controlled trials (RCTs), prospective cohort studies, and systematic reviews.

Information Sources and Search Strategy

Systematic electronic searches were conducted in PubMed, Google Scholar, and Ayurveda-specific journals using keywords such as Ayurveda, lifestyle disorders, metabolic syndrome, type 2 diabetes, dyslipidemia, NAFLD, and Panchakarma up to 01 February 2026. WHO documents on traditional medicine were also reviewed [7]. The search yielded 12 records from PubMed, 90 eligible records from Google Scholar following title and abstract screening, and 18 additional records from Ayurveda-focused journals. After removal of duplicates, 100 unique records were screened for eligibility.

Study Selection

Titles and abstracts were screened, followed by full-text assessment of eligible studies.

Data Extraction and Synthesis

Data extracted included study design, sample size, intervention details, outcomes, and duration. Due to heterogeneity, a narrative synthesis was performed.

Risk of Bias Assessment

Risk of bias was assessed qualitatively. Common limitations included small sample sizes, lack of blinding, and variability in intervention standardization.

Results

Study Selection

A total of 120 records were identified through database and manual searches. After removal of 20 duplicate records, 100 studies were screened based on titles and abstracts, of which 9 were excluded. Seventeen full-text articles were assessed for eligibility, and 72 were excluded due to methodological limitations or insufficient outcome data. Finally, 12 studies met the inclusion criteria and were included in the qualitative synthesis.

Effects of Ayurvedic Interventions

Metabolic Syndrome

A double-blind RCT demonstrated that *Arogyavardhini* compound combined with lifestyle modification significantly reduced waist circumference, triglycerides, and systolic blood pressure compared to lifestyle modification alone [8].

Outcome Metric	Lifestyle Alone	Lifestyle + <i>Arogyavardhini</i>
Waist Circumference (%)	-1.32	-3.06
Triglycerides (%)	-5.81	-18.03
Systolic BP (%)	-4.43	-6.89
HDL (%)	+9.13	+5.56

Figure 1: Effects of Ayurvedic intervention vs control on primary metabolic parameters [8]



Another study showed that *Tryushnadi churna* is effective in decreasing weight, BMI and improving quality of life in obese participants with MetS thus concluding that Integrative management with Ayurveda medication, Ayurveda diet and yoga is beneficial approach in MetS with obesity.[12]

One comparative clinical study showed that trial drugs i.e. *Dashang Guggulu* with *Triphaladi Kwatha* were found more effective in reducing bodyweight, BMI, skin fold thickness and clinical features however modern drug i.e. atorvastatin proved more effective in improving deranged serum lipid levels. [13]

Type 2 Diabetes Mellitus

A systematic review reported modest but significant reductions in fasting blood glucose and HbA1c with selected Ayurvedic formulations, although methodological heterogeneity was noted [9].

Dyslipidemia and Cardiovascular Risk

A prospective cohort study demonstrated significant reductions in total cholesterol, LDL, triglycerides, and C-reactive protein following Ayurvedic intervention (*Arjuna powder* and *Arogyavardhini vati*), without evidence of hepatic or renal toxicity [10]. A pilot study has shown promising results of *Triphala* in management of Dyslipidemia. [15]

Non-Alcoholic Fatty Liver Disease

Recent RCT evidence suggests Ayurvedic formulations improve liver enzymes, BMI, and ultrasonographic fatty liver grading, indicating potential benefit as adjunct therapy [11].

A clinical study to determine the efficacy of KB Yoga (combination of Kirātatikta and Bhringarāja) in comparison with *Droṇapuṣpī* (*Leucas aspera* (Willd.) Link)) in patients with NAFLD showed that KB Yoga demonstrated superior hepatoprotective efficacy compared with *Droṇapuṣpī* in NAFLD, with significant reductions in ALT and AST and parallel improvement in gastrointestinal and constitutional symptoms. [14]

Discussion

This systematic review highlights the potential role of Ayurveda in managing lifestyle-related metabolic disorders. Improvements across metabolic parameters align with Ayurvedic principles of correcting *Agnimandya* and *Meda Dhatu* dysfunction [6]. WHO has emphasized the integration of traditional medicine in NCD management, supporting Ayurveda's role in preventive healthcare [7].

However, limitations including small sample sizes, inconsistent methodologies, lack of formulation standardization, and safety concerns necessitate further high-quality research [9].

Limitations

- The availability of large-scale, methodologically rigorous randomized controlled trials is limited.
- Considerable heterogeneity exists in the Ayurvedic interventions, treatment protocols, outcome measures, and study designs.
- Due to the substantial clinical and methodological heterogeneity, a quantitative meta-analysis could not be performed.

Conclusion

Ayurvedic interventions show promising potential in the management of lifestyle-related metabolic disorders, particularly when incorporated alongside appropriate dietary and lifestyle modifications. However, well-designed, multicenter randomized controlled trials using standardized interventions, outcome measures, and treatment protocols are required to generate stronger evidence and support definitive clinical recommendations.

**Source of Funding**

None

Conflict of Interest

There are no conflict of interest

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स्थौल्य (मेदोरोग) निवारण में ऋतुचर्या का महत्व

डॉ. निवेदिता जोशी
जिला आयुर्वेदिक एवं यूनानी अधिकारी
उधमसिंह नगर

अद्यतन युग में संपूर्ण विश्व में स्थौल्य (Obesity) एक महाव्याधि के रूप में जनजीवन को ग्रसित कर चुकी है। आधुनिक चिकित्सा विज्ञान में इसका कारण मुख्य रूप से कैलोरी-असंतुलन अथवा निष्क्रिय जीवनशैली को बताया जाता है, परंतु महर्षियों द्वारा प्रयुक्त आयुर्वेद शास्त्र में इसका मूल कारण 'प्रज्ञापराध' तथा प्रकृति के साथ तालमेल का अभाव माना गया है। आयुर्वेद की मूल आधारशिला 'स्वस्थस्य स्वास्थ्यरक्षणं आतुरस्य विकारप्रशमनं च' के सिद्धांत पर टिकी है। इस संदर्भ में ऋतुचर्या (ऋतु-अनुकूल आहार-विहार का पालन) केवल एक सामान्य आचार नहीं है, अपितु मेदोरोग (स्थूलता) के निर्मूलन और रोकथाम के लिए एक अत्यंत प्रभावी एवं दिव्यौषध तुल्य उपाय है।

आयुर्वेदीय दृष्ट्या स्थौल्य(मेदोरोग) का स्वरूप

आयुर्वेद में मोटापे को 'मेदोरोग' अथवा 'स्थूलता' नाम से वर्णित किया गया है। आचार्य चरक ने 'अष्टनिर्दिष्ट पुरुष' के अंतर्गत स्थौल्य का वर्णन करते हुए इसके मूल लक्षणों और कारणों को स्पष्ट किया है—जहाँ मेद (वसा) और मांस धातु की अत्यधिक वृद्धि हो जाती है।

"तत्रातिस्थूलस्य कफप्रकोपाद् मेदसो वृद्धयति संचयाच्चा"

(चरक संहिता, सूत्रस्थान 21/4)

जब मनुष्य की जठराग्नि मंद हो जाती है, तब खाए गए आहार का सम्यक पाचन नहीं होता। वह अपचित आहार रस, रस धातु के स्थान पर विकृतरूपेण 'आम' नामक विषतत्व को उत्पन्न करता है, जो मेदोधातु में पहुँचकर उसकी अतिवृद्धि कर देता है। इसके परिणामस्वरूप मेदवह स्रोतस अवरोद्ध हो जाते हैं, जिससे शरीर में आलस्य, श्वास, भारीपन और अत्यधिक थकान जैसी समस्याएँ उत्पन्न होने लगती हैं।

आदान एवं विसर्ग काल

प्रकृति रव्यं ऋतु परिवर्तन के साथ मानव शरीर का पोषण और संचालन करती है। आयुर्वेद शास्त्र में संवत्सर (वर्ष) को सूर्य की गति के आधार पर दो भागों में बांटा गया है:

आदानकाल (उत्तरायण): इस काल में सूर्य की तीक्ष्णता के कारण जगत का बल क्षीण होता है। शिशिर, वसंत और ग्रीष्म ऋतुएँ इसके अंतर्गत आती हैं, जिनमें तिक्त, कषाय और कटु रस प्रबल होते हैं।

विसर्गकाल (दक्षिणायन): इस काल में चंद्रमा बलयुक्त होता है और पृथ्वी शीतलता व बल प्राप्त करती है। वर्षा, शरद और हेमंत ऋतुएँ इसके अंतर्गत आती हैं, जिनमें मधुर, अम्ल और लवण रस शरीर को बल प्रदान करते हैं।

जब मनुष्य इन प्राकृतिक परिवर्तनों की उपेक्षा करके सभी ऋतुओं में एक जैसा आहार-विहार रखता है, तब दोष कुपित होकर स्थौल्यको जन्म देते हैं।

ऋतुचर्या के अनुसार मेदोरोग निवारण के शास्त्रीय उपाय

क. हेमंत और शिशिर ऋतुचर्या (शीतकाल)

हेमंत और शिशिर ऋतुओं में ठंड के कारण जठराग्नि प्रदीप्त होती है और शरीर का बल उत्तम रहता है। इस काल में पौष्टिक भोजन आसानी से पच जाता है, परंतु यदि इस दौरान व्यायाम के बिना केवल गुरु (भारी) और स्निग्ध (चिकनाईयुक्त) आहार का सेवन किया जाए, तो कफ दोष का संचय होने लगता है।

ख. वसंत ऋतुचर्या (स्थौल्यनिवारण का मुख्य सोपान)

वसंत ऋतु स्थौल्य की रोकथाम के लिए अत्यधिक महत्वपूर्ण है। सूर्य की बढ़ती गर्मी से हेमंत काल में संचित कफ दोष पिघलने (द्रवीभूत होने) लगता है, जिससे जठराग्नि मंद हो जाती है। अष्टाङ्ग हृदय में इस संदर्भ में स्पष्ट निर्देश दिया गया है:

वसन्ते कफवृद्धिर्भवति। तस्मात् कफविनाशनं यत् तत्तत् प्रयोज्यम्।

तेन शीतेनाधिकं व्यायामः, रक्षोष्णलघु आहारः।

(अष्टाङ्ग हृदय, सूत्रस्थान 3/38)

- **चिकित्सकीय विधान:** वसंत काल में कफ के प्रकोप को शांत करने के लिए रुक्ष, उष्ण तथा लघु आहार (जैसे—जौ, पुराना गेहूं, मूंग का सूप) का सेवन करना चाहिए।

- **शोधनचर्या (पंचकर्म):** वसंत ऋतु वमन कर्म (Therapeutic Emesis) के लिए सर्वोत्तम काल है। वमन के माध्यम से आमाशय में संचित अतिरिक्त कफ दोष को शरीर से बाहर निकाल दिया जाता है, जिससे मेदोरोग की जड़ें समाप्त हो जाती हैं।



ग. वर्षा एवं शरद ऋतुचर्या

वर्षा काल में वात दोष का प्रकोप होता है और जठराग्नि मंद हो जाती है। इस दौरान अनियंत्रित आहार-विहार से 'आम' दोष की उत्पत्ति होती है। अतः चरकसंहिता में निर्देश दिया गया है:
वर्षासु जीर्णान्नपानसेवी लघूष्णस्निग्धाहारः।

दिवास्वप्नवर्जितः स्यात् पानं जलस्य चाग्निसंस्कृतस्य।
(अष्टाङ्ग हृदय, सूत्रस्थान)

- **दिवास्वप्न निषेध** : दिन में सोना (दिवास्वप्न) कफ और मेद (वसा) को बढ़ाने वाला प्रमुख कारण माना गया है, अतः इसका पूर्णतः त्याग करना चाहिए।

मेदोरोग निवारण में ऋतुचर्या की कार्यप्रणाली (Mechanisms)

अग्नि-संरक्षण: ऋतु के अनुकूल आहार का चयन करने से जठराग्नि और धात्वग्नि संतुलित रहती है, जिससे 'आम' (विषैले तत्वों) का निर्माण रुकता है।

दोष-साम्य: जिस ऋतु में जो दोष स्वाभाविक रूप से प्रकुपित होता है (जैसे वसंत में कफ), उसी समय उचित आहार और शोधन द्वारा उसका शमन कर, शरीर में दोषों का संतुलन स्थापित किया जाता है।

स्रोतस-शोधन: नियमित व्यायाम और उष्ण उपचारों के माध्यम से 'मेदवह स्रोतस' शुद्ध रहते हैं, जिससे वसा का असामान्य संचय और मार्ग अवरोध (स्रोतरोध) नहीं होता।

आहारचर्या (Dietary Regimen):

- सदैव ऋतु-अनुकूल लघु, दीपन और पाचन द्रव्यों (जैसे शुण्ठी, मरीच, जीरक, हिङ्गु) का प्रयोग करें।
- वसंत और ग्रीष्म ऋतु में जौ (Barley), कुलत्थ, मूंग, और मधु (शहद) का सेवन विशेष रूप से हितकारी है, क्योंकि आयुर्वेद में शहद को कफ और मेद का नाश करने वाला बताया गया है।

विहारचर्या (Lifestyle):

- ऋतु के अनुसार शारीरिक बल का ध्यान रखते हुए व्यायाम करें। विशेष रूप से वसंत काल में प्रातःकालीन भ्रमण और योगासन (जैसे पश्चिमोत्तानासन, धनुरासन, मयूरासन) अनिवार्य रूप से करने चाहिए।
- दिन के समय सोने (दिवास्वप्न) की आदत को पूरी तरह छोड़ें, क्योंकि यह स्थूलतया एक मुख्य मार्ग है।

उपसंहार

आयुर्वेद की ऋतुचर्या विज्ञान मानव शरीर का प्रकृति के साथ सामंजस्य बिठाने का सर्वोत्तम मार्ग है। यदि हम प्राचीन आचार्यों द्वारा बताए गए इन शाश्वत नियमों को अपने दैनिक जीवन और स्वास्थ्य नीतियों में अपना लें, तो न केवल मेदोरोग (मोटापे) से बल्कि अन्य कई गंभीर मेटाबोलिक व्याधियों से भी सफलतापूर्वक बचा जा सकता है।

Childhood Diabetes in the context of Childhood Obesity:

An Ayurvedic and Modern Perspective

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Diabetes in childhood and adolescence is an increasing public-health concern. The term "juvenile diabetes" has traditionally referred mainly to type 1 diabetes mellitus, an autoimmune disorder requiring insulin therapy. However, rising childhood overweight and obesity have contributed to an increasing burden of type 2 diabetes among young people. WHO reports that more than 390 million children and adolescents aged 5-19 years were overweight in 2022, including more than 160 million living with obesity. From an Ayurvedic perspective, obesity and metabolic disturbance may be discussed through Meda, Kapha, Agni and Prameha/Madhumeha concepts. An integrative approach should use these concepts primarily for prevention and lifestyle support while retaining modern diagnosis, monitoring and evidence-based treatment.

Introduction-

Diabetes mellitus is a chronic metabolic disorder characterized by persistent hyperglycaemia. Type 1 diabetes results from autoimmune destruction of pancreatic beta cells and requires insulin replacement. Type 2 diabetes is primarily associated with insulin resistance and progressive beta-cell dysfunction. Although Type 2 diabetes was historically regarded as an adult disorder, it is increasingly recognized during adolescence, particularly in association with excess adiposity.

The association between childhood obesity and type 2 diabetes is clinically important. WHO notes that overweight and obesity during childhood are associated with a greater risk of diabetes and cardiovascular disease at younger ages.



Diagrammatic Representation: Childhood Obesity → Metabolic Risk



The pathway is conceptual; not every child with obesity develops diabetes.



Childhood Obesity and Diabetes: Modern Perspective

Childhood obesity is multifactorial and reflects interactions among dietary patterns, physical activity, genetics, family environment, socioeconomic circumstances and the wider food and physical environment. WHO defines obesity in children using age- and sex-specific growth references. For children aged 5-19 years, obesity is defined as BMI-for-age above +2 standard deviations from the WHO reference median.

Obesity should not be framed as a personal failure of the child. Family, school, community and environmental factors influence eating, activity and health.

Ayurvedic Understanding of Prameha and Madhumeha

Ayurvedic texts describe Prameha as a group of disorders involving abnormal urination and disturbance of dosha-dushya interactions. Madhumeha is included within the Prameha spectrum. For this article, these classical descriptions are used as a conceptual framework and should not be equated directly with modern biomedical diagnoses.

Classical Ayurvedic References

Charaka Samhita, Nidana Sthana, Prameha Nidana Adhyaya –. The chapter discusses the twenty types of Prameha arising from Tridosha involvement and describes etiological factors associated particularly with Kaphaja Prameha. Charaka Nidana Sthana 4/3 states that twenty forms of Prameha arise due to Tridosha aggravation. Charaka Nidana Sthana 4/5 specifically lists excessive use of Kapha-promoting dietary factors, avoidance of exercise, excessive sleep, prolonged sitting/lying and other factors producing Kapha, Meda and urine. These passages provide a classical basis for discussing diet, inactivity, Kapha and Meda in the Prameha framework.

“त्रिदोषकोपनिमित्ताविशतिः प्रमेहा भवन्ति विकाराश्चापरेऽपरिसङ्ख्येयाः । तत्र यथा त्रिदोषप्रकोपः प्रमेहानभिनिर्वर्तयति तथानुव्याख्यास्यामः ॥”
(चरक संहिता, निदानस्थान, प्रमेहनितान, 4/3)

“तत्रेमे त्रयो निदानादिविशेषाः श्लेष्मनिमित्तानां प्रमेहाणामाशु निर्बुत्तिकरा भवन्ति; तद्यथा— ... मृजाव्यायामवर्जनं, स्वप्रशयनासनप्रसङ्गः, यश्च कश्चिद्विधिन्योऽपि श्लेष्ममेदोमूत्रसञ्जनः, स सर्वोनिदानविशेषः ॥”
(चरक संहिता, निदानस्थान, प्रमेहनितान, 4/5)

Sushruta Samhita, Nidana Sthana, Prameha Nidana –Sushruta Nidana Sthana 6/3 describes day sleep, lack of exercise, laziness and intake of cold, unctuous, sweet and Meda-promoting foods in the context of Prameha. Sushruta Nidana Sthana 6/4 describes the association of the Doshas with Meda and their progression through the urinary channels in the classical pathogenesis of Prameha. Sushruta 6/9 further describes the association of Doshas with Meda and other Dushyas in the different Prameha categories.

“ दिवास्वप्नाव्यायामालस्यप्रसक्तं शीतस्निग्धमधुरमेद्वद्रवात्रपानसेविनं पुरुषं जानीयात् प्रमेही भविष्यतीति ॥”
(सुश्रुत संहिता, निदानस्थान, प्रमेहनितान, 6/3)

“तस्य चैवं प्रवृत्तस्यापरिपक्वा एव वातपित्तश्लेष्माणो यदा मेदसा सहैकत्वमुपेत्य मूत्रवाहिस्त्रोतास्यनुसृत्याधो गत्वा बस्तेर्मुखमाश्रित्य निर्भिद्यन्ते तदा प्रमेहान् जनयन्ति ॥”
(सुश्रुत संहिता, निदानस्थान, प्रमेहनितान, 6/4)

“तत्र वातपित्तमेदोभिरन्वितः श्लेष्मा श्लेष्मप्रमेहान् जनयति, वातकफशोणितमेदोभिरन्वितं पित्तं पित्तप्रमेहान्, कफपित्तवसामजमेदोभिरन्वितो वायुर्वतप्रमेहान् ॥”
(सुश्रुत संहिता, निदानस्थान, प्रमेहनितान, 6/9)

Ayurvedic Approach to Prevention

1. Age-appropriate, balanced and nutrient-dense meals supporting normal growth.
2. Limit excessive intake of highly processed foods and added sugars.

3. Encourage regular physical activity and outdoor play appropriate to age and ability.
4. Maintain adequate sleep and a consistent daily routine.
5. Reduce prolonged sedentary behaviour.
6. Promote healthy family-based dietary and lifestyle practices rather than restrictive dieting of the child.

Role of Ayurveda in an Integrative Model

Ayurveda may have a supportive role in lifestyle counselling, dietary guidance, behavioural regulation and preventive health promotion. Its holistic approach can help families discuss diet, activity, sleep and routine. Current evidence is insufficient to support Ayurvedic medicines as a replacement for standard diabetes treatment in children. Herbal or herbo-mineral preparations should only be considered under qualified professional supervision. In established diabetes, prescribed insulin or other medical therapy should not be stopped or replaced by alternative treatment.

Modern Diagnosis and Management

1. Children with symptoms or risk factors for diabetes require appropriate medical evaluation.
2. Correct differentiation between type 1 and type 2 diabetes is essential.
3. Type 1 diabetes: insulin replacement is fundamental.
4. Type 2 diabetes: lifestyle intervention, family-based support and prescribed pharmacotherapy when indicated.
5. Regular glucose monitoring and follow-up are important.
6. Focus on metabolic health, healthy growth and well-being rather than appearance.

Family- and School-Centred Prevention

Parents, caregivers and schools can create environments that make healthy choices easier. Regular nutritious meals, active play, physical education, adequate sleep and reduced sedentary time are practical foundations. Prevention should be supportive and free from weight stigma.

Integrative Perspective: Ayurveda + Modern Medicine

Domain	Ayurvedic perspective	Modern perspective
Diet	Ahara quality, quantity and suitability	Balanced nutrition; limit excess energy and added sugars
Activity	Vihara and appropriate Vyayama	Regular age-appropriate physical activity
Metabolism	Agni, Meda and Kapha concepts	Insulin sensitivity, adiposity and glucose regulation
Disease framework	Prameha / Madhumeha	Type 1 or type 2 diabetes based on clinical evaluation
Treatment	Supportive lifestyle measures	Insulin and/or evidence-based pharmacotherapy when indicated

Conclusion

The increasing burden of childhood obesity and the emergence of type 2 diabetes in younger age groups highlight the importance of prevention, early recognition and comprehensive care. Modern medicine provides the essential framework for diagnosis, glucose monitoring and treatment. Ayurveda offers a complementary conceptual framework emphasizing Ahara, Vihara, Agni, Meda, Kapha and balanced daily living. The most responsible integrative model is one in which classical principles inform healthy lifestyle and preventive counselling while modern diagnostic and therapeutic standards remain central to care.

बाल्यावस्था में स्थौल्य : आयुर्वेदिक दृष्टिकोण, कारण, परिणाम एवं प्रबंधन

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परिचय

आज बच्चों में अधिक वजन और स्थूलता तेजी से बढ़ती हुई समस्या है। यह केवल शरीर के आकार की बात नहीं है, बल्कि आगे चलकर मधुमेह, उच्च रक्तचाप, रक्त में वसा की असामान्यता, यकृत में वसा का संचय, जोड़ों की तकलीफ तथा निद्रा में श्वासावरोध जैसी समस्याओं का कारण बन सकती है। आधुनिक चिकित्सा में बच्चों की स्थूलता का आकलन आयु, लिंग, ऊँचाई, वजन और BMI के आधार पर किया जाता है।

आयुर्वेद में स्थौल्य का वर्णन अतिस्थूलता के रूप में मिलता है और इसे अष्टौ निन्दित पुरुषों में स्थान दिया गया है। आयुर्वेदिक दृष्टि से दोष, अग्नि, मेदधातु, आहार-विहार तथा पारिवारिक प्रवृत्ति इसके विकास में महत्वपूर्ण हो सकते हैं। बालक में उपचार करते समय स्वस्थ वृद्धि और विकास को सर्वोच्च प्राथमिकता देना आवश्यक है।

स्थौल्य की आयुर्वेदिक संकल्पना

आचार्य चरक ने अतिस्थूल व्यक्ति का वर्णन करते हुए कहा है

“मेदोमांसातिवृद्धत्वाच्चलस्फिगुदरस्तनः।
अयथोपचयोत्साहो नरोऽतिस्थूल उच्यते॥”

चरक संहिता, सूत्रस्थान 21/9

अर्थात् मेद और मांस की अत्यधिक वृद्धि, नितम्ब, उदर तथा स्तनों में अधिकता और शरीर के उपचय तथा उत्साह में असामान्यता वाले व्यक्ति को अतिस्थूल कहा गया है। इससे स्पष्ट है कि स्थौल्य केवल बाहरी मोटापा नहीं, बल्कि शरीर के उपचय और पोषण की असामान्यता से जुड़ी अवस्था है।

निदान एवं सम्प्राप्ति

स्थौल्य में गुरु, मधुर और स्निग्ध आहार का अधिक सेवन, आवश्यकता से अधिक या बार-बार भोजन, दिन में सोना, शारीरिक श्रम का अभाव तथा असंयमित दिनचर्या प्रमुख कारण माने जाते हैं। वर्तमान जीवन में अत्यधिक मीठे पेय, तले हुए खाद्य पदार्थ, पैकेट वाले स्नैक्स, जंक फूड, लंबे समय तक बैठे रहना और अधिक स्क्रीन समय इन्हीं कारणों के आधुनिक रूप हैं।

आचार्य चरक ने मेदवृद्धि की प्रक्रिया समझाते हुए कहा है:-

मेदसाऽऽवृतमार्गत्वाद्वायुः कोष्ठे विशेषतः।
चरन् सन्धुक्ष्यत्यग्निमाहारं शोषयत्यपि॥

चरक संहिता, सूत्रस्थान 21/5

मेद द्वारा मार्ग के आवरण से वायु कोष्ठ में विचरण करती हुई अग्नि को तीव्र करती है। इससे भोजन शीघ्र पचने और बार-बार भूख लगने की प्रवृत्ति हो सकती है तथा अधिक भोजन मेदवृद्धि को आगे बढ़ा सकता है।

स्थौल्य के प्रमुख कारण

- गुरु, मधुर, तले-भुने और अधिक ऊर्जा वाले खाद्य पदार्थों का अधिक सेवन।
- मीठे पेय, पैकेट वाले खाद्य पदार्थ और जंक फूड की अधिकता।
- शारीरिक गतिविधि का अभाव तथा लंबे समय तक बैठकर पढ़ना या स्क्रीन देखना।
- रात को देर से सोना और पर्याप्त निद्रा न लेना।
- परिवार में स्थौल्य की प्रवृत्ति तथा असंयमित पारिवारिक भोजन-पद्धति।
- मानसिक तनाव, पढ़ाई का दबाव और अनियमित दिनचर्या।

स्थौल्य के परिणाम

स्थौल्य से शरीर में जल्दी थकान, अधिक पसीना, सांस फूलना और शारीरिक सक्रियता में कमी हो सकती है। बच्चों में इंसुलिन प्रतिरोध, त्वचा पर काले-मोटे चकत्ते, उच्च रक्तचाप, रक्त में वसा की असामान्यता, फैटी लिवर, जोड़ों की समस्या और निद्रा में श्वासावरोध का जोखिम बढ़ सकता है। मानसिक स्तर पर आत्मविश्वास में कमी, शरीर के प्रति असंतोष और साथियों द्वारा उपहास जैसी समस्याएँ भी देखी जा सकती हैं।



मूल्यांकन

आयु के अनुसार ऊँचाई, वजन और BMI-for-age का मूल्यांकन करना चाहिए। साथ में भोजन की आदत, शारीरिक गतिविधि, निद्रा, पारिवारिक इतिहास, औषधियों का सेवन और मानसिक-सामाजिक स्थिति पूछना उपयोगी है। जोखिम के अनुसार रक्तचाप, रक्त में वसा, रक्त शर्करा या HbA1c तथा यकृत संबंधी जाँच की जा सकती है। असामान्य रूप से कम आयु में शुरू हुए स्थौल्य, वृद्धि की गति कम होने या अन्य विशिष्ट लक्षणों में अंतःस्रावी अथवा आनुवंशिक कारणों की जाँच आवश्यक हो सकती है।

आयुर्वेदिक प्रबंधन

स्थौल्य में लक्ष्य केवल वजन कम करना नहीं, बल्कि स्वस्थ वृद्धि के साथ आहार, अग्नि, दोष और मेदधातु का संतुलन बनाए रखना है। उपचार की पहली सीढ़ी निदान-परिवर्जन है। भोजन का समय निश्चित रखें, मीठे पेय और तले हुए पदार्थ कम करें तथा सब्जियाँ, फल, दालें, मोटे अनाज और पर्याप्त पौष्टिक आहार शामिल करें। बच्चे में कठोर उपवास या अत्यधिक भोजन-प्रतिबंध उचित नहीं है।

चरक ने स्थूल व्यक्ति के लिए कहा है

**गुरु चातर्पणं चेष्टं स्थूलानां कर्शनं प्रति।
कृशानां बृंहणार्थं च लघु सन्तर्पणं च यत्॥**

चरक संहिता, सूत्रस्थान 21/20

बालक में इस सिद्धांत का प्रयोग आयु, बल, वृद्धि और पोषण की आवश्यकता के अनुसार किया जाना चाहिए।

आयुर्वेदिक औषधीय एवं बाह्य उपचार

औषधि का चयन बालक की आयु, अग्नि, दोष, बल, मेदवृद्धि और सहवर्ती विकारों को देखकर किया जाना चाहिए। लेखनीय द्रव्यों में मुस्ता, चित्रक, हरिद्रा, कचा आदि का शास्त्रीय उल्लेख मिलता है। आवश्यकता के अनुसार त्रिफला और गुडूची जैसे द्रव्यों का चिकित्सकीय उपयोग किया जा सकता है। गुग्गुलु-प्रधान योगों का प्रयोग भी अवस्था के अनुसार किया जाता है, परंतु बाल्यावस्था में बिना चिकित्सकीय परीक्षण के औषधि देना उचित नहीं है।

उद्धर्तन को बाह्य चिकित्सा के रूप में उपयोग किया जा सकता है। यह कफ और मेद की अधिकता में सहायक माना गया है। बालक की त्वचा, आयु और सहनशीलता के अनुसार ही इसका प्रयोग करना चाहिए। शोधन चिकित्सा सामान्य उपचार नहीं है; अत्यधिक मेदवृद्धि, बल और अन्य लक्षणों को देखकर विशेषज्ञ की देखरेख में ही विचार किया जाना चाहिए।

आहार, विहार एवं व्यवहार परिवर्तन

- प्रतिदिन लगभग 45-60 मिनट आयु के अनुसार शारीरिक गतिविधि, खेल, तेज चलना, दौड़ना या योग।
- मीठे पेय, अत्यधिक तले खाद्य पदार्थ और बार-बार स्नैकिंग को सीमित करना।
- भोजन के समय स्क्रीन से दूरी और परिवार के साथ भोजन की आदत।
- उचित समय पर सोना तथा पर्याप्त निद्रा लेना।
- परिवार के सभी सदस्यों द्वारा स्वस्थ दिनचर्या अपनाना, ताकि बच्चे पर अकेले प्रतिबंध न लगे।

निष्कर्ष

बाल्यावस्था का स्थौल्य बहुआयामी समस्या है, जिसमें आहार-विहार, दोष, अग्नि, मेदधातु, पारिवारिक प्रवृत्ति और आधुनिक जीवनशैली की संयुक्त भूमिका हो सकती है। आयुर्वेद में स्थौल्य के कारण, सम्प्राप्ति और उपचार के सिद्धांतों का स्पष्ट वर्णन मिलता है। इसलिए उपचार का उद्देश्य केवल तराजू पर वजन कम करना नहीं, बल्कि स्वस्थ वृद्धि, संतुलित पोषण, नियमित शारीरिक सक्रियता और दीर्घकालीन स्वास्थ्य सुनिश्चित करना होना चाहिए। समय रहते जीवनशैली में सुधार और उचित चिकित्सकीय मार्गदर्शन से भविष्य की चयापचय संबंधी जटिलताओं का जोखिम कम किया जा सकता है।

संदर्भ

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Understanding Obesity-Associated Polyendocrine Metabolic Ovarian Syndrome (PMOS):

A Yukti-Based Framework for Sthoulya, Medoroga, and Integrative Management

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Abstract

Background: Conventional Ayurvedic interpretations of Polycystic Ovary Syndrome (PCOS) have historically relied on matching surface-level traits such as oligomenorrhea and infertility to classical entities like *Pushpaghni Jataharini* and *Anartava*. However, as nomenclature evolves toward Polyendocrine Metabolic Ovarian Syndrome (PMOS)—defining the disorder as an interconnected triad of metabolic, polyendocrine, and ovarian dysfunction, a superficial symptom-matching is inadequate. This article utilizes *Yukti* (rational synthesis) to construct a mechanism-driven *Samprapti* (pathogenesis) for the obesity-associated PMOS phenotype. **Methods:** A conceptual literature synthesis of Ayurvedic compendia and contemporary endocrinology guidelines (2020–2026) was conducted. Modern mechanistic drivers, including visceral adiposity, insulin resistance, and chronic inflammation, were functionally mapped to Ayurvedic systems (*Agni, Meda, Srotas*). **Results/Conceptual Findings:** A novel *Samprapti* framework is proposed. *Pushpaghni Jataharini* is reinterpreted as anovulatory breakthrough bleeding, while *Anartava* signifies functional ovulatory failure. Crucially, central adiposity (*Sthoulya*) and metabolic syndrome (*Medoroga*) act as primary amplifiers driving *Meda-Dhatvagni Mandya*. This disruption generates *Ama* (analogous to chronic low-grade inflammation), altering *Dhatu Parinama* (tissue transformation) and creating an *Avarana* (obstruction) in the *Artavavaha Srotas* that causes follicular arrest. **Conclusion:** Obesity-associated PMOS is a systemic cardiometabolic and endocrine disruption. Applying *Yukti* integrates scattered classical principles into a cohesive model, dictating an evidence-based, integrative management approach prioritizing metabolic health, *Apatarpana* (depletion therapies), targeted lifestyle modifications, and *Srotoshodhana* (channel-clearing).

Keywords: Polyendocrine Metabolic Ovarian Syndrome; Metabolic Syndrome; Obesity; Sthoulya; Medoroga; Pushpaghni Jataharini; Yukti; Integrative Medicine.

Introduction

Modern reproductive endocrinology is shifting from the anatomical focus of Polycystic Ovary Syndrome (PCOS) to a mechanistically accurate construct Polyendocrine Metabolic Ovarian Syndrome (PMOS) [1]. This transition recognizes that ovarian cysts are downstream consequences of a systemic triad: metabolic dysfunction, polyendocrine derangement, and ovarian arrest [2].

Historically, Ayurvedic scholarship correlated PCOS with classical concepts like *Pushpaghni Jataharini*, *Anartava*, and *Vandhyatva* based on phenotypic similarities [3]. While this provided a foundational bridge, symptom-matching (*Lakshana*) fails to establish pathophysiological equivalence. Concluding that "irregular menstruation plus infertility equals *Pushpaghni*" ignores the complex sequence of pathological events driving the disease. To bridge this gap, this article applies *Yukti* to shift from symptom-matching to a function-based Ayurvedic pathogenesis (*Samprapti*), specifically contextualizing PMOS within obesity (*Sthoulya*) and metabolic syndrome (*Medoroga*). Ayurvedic Understanding of Sthoulya-Medoroga and Metabolic Syndrome In obesity-associated PMOS, adiposity is not merely a diagnostic feature; it is the primary metabolic driver. Modern evidence establishes that visceral adiposity fuels insulin resistance, alters adipokine signaling, and initiates chronic low-grade inflammation, culminating in Metabolic Syndrome, a cluster of cardiometabolic risks including dyslipidemia and hypertension [4].

Ayurveda strictly differentiates mere excess body mass (*Sthoulya*) from systemic metabolic dysfunction (*Medoroga*). When *Meda Dhatu* (adipose tissue) accumulates pathologically due to *Santarpanajanya* (over-nourishment) etiologies, it suppresses *Meda-Dhatvagni* (tissue-level metabolic fire) [5]. This impaired *Dhatu* transformation causes tissues to resist nutrient assimilation- a state functionally mirroring insulin resistance. Consequently, unprocessed metabolites form *Ama* and pathological *Kleda* (excess moisture). *Ama* circulating in the *Rasavaha* and *Medovaha Srotas* provides a compelling classical equivalent to chronic low-grade systemic inflammation and dyslipidemia, fundamentally altering the systemic cardiometabolic environment.

Pathogenesis: Reinterpreting the PMOS Triad Applying *Yukti*, the interconnected pathophysiology of PMOS can be mapped into a cohesive Ayurvedic framework.

1. The Metabolic Axis (Insulin Resistance as Dhatvagni Mandya)

The suppression of *Meda-Dhatvagni* leads to hyperinsulinemia, acting as a pathogenic amplifier. Obesity (*Sthoulya*) thus serves as the metabolic substrate, generating *Avarana* (obstruction) across systemic channels.

2. The Polyendocrine Axis (Hyperandrogenism as Altered Dhatu Parinama)

Hyperinsulinemia drives ovarian and adrenal androgen overproduction [6]. Rather than simplistically equating androgens to *Pitta Dasha*, this hyperandrogenic state represents an aberration in *Dhatu Parinama* (tissue evolution). Normal *Artava* generation requires unobstructed *Vata* (for neuroendocrine pulsatility) and balanced *Pitta* (for physiological transformation). When systemic pathways are obstructed by dense *Kapha*, *Meda*, and *Ama*, transformative *Pitta* is diverted, causing local *Khavaigunya* (tissue susceptibility) that expresses virilizing traits rather than healthy ovulatory transformation.

3. The Ovarian Axis (Anovulation and Follicular Arrest)

Modern physiology mandates a re-evaluation of classical terms. The *Kashyapa Samhita* describes *Pushpaghni* as a condition where a woman menstruates without ovulating (*vrutha pushpam*) [7]. Because women with PMOS frequently experience estrogen-driven anovulatory breakthrough bleeding without actual follicular rupture, *Pushpaghni* perfectly encapsulates anovulatory breakthrough bleeding. Furthermore, Acharya Sushruta defines *Artava* as the functional ovum derived from *Rasa Dhatu* [8]. Therefore, *Anartava* fundamentally signifies functional ovulatory failure, not simply amenorrhea. In PMOS, the hyperandrogenic intra-ovarian environment causes premature follicular arrest [9]. Ayurvedically, the morbid *Meda-Kleda* matrix creates an *Avarana* within the *Artavavaha Srotas*. The follicle develops but is mechanically and functionally arrested because the downward action of *Apana Vata* is obstructed by this metabolic blockade.

Loop Samprapti: *Nidana* (sedentary/hypercaloric lifestyle) → *Sthoulya/Medoroga* → *Meda-Dhatvagni Mandya* (Insulin Resistance) → Accumulation of *Ama/Kleda* (Inflammation) → *Srotodushti* and *Avarana* of *Vata* → Disrupted *Prana-Apana* axis → *Artavavaha Srotas* obstruction → Follicular Arrest (*Anartava/Pushpaghni*) ↔ *Manas* (psychological burden).

Integrative Management Management must concurrently address metabolic correction, endocrine regulation, and cardiometabolic risk, utilizing evidence-based PCOS guidelines [2] integrated with classical Ayurvedic therapeutic principles. Prescribing simple emmenagogues (*Artava-janana*) without clearing the metabolic obstruction conceptually forces the *Srotas* against an *Avarana*, leading to clinical failure.

- **Nidana Parivarjana and Ahara (Dietary Regulation):** There is no single "PMOS diet". However, in obesity-associated PMOS, the principle of *Apatarpana* (metabolic depletion) is paramount. *Ahara* must be individualized based on *Prakriti* and *Agni*, prioritizing *Rukshana* (drying), *Deepana-Pachana* (metabolic kindling), and *Kledahara* foods to correct *Meda-Dhatvagni Mandya* and reverse insulin resistance. This aligns seamlessly with modern guidelines emphasizing caloric regulation and dietary quality for metabolic health [2].
- **Vihara and Dinacharya (Lifestyle and Behavioral Determinants):** Obesity is a chronic, multifactorial disease heavily influenced by behavior. *Dinacharya* interventions like emphasizing circadian regularity, strict sleep hygiene, and the reduction of sedentary behavior are essential. Regular *Vyayama* (physical activity) directly improves insulin sensitivity and combats systemic *Kleda* [10].
- **Yoga and Pranayama:** Clinical evidence establishes *Yoga* as a highly effective adjunctive intervention [11]. By downregulating sympathetic drive and cortisol production, targeted *Yoga* and *Pranayama* reduce stress-related neuroendocrine disruption, addressing the *Manas* (psychological) and cardiometabolic dimensions of PMOS.
- **Targeted Shodhana (Panchakarma):** Panchakarma is not universally indicated, but in cases of severe *Medoroga*, appropriately selected *Shodhana* therapies are invaluable. *Udvartana* (dry powder massage) targets visceral adiposity and localized *Kleda*, while supervised *Vamana* or *Virechana* dismantles systemic *Ama* and the *Meda-Avarana*. Only after this metabolic blockade is cleared can *Vatanulomana* therapies successfully facilitate physiological ovulation.

Conclusion

Earlier interpretations of PCOS utilized symptom similarity to correlate irregularity and infertility with concepts like *Pushpaghni Jataharini*. While foundational, this approach obscures underlying mechanisms. In obesity-associated PMOS, adiposity (*Sthoulya*) and metabolic syndrome (*Medoroga*) act as profound cardiometabolic amplifiers, intertwining insulin resistance and hyperandrogenism to cause ovulatory failure. By applying *Yukti*, Ayurveda provides a sophisticated, function-based interpretation of this triad, framing it as a state of *Dhatvagni Mandya* and *Avarana*. This integrated understanding translates directly into an evidence-based management framework that prioritizes systemic metabolic correction over isolated menstrual symptom management, demonstrating Ayurveda's enduring capacity to navigate complex modern diseases.

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An Integrated Ayurvedic Approach in the Management of Sthaulya:

A Case Report of 12.7 kg Weight Reduction Following Navaka Guggulu and Dietary Modification

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Introduction

Sthaulya is described among the disorders associated with abnormal accumulation of Meda and derangement of metabolic processes. The Ayurvedic approach to Sthaulya is not restricted to reduction of body weight but focuses on correction of Agni, regulation of dietary intake, management of Kapha-Meda predominance and restoration of appropriate metabolic activity.

The principle of **Apatarpana** is particularly relevant in disorders arising from excessive nourishment (Samtarpanottha Vyadhi). Dietary regulation, appropriate physical activity and Medohara/Lekhana interventions constitute important components of management. Navaka Guggulu is an Ayurvedic formulation used in the management of Medoroga/Sthaulya. Published clinical studies have evaluated Navaka Guggulu in obesity and have reported improvements in body weight and other anthropometric parameters. The present case documents the outcome of a 5-month Ayurvedic intervention consisting of Navaka Guggulu and a structured dietary regimen in an adult male with increased body weight.

2. Case Presentation

2.1 Patient Information

Parameter	Details
Patient	Dr. Rahul K. Vaidhya
Age	34 years
Sex	Male
Occupation	Medical Officer
Baseline weight	96.8 kg
Final weight	84.1 kg
Duration of intervention	5 months





3. Clinical Assessment

The patient was assessed primarily with respect to body weight and Ayurvedic clinical presentation.

The baseline body weight was **96.8 kg**.

During the intervention, a structured dietary regimen was implemented together with Navaka Guggulu.

4. Ayurvedic Assessment

From the Ayurvedic perspective, the case was approached as a condition of excessive Meda accumulation and the requirement for **Apatarpana and Medohara management**. The therapeutic rationale was based on:

Sthaulya/Medoroga → Meda accumulation → impaired metabolic regulation → requirement for Apatarpana, Agni-oriented dietary regulation and Medohara intervention.

Navaka Guggulu was selected as the principal Ayurvedic formulation.

5. Treatment Protocol

5.1 Medication

Navaka Guggulu

Dose: 2 tablets twice daily (BD) 500mg

6. Dietary Intervention

A structured dietary regimen was advised throughout the treatment period.

Breakfast

Approximately **750 g seasonal fruits**.

Lunch

- Normal steamed rice
- Dal
- Chhach

Dinner

- Seasonal vegetables
- Four rotis
- Dinner specifically advised **before 7:00 PM**

The dietary intervention was maintained for the duration of the 5-month treatment period. The dietary plan was intended to provide a structured eating pattern while avoiding late-night meals and excessive energy-dense dietary intake.

7. Treatment Duration

Total intervention period: 5 months

The patient was followed during the intervention with body weight as the principal documented outcome measure.

8. Outcome

A substantial reduction in body weight was observed during the treatment period.

Parameter	Baseline	After 5 Months	Change
Body weight	96.8 kg	84.1 kg	-12.7 kg
Percentage reduction	—	—	13.1%

Thus, the patient demonstrated a **12.7 kg reduction in body weight**, corresponding to approximately **13.1% reduction from baseline body weight** over 5 months.



Weight trajectory

96.8 kg → 84.1 kg

This represents a clinically meaningful reduction in absolute body weight during the observation period.

Discussion

Sthaulya is understood in Ayurveda as a disorder involving excessive Meda accumulation and disturbance of normal metabolic processes. The classical management principle emphasizes reduction of excessive nourishment and correction of the factors responsible for Meda accumulation.

The present case employed a combined intervention consisting of Navaka Guggulu and structured dietary modification rather than relying exclusively on pharmacological therapy. Navaka Guggulu has been evaluated in previous clinical studies of Medoroga/Sthaulya. A clinical study comparing Navaka Guggulu and Triphala Kwatha reported improvement in obesity-related clinical and laboratory parameters, with the combined intervention showing better overall results in several parameters.

The present case demonstrated a reduction of **12.7 kg (13.1%)** in body weight over 5 months. However, because dietary modification was simultaneously implemented, it is not possible from a single case to attribute the observed weight reduction specifically to Navaka Guggulu.

The structured dietary regimen may itself have contributed substantially to the outcome. Therefore, the present report should be interpreted as an observation of an **integrated Ayurvedic intervention**, rather than evidence of the independent efficacy of Navaka Guggulu.

Possible Ayurvedic Therapeutic Rationale

The intervention can be interpreted according to the Ayurvedic principle of managing excessive Meda through:

- Apatarpana
- Medohara management
- Lekhana-oriented therapy
- Regulation of dietary intake
- Avoidance of late-night meals
- Appropriate meal timing
- Regulation of Agni and metabolic function

Navaka Guggulu has been investigated clinically in obesity, including studies assessing changes in body weight and anthropometric parameters.

The combination of medication and dietary regulation may therefore represent a practical multimodal approach to Sthaulya management.

Safety and Tolerability

No adverse event was documented during the reported 5-month intervention period based on the available case records.

Conclusion

This case describes a 34-year-old male who underwent a 5-month Ayurvedic intervention comprising Navaka Guggulu 2 tablets twice daily along with a structured dietary regimen. During the observation period, body weight decreased from 96.8 kg to 84.1 kg, representing a total reduction of 12.7 kg (13.1%).

The observed outcome suggests that an integrated Ayurvedic approach combining Medohara intervention with structured dietary modification and appropriate meal timing may be useful in the management of increased body weight/Sthaulya.



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WHEN CHILDHOOD BECOMES HEAVY: Childhood and Adolescent Obesity Through the Ayurvedic Lens

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Childhood is supposed to be a time of running, playing, learning and growing—not a time of worrying about body weight.

Yet today, an increasing number of children are growing up with excess weight. According to the World Health Organization, **more than 390 million children and adolescents aged 5–19 years were overweight in 2022, including more than 160 million living with obesity.** The prevalence of overweight in this age group has increased from 8% in 1990 to 20% in 2022.

These are not merely numbers on a graph. Behind every number is a child whose future metabolic health may already be changing.

But before we ask, **“How can we make this child lose weight?”**, perhaps we need to ask a more important question:

“What kind of environment are we creating for our children?”

A child wakes up late, skips breakfast or eats hurriedly, travels to school instead of walking, spends hours sitting in classrooms, returns home to a screen, eats packaged snacks, drinks sugary beverages, studies, watches more screens and sleeps late.

Then we tell the child: **“You need to exercise more.”**

Is the child really the problem?

Ayurveda Saw the Pattern Long Before We Named It Obesity

Ayurveda does not discuss obesity merely as an excess number on a weighing scale. **Sthoulya** is described within a broader framework of disorders arising from excessive nourishment—**Santarpanottha Vikara**.

Charaka, in *Sūtrasthāna* 23, *Santarpanīya Adhyāya*, describes excessive intake of **Snigdha, Madhura, Guru and Picchila** foods, excessive eating, dislike of physical activity and indulgence in daytime sleep, sitting and sedentary comfort as causes of Santarpana-related disorders.

Read in today's context, the description is remarkably relevant.

Our modern child may not be consuming exactly the foods described in the classical text, but the underlying pattern is familiar:

Excess nourishment + inadequate activity + disturbed routine = increased risk of metabolic imbalance.

Ayurveda therefore gives us an important message: **disease prevention begins with understanding the pattern that creates disease.**





What Does Charaka Say About Sthoulya?

Charaka gives a remarkably clear description of Atisthoulya:

“मेदोमांसातिवृद्धत्वाच्चलस्फिगुदरस्तनः ।
अयथोपचयोत्साहो नरोऽतिस्थूल उच्यते ॥”

– Charaka Samhitā, Sūtrasthāna 21/9

The verse describes excessive increase of Meda and Mamsa, with characteristic bodily changes and reduced normal functional capacity. It is a classical description, not a modern diagnostic definition of obesity, but it provides an authentic Ayurvedic foundation for understanding Sthoulya.

Charaka also explains the pathophysiology:

“मेदसाऽऽवृत्तमार्गत्वाद्वायुः कोष्ठे विशेषतः ।
चरन् सन्धुक्ष्यत्यग्निमाहारं शोषयत्यपि ॥”

– Charaka Samhitā, Sūtrasthāna 21/5

The classical explanation brings Meda, Vata and Agni into the disease process. It reminds us that Ayurveda does not view obesity simply as excess body mass; it considers disturbed functional processes and the interaction of Dosha, Dhatu and Srotas.

Meda Is More Than “Fat”

In Ayurveda, **Meda Dhatu** is one of the seven Dhatus and has an important role in nourishment and bodily structure. In Sthoulya, excessive Meda and disturbance of its normal functioning are central to the Ayurvedic description.

But we should be careful not to say that *Meda Dhatu is simply identical to modern adipose tissue*. The two concepts arise from different medical frameworks.

Instead, Ayurveda offers us a different way of looking at the problem—through **Dhatu, Agni, Dosha and Srotas**.

And this brings us to one of Ayurveda's most important concepts: **Agni**.

Is the Problem Only “Eating Too Much”?

Not necessarily.

Ayurveda asks us to look at **how food is taken, how much is taken, when it is taken and how the body processes it**.

A child who is constantly eating without hunger, frequently snacking, consuming highly processed foods and remaining physically inactive is not simply making an occasional poor food choice.

A **pattern** is being created.

That is why childhood obesity cannot be addressed by putting a child on a restrictive diet for a few weeks.

The aim should be to restore healthy patterns of:

Ahara + Vihara + Dinacharya + Nidra + Manasika balance.

The Child Should Not Be Put on a Diet—The Family Should Change Its Lifestyle

This may be one of the most important principles in childhood obesity management.

If parents regularly bring packaged snacks home, drink sugary beverages, eat while watching television and remain sedentary, asking the child to “control” everything is unrealistic.



Instead:

- Make fresh and nourishing food easily available.
- Reduce sugary drinks and ultra-processed snacks.
- Establish regular meal times.
- Encourage outdoor play.
- Create screen-free meal times.
- Maintain a consistent sleep routine.
- Eat together as a family whenever possible.

Most importantly, **do not shame the child.**

A child who repeatedly hears, “*You are fat,*” may develop a damaged relationship with food and body image long before developing a healthy relationship with either.

Ahara: Nourishment, Not Deprivation

Ayurvedic dietary principles can be beautifully applied to prevention.

Ahara Matra reminds us that quantity matters. Food should be appropriate to the individual's needs, digestive capacity, age and activity.

For children, this principle must be applied with particular care.

A growing child needs adequate nutrition for the brain, bones, muscles, hormonal development and puberty. Therefore, childhood obesity should **never become an excuse for crash diets, starvation or indiscriminate fasting.**

The goal is not:

“Eat less at any cost.”

The goal is:

“Eat appropriately, digest well and live actively.”

Apatarpana Does Not Mean Starving a Child

This distinction is important when applying Ayurveda authentically.

Charaka describes **Apatarpana** as a therapeutic principle in the context of disorders caused by excessive nourishment. Classical management of Santarpana disorders includes measures aimed at reducing excess nourishment and promoting appropriate activity.

But applying Apatarpana to a child cannot mean blindly imposing adult weight-loss protocols.

For a growing child, **reducing excess is not the same as reducing essential nourishment.**

This is where the Ayurvedic principle of **Yukti**—appropriate clinical reasoning—becomes essential.

Movement Should Be Joy, Not Punishment

A child should not have to “earn” food through exercise.

Running, cycling, swimming, dancing, sports, outdoor games and age-appropriate yoga can become natural parts of childhood.

The objective is not simply to burn calories.

It is to help the child discover:

“My body loves to move.”

When movement becomes joyful rather than punitive, it has a much greater chance of becoming a lifelong habit.

The Real Treatment May Begin Before the Doctor's Clinic

Childhood obesity requires parents, schools, healthcare professionals and communities to work together.

Ayurveda's greatest contribution may be its **preventive vision**—the understanding that health is created every day through food, routine, activity, sleep and balanced living.

We should therefore stop asking only:



“How do we reduce this child's weight?”

And start asking:

“How do we create a childhood in which obesity has less opportunity to develop?”

Because the ultimate goal is not to raise thinner children.

It is to raise children who are **strong, active, emotionally secure, well-nourished and metabolically healthy.**

Do not make the child fight the body.

Change the environment.

Change the habits.

Protect the childhood.



Integrative Approaches to Childhood Obesity

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Abstract

Childhood and adolescent obesity are a rapidly escalating global health crisis that negatively affects both physical well-being and academic performance. This condition carries severe immediate and long-term medical risks, often triggered by nutritional imbalances and excessive calorie intake. Over the past few decades, sedentary habits have driven a dramatic spike in obesity rates. To address this, Ayurveda—the ancient science of life—classifies the condition as Medoroga, attributing it to an imbalance in the doshas and disruptions in Agni (digestive fire). Classical Ayurvedic texts advocate for Pathya Aahar (wholesome dietary practices) and specific yogas (formulations/practices) as effective measures for both preventing and managing weight gain.

Keywords: Sthoulya, Medoroga, Childhood disorder, Overnutrition.

Introduction

Obesity is clinically characterised by an abnormal accumulation of adipose tissue that poses significant health vulnerabilities. A body mass exceeding the ideal parameters for an individual's age, gender, and height by 20% or more is recognised as a clinical risk factor¹. Severe weight gain acts as a major health hazard, frequently precipitating metabolic and pathological complications. These include hyperinsulinemia, diabetes mellitus, hypertension, dyslipidaemia, accelerated atherosclerosis, and cholelithiasis.

Epidemiological data published in the Indian Journal of Endocrinology and Metabolism indicate that 5.74% to 8.82% of school-aged children in India are currently affected by obesity. On a global scale, data from the International Obesity Task Force (IOTF) reveals that as early as the year 2000, approximately 10% of youth aged 5 to 17 (roughly 155 million) were classified as overweight, with 30 to 45 million (2% to 3%) meeting the criteria for obesity².





Childhood Obesity

1. The main causes of obesity in children include:

- Mismatch between calories consumed and calories burned.
- Hormonal root causes, including Cushing's syndrome and hypothyroidism.
- Inherited genetic syndromes such as Prader-Willi, Carpenter, and Laurence-Moon-Bardet-Biedl.
- Weight gain triggered by medications like antiepileptics, corticosteroids, and estrogen.
- Monogenic defects, including leptin resistance or congenital leptin deficiency³.

2. Morphologic features of childhood obesity and complications: This condition is characterised by elevated fat accumulation within subcutaneous layers, as well as within skeletal muscle and vital visceral organs, including the liver, heart, kidneys, and omentum. The problem is also associated with significant complications such as Hyperlipidemia, hypertension, Insulin resistance, diabetes mellitus, Restrictive lung disease, obstructive airway disease, Fatty liver, osteoarthritis, and gout.

3. Diagnosis: To get a clear picture of overall health, we need to look at how your metabolism, organs, and hormones are functioning. Here are the specific tests required:

- Blood Sugar Evaluation: This checks the glucose levels to see how the body processes energy and to screen for diabetes.
- Cholesterol Profile: A look at blood fats (lipids) to evaluate cardiovascular and heart health.
- Liver Health Assessment: A panel of tests to ensure the liver is filtering toxins and working correctly.
- Thyroid Performance Screen: An analysis of thyroid hormones to see if metabolism is running too fast or too slow.
- Growth Hormone Analysis: A specialised check to measure the production and activity of growth hormones in your system.

Ayurveda and obesity

In classical Ayurvedic literature, severe obesity is deeply analysed as both a systemic imbalance and a metabolic disorder. In the Charaksamhita, Acharya Charak dedicates a section within the Asthanindidityaadhaya to discuss sthauilya (obesity), explicitly outlining the numerous physical tolls it takes on an individual, including a shortened lifespan, restricted physical mobility, excessive sweating, and a distinct bodily odour. According to these ancient texts, the root cause of this condition stems from over-saturation, which is triggered by a consistent diet of heavy, excessively sweet, cold, and highly fatty foods⁴. Furthermore, the texts categorise atisthauilya (extreme obesity) as one of the twenty distinct disorders driven purely by an aggravation of the Kapha dosha⁵. Because it is inherently recognised as a disease born from over-nutrition (santarpanajanaya roaga)⁶, classical management mandates that it be treated through purification therapies (samsodhanayogya roagas)⁷ to restore internal balance.

To effectively address pediatric obesity (*atisthauilya*), classical texts advocate for a comprehensive approach combining deep bio-cleansing, targeted pharmacology, and strict behavioural modifications. Acharya Charak advises managing these over-nutritional disorders (*santarpanajanaya roagas*) through intensive therapeutic procedures including *vaman* (medicated emesis), *virechan* (therapeutic purgation), *swedana* (sudation therapy), and regular *vyayama* (physical exercise), which are complemented by a dietary regimen of *ruksha ahara* (dry, non-fatty foods) and the administration of *madhu* (honey) mixed with *haritakichurna*⁸. Further expanding on pharmaceutical interventions,



Acharya Sushruta outlines a robust strategy utilising *virukshaniya* (drying) and *chedaniya* (fat-scraping) substances. This specialised protocol includes the clinical use of *shilajatu*, *guggulu*, *gomutra* (cow urine), *triphala*, *loharaja* (iron filings), *rasanjana*, and *madhu*, alongside a diet centred on specific wholesome grains and legumes such as *yava* (barley), *mudhga* (green gram), *koraduska*, *shyamaka*, and *uddhalaka*⁹. To reinforce these therapies, daily behavioural guidelines mandate the complete avoidance of excessive sleep and daytime napping, the habit of drinking lukewarm water immediately following meals, and the administration of *lekhanabasti* (medicated scraping enemas) to clear deep-seated adipose tissue.

Herbs having anti-obesity effect

Modern pharmacological evaluations have increasingly validated traditional Ayurvedic treatments by demonstrating the distinct metabolic mechanisms of key medicinal plants. Scientific trials exploring the metabolic impact of *Vidanga* (*Embelia ribes*) show that its ethanolic extract significantly reduces harmful serum markers, notably lowering levels of leptin, insulin, glucose, and cholesterol¹⁰. Research indicates that both alcoholic and alkane extracts derived from the leaves of *Musta* (*Cyperus rotundus*) exhibit strong anti-fat activity, making it a reliable natural countermeasure against excessive weight gain. Controlled animal studies reveal that *Vacha* (*Acorus calamus*) effectively minimises serum cholesterol and triglycerides in subjects fed an atherogenic, high-fat diet, confirming its lipid-lowering potential¹¹.

Conclusion

Childhood obesity represents a critical health crisis that profoundly compromises both the physical well-being and psychological development of developing children. Youth experiencing this condition face a significantly elevated risk of developing serious long-term complications, including type 2 diabetes mellitus, chronic hypertension, and early-onset coronary heart disease. Successfully mitigating and managing childhood obesity relies on proactive, foundational lifestyle interventions. These primarily include cultivating nutrient-dense dietary habits, systematically increasing daily physical activity, and actively minimizing prolonged sedentary behaviours.

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e-magazine by AYUSH Department, Uttarakhand Govt

Monthly Magazine | August 2026 Edition



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