

# Clinical Evaluation of the Efficacy of Panchakarma in the Management of Lifestyle Disorders: A Comprehensive Review

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**Abstract**—Lifestyle disorders, often categorized under non-communicable diseases (NCDs), constitute a major global health challenge due to rapid urbanization, sedentary habits, high-calorie nutrition, stress, and environmental factors. Conditions such as obesity, type 2 diabetes mellitus, hypertension, dyslipidemia, metabolic syndrome, non-alcoholic fatty liver disease (NAFLD), and polycystic ovarian syndrome (PCOS) are rising at an alarming rate and represent a significant burden on healthcare systems. Ayurveda attributes these disorders to Santarpanajanya vyadhi, characterized by aggravated Kapha and Meda, impaired Agni, Ama formation, and Srotorodha. Panchakarma, the classical Ayurvedic detoxification and rejuvenation therapy, offers a unique multidimensional approach aimed at eliminating accumulated metabolic toxins, restoring doshic balance, regulating metabolism, and promoting mental well-being. This review comprehensively evaluates clinical and experimental evidence regarding the efficacy of core Panchakarma procedures—Vamana, Virechana, Basti, Nasya, and Raktamokshana—in managing lifestyle disorders. Literature from classical texts, contemporary research databases, clinical trials, and observational studies indicates that Panchakarma significantly improves anthropometric measures, metabolic parameters, inflammatory markers, hormonal profiles, hepatic function, and psychological stress indicators. Panchakarma was found effective not only in symptom management but also in targeting the root cause of metabolic dysfunction, improving quality of life, and reducing dependency on long-term pharmacotherapy. However, the review emphasizes the need for standardized protocols, high-quality RCTs, mechanistic studies, and long-term follow-ups to validate these findings globally. Panchakarma holds promise as an integrative therapeutic modality for addressing modern lifestyle diseases.

**Index Terms**—Panchakarma, Lifestyle disorders, Virechana, Basti, Obesity, Diabetes, Hypertension, PCOS, Metabolic syndrome, Ayurveda, Detoxification, Clinical efficacy.

## I. INTRODUCTION

Lifestyle disorders have emerged as a dominant health concern of the 21st century, primarily due to modernization, mechanization, changing dietary habits, and psychosocial stressors. These disorders include a wide spectrum of conditions such as obesity, hypertension, metabolic syndrome, type 2 diabetes mellitus, dyslipidemia, NAFLD, PCOS, and stress-induced psychosomatic illnesses. According to WHO projections, lifestyle disorders currently account for more than 70% of global mortality, with an upward trend projected for coming decades. Their early onset in young adults further increases the risk of morbidity, disability, reduced productivity, and economic burden.

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From an Ayurvedic viewpoint, lifestyle disorders arise predominantly from Santarpana Ahara-Vihara, leading to Kapha and Meda Vriddhi, Ama formation due to Agnimandya, and obstruction in microchannels (Srotorodha). This disturbance results in impaired metabolism, hormonal imbalance, tissue dysfunction, and altered systemic homeostasis. Ayurveda emphasizes restoring metabolic balance through detoxification, dietary correction, lifestyle modification, rejuvenation, and psychosomatic regulation. 2

Panchakarma—the fivefold bio-purificatory therapy comprising Vamana, Virechana, Basti, Nasya, and Raktamokshana—plays a central role in the management of metabolic and lifestyle disorders. These therapies are designed to eliminate deep-seated metabolic toxins, regulate digestive and cellular metabolism (Agni), reverse Srotorodha, improve tissue nourishment, enhance insulin sensitivity, and restore the neuroendocrine axis. Panchakarma is unique in its comprehensive approach, involving preparation (Purva Karma), cleansing procedures (Pradhana Karma), and post-procedure rehabilitation (Paschat Karma).<sup>3</sup>

Recent research demonstrates that Panchakarma influences biochemical, neurological, immunological, and metabolic mechanisms. Studies indicate improvements in lipid profile, blood glucose, body mass index, liver enzymes, inflammatory biomarkers, oxidative stress markers, and psychological well-being. As the global healthcare system shifts toward integrative, preventive, and holistic medicine, evaluating Panchakarma's scientific validity becomes crucial.<sup>4</sup>

This review aims to critically analyze clinical evidence on Panchakarma's efficacy in lifestyle disorders and provide an integrative perspective for practitioners and researchers.

Panchakarma comprises: 5,6

- Vamana (therapeutic emesis) – effective for Kapha disorders, obesity.
- Virechana (purgation) – indicated for Pitta disorders, liver diseases, metabolic syndrome.
- Basti (medicated enemas) – prime therapy for Vata disorders, metabolic imbalance, insulin resistance.
- Raktamokshana – bloodletting for hypertension, dyslipidemia, inflammatory disorders.
- Nasya – for head–neck disorders and neuroendocrine balance.

Given the increasing global demand for holistic metabolic detoxification, a review of the clinical efficacy of Panchakarma in lifestyle disorders is highly relevant.

## II. AIMS AND OBJECTIVES

- To review classical and contemporary evidence on the role of Panchakarma in lifestyle disorders.

- To analyze the efficacy of different Panchakarma procedures in obesity, diabetes, hypertension, dyslipidemia, NAFLD, PCOS, and stress-related disorders.
- To provide an evidence-based framework for integrating Panchakarma into clinical practice.
- To identify research gaps and recommend future directions.

## III. MATERIALS AND METHODS

Search Strategy: Literature was retrieved from PubMed, Scopus, AYUSH Research Portal, Google Scholar, and Ayurveda classical texts.

Study Types: Clinical trials, RCTs, systematic reviews, observational studies, dissertations.

Inclusion Criteria: Human studies evaluating Panchakarma procedures in lifestyle diseases.

Exclusion Criteria: Animal studies, non-clinical reviews without intervention details.

Data Extraction: Therapeutic procedure, sample size, outcomes, statistical significance.

Review of Lifestyle Disorders and Panchakarma

### 1. Obesity (Sthaulya)

Ayurvedic Pathophysiology<sup>7</sup>

Obesity is described as Sthaulya, a Santarpanajanya Vyadhi arising from excessive intake of calorie-dense, Guru, Snigdha foods combined with sedentary habits. This leads to:

- Agnimandya (digestive/metabolic dysfunction)
- Ama formation
- Kapha–Meda Vriddhi
- Srotorodha (microchannel obstruction)
- Dhatvagni impairment leading to abnormal Meda deposition

Obesity is also linked with psychological factors such as stress-induced eating and sleep disturbances, which further aggravate Kapha and Meda.

Role of Panchakarma

### 1. Vamana (Therapeutic Emesis)<sup>8</sup>

- Removes excess Kapha and Meda from the gastrointestinal tract.
- Mobilises stagnant fat stores and reduces subcutaneous and visceral fat.
- Improves Agni and metabolic rate.

### 2. Virechana (Purgation)<sup>9</sup>

- Eliminates Ama and Pitta-Kapha imbalance.

- Improves lipid metabolism and reduces hepatic fat accumulation.

### 3. Lekhaniya Basti<sup>10</sup>

- Medicated enemas used for scraping action (Lekhana).
- Reduces adipose tissue and helps metabolic correction.

#### Clinical Evidence<sup>11</sup>

Studies show significant reductions in:

- Body weight (5–12% average reduction)
- BMI
- Waist–hip ratio
- Serum cholesterol, triglycerides, LDL
- Liver fat in NAFLD-associated obesity
- Obesity responds best to sequential Panchakarma (Vamana → Virechana → Lekhaniya Basti).

### 2. Type 2 Diabetes Mellitus (Madhumeha/Prameha)<sup>12</sup>

#### Ayurvedic Pathogenesis

Prameha arises from:

- Kapha–Meda aggravation
- Agnimandya leading to Ama and impaired glucose metabolism
- Shleshma imbalance causing dhatu dushti
- Mutravahasrotas dysfunction
- The altered Meda contributes to insulin resistance.

#### Panchakarma Interventions<sup>13</sup>

##### 1. Virechana

- Enhances pancreatic and hepatic function
- Reduces fasting blood sugar, postprandial glucose, and HbA1c
- Corrects Pitta and Kapha imbalance

##### 2. Basti (Especially Niruha Basti)

- Improves insulin sensitivity
- Reduces inflammatory cytokines
- Corrects Vata-induced neuropathic tendencies

##### 3. Udvartana<sup>14</sup>

Stimulates metabolism and reduces adiposity contributing to insulin resistance.

#### Clinical Outcomes

- Reduction in HbA1c by 0.5–1.2%
- Decrease in fasting insulin and HOMA-IR
- Reduced inflammatory markers (CRP, IL-6)
- Weight reduction and improved lipid profile
- Panchakarma helps reverse metabolic dysfunction, thereby reducing medication dependency.

### 3. Hypertension (Rakta Gata Vata)<sup>15</sup>

#### Ayurvedic Pathogenesis

Hypertension is often conceptualized as:

- Rakta Gata Vata
- Vyana Vata Dushti
- Raja-Tama aggravation causing sympathetic overactivity
- Avarana of Vata by Pitta/Kapha leading to vascular resistance
- Stress, poor sleep, and Ama also contribute.

#### Role of Panchakarma<sup>16</sup>

##### 1. Raktamokshana

- Reduces Rakta Dushti and vascular tension
- Improves rheology and endothelial function

##### 2. Basti

- Regulates Vata and reduces sympathetic overactivity
- Improves autonomic balance

##### 3. Shirodhara

- Significant reduction in systolic and diastolic BP
- Acts via HPA-axis modulation and stress reduction

#### Clinical Evidence

Studies show:

- 10–18 mmHg reduction in systolic BP
- Improved heart rate variability
- Reduced stress, anxiety, and insomnia

These therapies show promising effects as supportive management in essential hypertension.

### 4. Dyslipidemia (Medo Dushti)<sup>17</sup>

Medo Dhatu Dushti arises from:

- Kapha dominance
- Fatty, sweet, Guru foods
- Sedentary behaviour
- Ama causing impaired lipid transportation

#### Panchakarma Approaches

##### Virechana

- Removes excess Pitta and Ama
- Improves liver metabolism and bile secretion

##### Udvartana

- Dry powder massage helps break subcutaneous fat
- Enhances lymphatic and peripheral circulation

##### Vamana

Useful in Kapha-dominant dyslipidemia

#### Clinical Benefits

- Reduction in LDL, VLDL, triglycerides
- Increase in HDL

- Improved hepatic lipid metabolism
- Panchakarma also reduces oxidative stress, contributing to cardioprotective effects.

#### 5. Non-Alcoholic Fatty Liver Disease (NAFLD/Yakrit Vriddhi)<sup>18</sup>

##### Ayurvedic View

- NAFLD correlates with:
- Yakrit Vriddhi
- Kapha-Meda Vriddhi
- Ama accumulation in liver channels (Yakrit–Pliha Srotas)
- Panchakarma Interventions

##### Virechana

- Clears Pitta and Ama from the liver
- Improves liver enzymes (ALT, AST)
- Reduces hepatic fat on ultrasound

##### Basti

- Regulates Vata and supports metabolism
- Udvartana + Pathya
- Helps in weight reduction and fat mobilization

##### Clinical Outcomes

##### Studies demonstrate:

- Improvement in ultrasound grading of fatty liver
- Significant reduction in ALT, AST
- Weight reduction and improved lipid profile
- Panchakarma offers a holistic approach to NAFLD management.

#### 6. Polycystic Ovarian Syndrome (PCOS/Artava Dushti)<sup>19</sup>

##### Ayurvedic Pathogenesis

##### PCOS is associated with:

- Vata–Kapha imbalance
- Agnimandya → Ama → Artava Dhatu Dushti
- Meda Vriddhi causing insulin resistance
- Srotorodha affecting ovarian function

##### Panchakarma Therapies

##### 1. Virechana

- Reduces Ama and Pitta
- Improves hormone regulation
- Supports weight loss

##### 2. Basti

- Regulates Apana Vata
- Improves ovulation and menstrual cycle
- Reduces ovarian volume on ultrasound

##### 3. Udvartana + Swedana

Helps reduce obesity linked with PCOS

##### Clinical Improvements

- Regularization of menstrual cycles
- Increased ovulation rates
- Reduction in androgen levels
- Reduction in BMI, fasting insulin, and insulin resistance
- Panchakarma enhances fertility outcomes by addressing root metabolic dysfunction.

## IV. DISCUSSION

The findings from reviewed literature reveal that Panchakarma offers a multipronged therapeutic approach for managing lifestyle disorders. Unlike conventional medicine, which often focuses only on symptom control, Panchakarma acts at various levels—from detoxification to metabolic correction, physiological restoration, and psychological balance.<sup>20</sup>

### 1. Detoxification and Metabolic Reset

Clinical studies suggest that Panchakarma eliminates accumulated Ama and metabolic waste, reduces inflammatory mediators, and resets metabolic pathways. Vamana and Virechana significantly improve lipid metabolism, reduce body fat, clear liver congestion, and regulate glucose homeostasis. The detoxification effect is supported by reductions in markers such as CRP, IL-6, and TNF- $\alpha$ .<sup>21</sup>

### 2. Restoration of Agni and Gut Microbiome Balance

Panchakarma therapies improve digestive and cellular metabolism by restoring Agni. Enhanced Agni leads to better nutrient assimilation, reduced lipogenesis, and improved insulin sensitivity. Emerging research also suggests positive alterations in gut microbiota following Panchakarma, contributing to improved metabolic health.<sup>22</sup>

### 3. Doshic Regulation and Systemic Homeostasis<sup>23</sup>

Each Panchakarma procedure targets specific doshic imbalances:

- Vamana reduces Kapha and Meda, correcting obesity and dyslipidemia.
- Virechana pacifies Pitta and detoxifies the liver, benefiting NAFLD and metabolic syndrome.
- Basti, considered half of all treatments, regulates Vata, stabilizes the nervous system, and improves hormonal and metabolic balance.
- Raktamokshana corrects vitiated Rakta and reduces blood pressure and inflammation.

- Nasya acts on neuroendocrine pathways, improving stress, sleep, and autonomic balance.

#### 4. Neuroendocrine Modulation

Stress and sleep disorders contribute significantly to lifestyle diseases. Panchakarma procedures such as Shirodhara, Nasya, and Matra Basti modulate the hypothalamic–pituitary–adrenal (HPA) axis. Reductions in cortisol and improvements in parasympathetic tone support this mechanism.<sup>24</sup>

#### 5. Sustainable Lifestyle Modification

Panchakarma incorporates diet regulation, pathya-apathya, yoga, meditation, and behavioral counseling as part of its broader framework. This integrative approach ensures long-term adherence to healthy behaviours, supporting sustained remission of lifestyle diseases.

#### 6. Evidence Gaps and Research Needs

Although existing studies demonstrate significant benefits, many trials suffer from small sample sizes, lack of controls, non-standardized protocols, and short follow-up. There is a need for:<sup>25</sup>

- Large-scale multicenter RCTs
- Biological mechanism studies
- Standardized Panchakarma guidelines
- Long-term outcome research
- Integration with modern diagnostic tools

Despite these limitations, the cumulative evidence supports Panchakarma as a promising and effective intervention for modern metabolic and lifestyle conditions.

### V. CONCLUSION

Lifestyle disorders pose a profound challenge to global health, necessitating therapeutic strategies that go beyond symptomatic relief. Panchakarma, rooted in classical Ayurvedic principles, offers a comprehensive approach by addressing the root cause of metabolic dysfunction, improving digestion and metabolism, eliminating accumulated toxins, regulating hormonal and autonomic pathways, and enhancing overall physical and psychological resilience. The review demonstrates that Panchakarma interventions—especially Vamana, Virechana, and Basti—show significant efficacy in obesity, diabetes, hypertension, dyslipidemia, NAFLD, PCOS, and stress-related disorders. Improvements in metabolic markers, inflammatory profiles, and quality of life highlight the

clinical relevance of these therapies. Moreover, Panchakarma serves as a sustainable intervention, incorporating diet, lifestyle, and behavioral modifications that support long-term health benefits. However, further research is crucial to establishing international standards, validating mechanisms, and ensuring reproducibility. With appropriate scientific validation and integration into modern clinical protocols, Panchakarma has the potential to become a global therapeutic model for lifestyle disorder management. Its holistic, preventive, and restorative nature aligns with current trends in integrative medicine and offers a promising pathway to address the increasing burden of chronic lifestyle diseases.

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