

REVIEW ARTICLE

Obesity as a Contributing Factor to Female Infertility an Ayurvedic Perspective

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ABSTRACT

Background: Obesity is a growing global health concern with profound endocrine, metabolic, and reproductive consequences. The increasing prevalence of obesity among women of reproductive age is associated with menstrual irregularities, anovulation, impaired endometrial receptivity, and infertility. In Ayurveda, *Sthoulya* (obesity) is a *Santarpanajanya Vyadhi* (disease caused by overnutrition) characterized by excessive *Meda Dhatu* (adipose tissue) and *Kapha Dosha* predominance. At the same time, *Vandhyatva* (female infertility) results from disturbances in *Ritu* (fertile period), *Kshetra* (uterus), *Ambu* (nourishment), and *Beeja* (ovum).

Objectives: The purpose of this study was to review the impact of lifestyle-induced obesity on female infertility and its management from contemporary and Ayurvedic perspectives.

Materials and Methods: Classical Ayurvedic texts, modern gynecology textbooks, and recent scientific literature on obesity and infertility were critically reviewed to analyze etiopathogenesis, reproductive consequences, and therapeutic approaches.

Results: Obesity adversely affects female fertility through insulin resistance, hyperinsulinemia, hyperestrogenism, leptin resistance, chronic inflammation, and hypothalamic–pituitary–ovarian axis dysfunction, resulting in ovulatory disorders, polycystic ovarian syndrome, poor endometrial receptivity, and infertility. Ayurveda attributes these changes to *Kapha-Meda Vriddhi* (increase of *Kapha* and adipose tissue), *Agnimandya* (impaired digestive and metabolic fire), *Srotorodha* (obstruction of body channels), and *Artava Dushti* (vitiation of menstrual tissue). Management includes *Nidana Parivarjana* (avoidance of causative factors), dietary and lifestyle modification, *Shodhana* (bio-purificatory therapies), and *Shamana* (pacifying therapies).

Conclusion: Lifestyle-induced obesity is a reversible risk factor for female infertility. Integrating Ayurvedic principles with lifestyle modification may improve reproductive health and fertility outcomes.

1. INTRODUCTION

Obesity is a disease condition with systemic endocrine and metabolic consequences. The prevalence of obesity is increasing significantly worldwide. The International Obesity Task Force reported that 1.1 billion adults are overweight. They also reported that 312 million of them are obese.^[1]

According to the World Obesity Atlas, the prevalence of obesity in India remains below 19%.^[2] However, data from the National Family

Health Survey indicate a steady rise in overweight and obesity among Indian women, increasing from approximately 20% to nearly 30% over the past decade, highlighting a growing public health concern.^[3] In India, 76% of infertile women are overweight or obese. Obesity increases the risk of infertility, miscarriage, and pregnancy complications.^[4]

In Ayurveda, *Sthoulya* is a *Santarpanajanya Vyadhi* marked by excessive *Meda*, *Mamsa Dhatu*, and *Kapha Dosha* dominance,^[5] whereas *Vandhyatva* arises from disruption of *Rutu*, *Kshetra*, *Ambu*, and *Beeja*.^[6] Hence, understanding the link between *Sthoulya* and *Vandhyatva* through classical Ayurvedic principles offers a holistic approach to the prevention and restoration of reproductive health.

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1.1. Obesity^[7]

Obesity is a condition of excessive body fat accumulation that adversely affects health. It is clinically assessed primarily by body mass index (BMI), with BMI ≥ 30 kg/m² classified as obese by the World Health Organization (WHO).

1.1.1. Etiological factors of obesity

1. Excessive consumption of food (60–70%)
2. Genetic factors (20–30%)
3. Hormonal and endocrine factors (5–10%)
4. Drug-induced obesity (5–10%).

Obesity is a multifactorial disorder influenced by genetic, environmental, hormonal, and lifestyle factors. However, lifestyle-related factors, including unhealthy dietary habits, physical inactivity, and sedentary behavior, are the major contributors to its increasing prevalence and are largely modifiable. Since obesity adversely affects female reproductive function and fertility, understanding the role of lifestyle factors is essential for developing effective preventive and therapeutic strategies.

1.1.2. Etiopathology of obesity^[8]

- Obesity develops when chronic energy intake exceeds energy expenditure, leading to excessive triglyceride accumulation within adipose tissue.
- Persistent caloric excess causes adipocyte hypertrophy and hyperplasia, transforming adipose tissue into an active endocrine organ that secretes adipokines such as leptin, adiponectin, resistin, and inflammatory cytokines.
- In obesity, leptin resistance, reduced adiponectin levels, and increased pro-inflammatory mediators (tumor necrosis factor alpha and interleukin-6) promote chronic low-grade inflammation, insulin resistance, and hyperinsulinemia. These metabolic disturbances impair hypothalamic regulation of appetite and energy balance, resulting in increased food intake and reduced energy expenditure.
- Alterations in gut microbiota further enhance energy extraction from the diet and increase intestinal permeability, perpetuating systemic inflammation. Collectively, these endocrine, metabolic, inflammatory, and neuroendocrine abnormalities contribute to the development and progression of obesity and its associated complications, including reproductive dysfunction.

1.1.3. Obesity and female infertility^[9]

- Obesity is a well-established modifiable risk factor for female infertility, adversely affecting reproductive function through complex metabolic, endocrine, and inflammatory mechanisms.
- Excess adipose tissue functions as an active endocrine organ, leading to hyperinsulinemia, hyperestrogenism, leptin resistance, and chronic low-grade inflammation, all of which disrupt the hypothalamic–pituitary–ovarian axis.
- These alterations impair gonadotropin secretion, follicular development, ovulation, oocyte quality, and endometrial receptivity, thereby reducing fecundity. Obesity also increases the risk of polycystic ovary syndrome (PCOS), menstrual irregularities, implantation failure, miscarriage, and adverse pregnancy outcomes.
- Studies have shown that even a modest weight reduction of 5–10% can restore ovulation, improve menstrual regularity, and enhance spontaneous conception and assisted reproductive technology outcomes. Therefore, early identification and management of obesity through lifestyle modification and appropriate therapeutic

interventions are essential for improving reproductive health and fertility in women.

1.2. Diagnosis

1. Anthropometric assessment: BMI ≥ 30 kg/m² (WHO classification), waist circumference > 80 cm in Asian women, waist-to-hip ratio > 0.85 indicating central obesity.
2. Hormonal evaluation: Serum follicle-stimulating hormone (FSH) and luteinizing hormone (LH), serum prolactin, estradiol, mid-luteal progesterone, thyroid profile (thyroid-stimulating hormone, FT4), serum testosterone, dehydroepiandrosterone sulfate, and anti-müllerian hormone.
3. Metabolic evaluation: Fasting blood glucose, fasting serum insulin, glycated hemoglobin, lipid profile, liver function tests, and oral glucose tolerance test when indicated.
4. Imaging and fertility assessment: Transvaginal ultrasonography to assess ovarian morphology, follicular development, and endometrial thickness. Pelvic ultrasonography and hysterosalpingography for tubal patency, if infertility persists.
5. Semen analysis of the partner is part of the routine infertility evaluation.

1.3. Modern Management^[8]

The modern management of obesity-associated female infertility primarily focuses on weight reduction through lifestyle modification, including a calorie-restricted balanced diet, regular physical activity (150–300 min of moderate-intensity exercise per week), and behavioral interventions. A weight loss of 5–10% has been shown to improve insulin sensitivity, restore ovulation, and increase pregnancy rates.

Pharmacological agents such as metformin (particularly in women with insulin resistance or PCOS), orlistat, and glucagon-like peptide-1 receptor agonists may be used in selected patients.

Bariatric surgery is considered for women with severe obesity who do not respond to conservative measures. If infertility persists despite weight optimization, ovulation induction using letrozole or clomiphene citrate, gonadotropin therapy, or assisted reproductive technologies may be employed to improve reproductive outcomes.

2. DISCUSSION

From an Ayurvedic perspective, obesity corresponds to *Sthoulya* (obesity), and infertility can be understood under the concept of *Vandhyatva* (female infertility), explaining both conditions through disturbances in *Dosha* (functional bio-elements), *Dhatu* (body tissues), *Agni* (digestive and metabolic fire), and *Srotas* (body channels).

2.1. Sthoulya

2.1.1. Nidana (causative factors)

According to *Charaka Samhita*, *Sthoulya* (obesity) is a *Santarpanajanya Vyadhi* (disease caused by over-nourishment) resulting from excessive consumption of *Guru* (heavy), *Snigdha* (unctuous), and *Madhura Ahara* (sweet foods), along with *Avyayama* (lack of physical activity), *Divaswapna* (daytime sleep), excessive alcohol intake, and sedentary habits (Table 1).^[5]

2.1.2. Samprapthi (pathophysiology)^[9]

These etiological factors aggravate *Kapha Dosha* (bio-element responsible for structure and nourishment) and promote excessive accumulation of *Meda Dhatu* (adipose tissue), leading to *Agnimandya*

(diminished digestive and metabolic activity) and formation of *Ama* (metabolic toxins).

Excessive *Meda Dhatu* obstructs the *Srotas* (body channels), producing *Srotorodha* (obstruction of body channels), which results in *Margavarana* (obstruction of the normal pathway) of *Vata Dosha* (bio-element governing movement).

Consequently, nutrients are preferentially directed toward *Meda Dhatu*. At the same time, the remaining *Dhatus* receive inadequate nourishment, resulting in *Kevala Medo Vriddhi* (isolated increase of adipose tissue) and *Uttarottara Dhatu Kshaya* (progressive depletion of subsequent body tissues).

2.2. Concept of Vyadhi Sankarata (Interrelationship of Diseases)

This concept is described by *Charaka*, who explains the occurrence of two or more diseases simultaneously, either due to *Prayoga Aparishuddhatwa* (improper therapeutic intervention) or *Anyonyasambhava* (mutual causation or interrelationship between diseases).^[10] This concept can be applied to explain the coexistence of obesity, metabolic disorders, and female infertility, where one condition predisposes to or aggravates the other, resulting in a complex clinical presentation.

Continuous exposure to *Santarpana Nidana* (causes of over-nourishment) predisposes individuals to *Sthoulya* (obesity), *Prameha* (metabolic disorders including diabetes), and *Vandhyatva* (female infertility) through common pathological mechanisms. This phenomenon is explained by *Anyonya Sambhava* (mutual causation), wherein one disease acts as an etiological factor for another. Thus, obesity should be regarded as a systemic disorder capable of initiating multiple pathological conditions rather than merely excessive body weight.

2.3. Vandhyatva (Infertility)

Acharya Sushruta defines *Stree Vandhyatwa* as *Nashtaartava*, that is, destruction of *Artava* (ovum).^[11] Successful conception in Ayurveda depends upon the integrity of *Rutu* (appropriate fertile period), *Kshetra* (healthy uterus and reproductive tract), *Ambu* (adequate nutrition), and *Beeja* (healthy ovum and sperm).^[12]

In women with *Sthoulya* (obesity), excessive *Kapha Dosha* and *Meda Dhatu* obstruct the *Artavavaha Srotas* (channels carrying menstrual tissue). *Sushruta* explains that obstruction of the pathway of *Artava* (menstrual tissue) by aggravated *Doshas* results in *Artava Dushti* (vitiation of menstrual tissue) and *Artava Kshaya* (diminished menstrual tissue).^[13] *Vagbhata* attributes this condition to *Vata-Kapha Avarana* (obstruction of *Vata* by *Kapha*).^[14] Clinically, these pathological changes correspond to menstrual irregularities, oligo-ovulation, anovulation, and infertility observed in obese women.

The role of *Rasa Dhatu* (primary nourishing tissue) further explains the relationship between obesity and infertility. Since *Artava* (menstrual tissue) is considered the *Upadhatu* (secondary tissue) of *Rasa Dhatu*,^[15] impaired formation of *Rasa* due to *Agnimandya* (impaired metabolism) and excessive *Meda* (adipose tissue) may directly affect the quality and quantity of *Artava*.

Charaka also states that excessive intake of heavy and unctuous foods together with *Ati Chinta* (excessive psychological stress) vitiates the *Rasavaha Srotas* (channels carrying nutrient plasma),^[16] thereby producing defective nourishment of *Artava*. These alterations manifest

clinically as irregular menstruation, scanty menstrual flow, ovulatory dysfunction, and subfertility.

Modern endocrine abnormalities closely correlate with these Ayurvedic concepts. Excess adipose tissue increases peripheral aromatization of androgens to estrogens, resulting in hyperestrogenism. Simultaneously, insulin resistance produces hyperinsulinemia, suppresses sex hormone-binding globulin, and increases circulating free estrogen and testosterone. Chronic hyperleptinemia leads to leptin resistance, impairing gonadotropin-releasing hormone secretion and disturbing FSH and LH release. These hormonal disturbances culminate in anovulation, poor oocyte quality, defective endometrial receptivity, and infertility.^[17]

From an Ayurvedic perspective, these changes can be interpreted as manifestations of *Kapha-Meda Vriddhi* (increase of *Kapha* and adipose tissue), *Vata Avarana* (obstruction of *Vata*), *Artava Dushti* (vitiation of menstrual tissue), and *Kshetra Dushti* (defective uterine environment), all of which interfere with conception.

2.4. Ayurvedic Management of Sthoulya-Induced Vandhyatva

Ayurveda emphasizes treating the root cause of disease rather than merely alleviating symptoms. Since *Sthoulya* (obesity) is considered a *Santarpanajanya Vyadhi* (disease caused by over-nourishment), its management primarily focuses on reducing excessive *Kapha Dosha* (bio-element responsible for structure and nourishment) and *Meda Dhatu* (adipose tissue), restoring *Agni* (digestive and metabolic fire), eliminating *Ama* (metabolic toxins), and relieving *Srotorodha* (obstruction of body channels). In women with obesity-related *Vandhyatva* (female infertility), treatment aims not only to reduce body weight but also to restore normal ovulation, improve *Artava* (menstrual tissue), and create a healthy uterine environment for conception.

2.5. Principles of Management^[18]

2.5.1. Nidana Parivarjana (elimination of causative factors)

- Avoidance of *Guru* (heavy), *Snigdha* (unctuous), and *Madhura Ahara* (sweet foods)
- Avoidance of *Divaswapna* (daytime sleep), sedentary lifestyle, and overeating
- Importance of correcting lifestyle habits.

2.5.2. Ahara Chikitsa (dietary management)

- *Laghu* (light) and *Ruksha* (dry) diet
- *Lekhana Ahara* (fat-reducing foods)
- Restriction of calorie-dense and processed foods (Table 2).

2.5.3. Vihara Chikitsa (lifestyle modification)

- *Vyayama* (physical exercise)
- *Yoga* and *Pranayama* (breathing exercises)
- Avoid stress
- Adequate sleep and maintaining circadian rhythm (Table 3).

2.5.4. Shodhana Chikitsa (bio-purificatory therapy)

- Vamana* (therapeutic emesis)
 - *Vamana* (therapeutic emesis) is the principal *Shodhana* (bio-purificatory therapy) indicated for *Kapha* disorders. Since *Sthoulya* (obesity) is predominantly caused by *Kapha Dosha* (bio-element responsible for structure and nourishment) and *Meda Dhatu* (adipose tissue), *Vamana* eliminates vitiated *Kapha* from its principal seat and corrects *Agni*.
 - Reduces excessive appetite (*Atikshudha*) and thirst (*Atitrishna*), which are characteristic features of *Sthoulya*,

digests *Ama*, and clears the obstructed channels. The reduction in *Kapha* and *Meda* restores the normal movement of *Apana Vata*, thereby improving *Artava* (menstrual tissue) formation.

- From a modern perspective, *Vamana* helps improve metabolic homeostasis by reducing adiposity, improving insulin sensitivity, decreasing chronic inflammation, and restoring hormonal balance, which collectively enhance reproductive function and fertility in women with obesity-induced *Vandhyatva* (female infertility).
- b. *Virechana* (therapeutic Purgation)
- *Virechana* (therapeutic purgation) acts by producing *Dosha Shodhana* (elimination of vitiated *Doshas*), primarily removing aggravated *Kapha Dosha* (bio-element responsible for structure and nourishment) and *Pitta Dosha* (bio-element governing metabolism).
 - This leads to a reduction in excessive *Meda Dhatu* (adipose tissue), correction of *Agni* (digestive and metabolic fire), and digestion of *Ama* (metabolic toxins). Consequently, *Srotorodha* (obstruction of body channels) is relieved, restoring the normal movement of *Apana Vata* (the subtype of *Vata* responsible for menstruation and reproduction).
 - The normalization of *Apana Vata* facilitates proper functioning of the *Artavavaha Srotas* (channels carrying menstrual tissue), resulting in healthy *Artava* (menstrual tissue) formation, regular ovulation, and improved endometrial receptivity.
 - From a modern perspective, these changes are associated with improved insulin sensitivity, reduction in systemic inflammation, restoration of hormonal balance, and enhanced ovarian function, ultimately increasing the likelihood of successful conception in women with obesity-induced *Vandhyatva* (female infertility).
- c. *Basti Chikitsa* (medicated enema)
- *Basti Karma* (medicated enema therapy) is considered the most effective treatment for disorders involving *Vata Dosha* (bio-element governing movement) and plays a crucial role in the management of obesity-induced *Vandhyatva* (female infertility).
 - In *Sthoulya* (obesity), excessive *Kapha Dosha* (bio-element responsible for structure and nourishment) and *Meda Dhatu* (adipose tissue) produce *Margavarana* (obstruction of the normal pathway) of *Apana Vata* (the subtype of *Vata* responsible for menstruation and reproduction), leading to ovulatory dysfunction and infertility.
 - *Basti Karma*, particularly *Lekhaniya Basti* (scraping medicated enema), alleviates *Kapha-Meda Dushti* (vitiation of *Kapha* and adipose tissue), digests *Ama* (metabolic toxins), improves *Agni* (digestive and metabolic fire), and relieves *Srotorodha* (obstruction of body channels).
 - By restoring the normal movement of *Apana Vata*, it facilitates proper functioning of the *Artavavaha Srotas* (channels carrying menstrual tissue), resulting in healthy *Artava* (menstrual tissue) formation, regular ovulation, and improved endometrial receptivity. The *Lekhana* (scraping), *Medohara* (fat-reducing), *Deepana* (enhancing digestive fire), and *Pachana* (digesting metabolic toxins) properties of the drugs used in *Basti* further reduce excessive adiposity, improve lipid and glucose metabolism, enhance insulin sensitivity, and restore hormonal balance.
 - Thus, *Basti Karma* acts at both systemic and reproductive levels to correct the underlying pathology of obesity, thereby improving fertility and increasing the chances of successful conception (Tables 4 and 5).
- d. *Ruksha Udvartana* (Dry Powder Massage)
- Common classical formulations used for *Ruksha Udvartana* are *Kolakulathadi Churna* (most commonly used), *Triphaladi Churna*, *Yavadi Churna*, and *Lodhradi Churna*:
- *Ruksha Udvartana* (dry powder massage) is an important *Bahya Chikitsa* (external therapy) indicated for *Sthoulya* (obesity). It employs dry herbal powders possessing *Lekhana* (scraping), *Ruksha* (drying), and *Kapha-Medohara* (reducing *Kapha* and adipose tissue) properties, which help liquefy and mobilize accumulated *Meda Dhatu* (adipose tissue).
 - The friction generated during upward massage (*Udvartana*) relieves *Srotorodha* (obstruction of body channels), stimulates *Agni* (digestive and metabolic fire), enhances peripheral blood and lymphatic circulation, and promotes the breakdown of subcutaneous fat.
 - By correcting *Kapha-Meda Dushti* (vitiation of *Kapha* and adipose tissue), it helps restore *Apana Vata* (the subtype of *Vata* responsible for menstruation and reproduction), thereby improving ovulation and fertility in women with obesity-induced *Vandhyatva* (female infertility).
- e. *Shamana Chikitsa* (pacifying therapy)
- Table 6.
- f. *Rasayana* and fertility-promoting therapy
- Following *Panchakarma* (bio-purificatory therapy), *Shodhana* (purification) removes vitiated *Doshas* (functional bio-elements), improves *Agni* (digestive and metabolic fire), and eliminates *Ama* (metabolic toxins), resulting in *Shuddhi* (purification) of the *Garbhashaya* (uterus) and *Yoni* (female reproductive tract).
 - This creates a favorable environment for the formation of *Prakruta Beeja* (healthy ovum) and successful conception. After *Shodhana*, *Shamana Chikitsa* (pacifying therapy) along with *Pathya* (wholesome diet and lifestyle) should be continued, and BMI should be reassessed to ensure attainment of a healthy weight. Once BMI is normalized, *Artava Poshaka Dravyas* (drugs that nourish the menstrual tissue) and *Garbhashaya Poshaka Dravyas* (drugs that nourish the uterus) should be administered to improve ovulation, endometrial receptivity, and overall fertility (Table 7).

3. CONCLUSION

- Obesity is a major modifiable risk factor for female infertility, adversely affecting ovulation, endocrine function, and endometrial receptivity. Ayurveda considers *Sthoulya* (obesity) and *Vandhyatva* (female infertility) as interconnected conditions resulting from *Kapha-Meda Dushti* (vitiation of *Kapha* and adipose tissue), *Agnimandya* (impaired digestive and metabolic fire), *Ama* (metabolic toxins), *Srotorodha* (obstruction of body channels), and dysfunction of *Apana Vata* (the subtype of *Vata* governing reproduction).
- A comprehensive treatment approach comprising *Shodhana* (bio-purificatory therapy), *Shamana* (pacifying therapy), appropriate *Ahara* (diet), *Vihara* (lifestyle), and fertility-promoting *Rasayana* (rejuvenative therapy) addresses both the metabolic and reproductive aspects of the disease.

- By reducing excessive adiposity, restoring hormonal and metabolic balance, improving ovulation, and enhancing endometrial receptivity, Ayurveda offers a holistic and individualized strategy for improving fertility outcomes in women with obesity-induced infertility. Nevertheless, well-designed clinical studies are required to further validate these therapeutic approaches and strengthen the evidence for their integration into contemporary infertility management.

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The data analyzed in this review were obtained from publicly available sources, including peer-reviewed articles, observational studies, and surveys accessible through databases.

10. DISCLAIMER/VIEW AND OPINIONS

The opinions expressed in this article are solely those of the authors and do not reflect the views of the International Research Journal of Ayurveda and Yoga or its editorial board.

11. AI-USE DECLARATION

The authors declare that no generative AI tools were used to create scientific content, interpret data, or draft any sections of this manuscript. AI-based tools were used solely for minor language and grammar refinements to improve clarity and readability. All scientific content, analysis, and conclusions remain the sole responsibility of the author.

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Table 1: Ayurvedic and contemporary perspectives on the etiological factors of *Sthoulya* leading to female infertility

Ayurvedic causative factor (<i>Nidana</i>) ^[9]	Present-day relevance	Probable role in female infertility
<i>Guru-Snigdha Ahara</i> (heavy, oily foods)	Frequent intake of fast foods, fried foods, processed foods, high-fat diet	Promotes obesity, insulin resistance, hormonal imbalance, and anovulation
<i>Atyadhika Sevana</i> (overeating)	Excess calorie consumption, binge eating, large portion sizes	Weight gain, hyperinsulinemia, ovulatory dysfunction
<i>Ati Sampurana</i> (overeating until satiety)	Habitual overconsumption of food	Excess <i>Meda</i> accumulation, menstrual irregularities, reduced fertility
<i>Adhyashana</i> (eating before the previous meal is digested)	Frequent snacking, late-night eating, and irregular meal timings	Impaired metabolism, obesity and endocrine dysfunction
<i>Mahisha Dugdha Sevana</i> (excess buffalo milk)	Excess intake of high-fat dairy products	Increased adiposity, insulin resistance
<i>Ghrta Adhika Sevana</i> (excess ghee consumption)	Excess saturated fat intake	Obesity, dyslipidemia, impaired ovulation
<i>Pishtanna Sevana</i> (refined flour preparations)	Refined carbohydrates, bakery products, pizzas, pastries	Hyperglycemia, obesity, PCOS, anovulation
<i>Anupa Mamsa Sevana</i> (meat from marshy animals)	Excess red meat and processed meat consumption	Increased adiposity, inflammation, reduced fertility
<i>Naveena Anna Ati Sevana</i> (freshly harvested grains)	Refined rice, polished rice, and excessive white rice intake	High glycemic load, insulin resistance, obesity
<i>Atyadhika Madira Pana</i> (excess alcohol consumption)	Regular alcohol intake	Hormonal disturbances, poor oocyte quality, menstrual disorders
<i>Guda and Guda Vikara Adhika Sevana</i> (excess jaggery and sweet preparations)	Excess sugar, sweets, sugar-sweetened beverages, and desserts	Hyperinsulinemia, obesity, impaired ovulation
<i>Varuni Madhya Ati Sevana</i> (frequent alcoholic beverages)	Beer, wine, cocktails, alcoholic drinks	Endocrine dysfunction, menstrual irregularities, infertility
<i>Ayayama</i> (lack of exercise)	Sedentary lifestyle, prolonged sitting, minimal physical activity	Obesity, insulin resistance, ovulatory dysfunction
<i>Divaswapna</i> (daytime sleeping)	Long daytime naps, sedentary work patterns	Reduced metabolic rate, weight gain, hormonal imbalance
<i>Ati Nidra</i> (excessive sleep)	Sleeping >9–10 h/day, poor sleep hygiene	Altered circadian rhythm, obesity, reproductive hormone imbalance
<i>Sahaja Karana</i> (constitutional factors)	Individual susceptibility, body constitution	Increased predisposition to obesity and metabolic disorders
<i>Kulaja Karana</i> (hereditary factors)	Family history of obesity, diabetes, PCOS	Genetic predisposition to obesity, insulin resistance, infertility

PCOS: Polycystic ovary syndrome

Table 2: *Pathya* and *Apathya Ahara* for the management of *Sthoulya* (obesity)

Varga (food group)	Pathya (recommended foods)	Apathya (foods to avoid)
<i>Shuka Dhanya</i> (Cereals)	<i>Purana Shali</i> (aged rice), <i>Kodrava</i> (kodo millet), <i>Shyamaka</i> (barnyard millet), <i>Yava</i> (barley), <i>Priyangu</i> (foxtail millet), <i>Laja</i> (parched rice), <i>Nivara</i> (wild rice), <i>Koradushaka</i> (kodo-type millet), <i>Prashatika</i> (fine variety of rice)	<i>Godhuma</i> (wheat), <i>Naveena Shali</i> (newly harvested rice)
<i>Shami Dhanya</i> (Pulses/Legumes)	<i>Mudga</i> (green gram), <i>Rajamasha</i> (cowpea), <i>Kulattha</i> (horse gram), <i>Chanaka</i> (Bengal gram/chickpea), <i>Masura</i> (red lentil), <i>Adhaki</i> (pigeon pea/red gram), <i>Makushaka</i> (moth bean)	<i>Masha</i> (black gram/urad dal)
<i>Shaka Varga</i> (Vegetables)	<i>Patola</i> (pointed gourd), <i>Patrashaka</i> (leafy vegetables), <i>Shigru</i> (drumstick), <i>Vruntaka/Vartaka</i> (brinjal/eggplant), vegetables with <i>Katu</i> (pungent) and <i>Tikta</i> (bitter) taste, <i>Vastuka</i> (bathua/lamb's quarters), <i>Trapusha</i> (cucumber), <i>Evaruka</i> (snake cucumber), <i>Adraka</i> (ginger), <i>Mulaka</i> (radish), <i>Surasa</i> (holy basil), <i>Grajjana</i> (carrot)	Sweet-tasting vegetables (<i>Madhura Rasatmaka Shaka</i>) such as potato, sweet potato, yam
<i>Phala Varga</i> (Fruits)	<i>Kapittha</i> (wood apple), <i>Jambu</i> (Indian blackberry/jamun), <i>Amalaki</i> (Indian gooseberry), <i>Ela</i> (cardamom), <i>Bibhitaki</i> (belliric myrobalan), <i>Haritaki</i> (chebulic myrobalan), <i>Maricha</i> (black pepper), <i>Pippali</i> (long pepper), <i>Eranda Karkati</i> (wild cucumber), <i>Ankola</i> (Alangium), <i>Narang</i> (orange), <i>Bilva Phala</i> (bael fruit)	Sweet fruits (<i>Madhura Phala</i>) such as banana, mango, grapes, chikoo
<i>Drava Varga</i> (Liquids)	Honey (<i>Madhu</i>), <i>Takra</i> (buttermilk), <i>Ushna Jala</i> (warm water), <i>Tila Taila</i> (sesame oil), <i>Sarshapa Taila</i> (mustard oil), <i>Ashava</i> (herbal fermented preparation), <i>Arishta</i> (medicated fermented preparation), <i>Surasava</i> (fermented herbal beverage), <i>Jeerna Madya</i> (well-aged wine)	<i>Dugdha Varga</i> (milk and milk products), <i>Ikshu Vikara</i> (sugarcane products such as sugar, jaggery, sugar syrup)
<i>Mamsa Varga</i> (Meat)	<i>Rohita Matsya</i> (Rohu fish)	<i>Anupa Mamsa</i> (meat of marshy animals), <i>Audaka Mamsa</i> (aquatic animals), <i>Gramya Mamsa</i> (domestic animal meat)

Table 3: Recommended *Yogasanas* for the management of *Sthoulya* (obesity) and female infertility

Yogasana	English name	Benefits
<i>Surya Namaskara</i>	Sun salutation	Improves metabolism, promotes weight loss, enhances flexibility and circulation
<i>Trikonasana</i>	Triangle pose	Reduces abdominal fat, improves digestion and balance
<i>Bhujangasana</i>	Cobra pose	Stimulates abdominal organs, improves ovarian and uterine circulation
<i>Naukasana</i>	Boat pose	Strengthens abdominal muscles and reduces central obesity
<i>Dhanurasana</i>	Bow pose	Improves digestion, stimulates reproductive organs, enhances metabolism
<i>Pavanamuktasana</i>	Wind-relieving pose	Improves digestion, relieves bloating, reduces abdominal fat
<i>Paschimottanasana</i>	Seated forward bend	Improves insulin sensitivity, stretches abdominal organs
<i>Setu Bandhasana</i>	Bridge pose	Improves pelvic blood circulation and endocrine function
<i>Utkatasana</i>	Chair pose	Strengthens lower limbs and promotes calorie expenditure
<i>Virabhadrasana</i>	Warrior pose	Improves muscle strength, balance, and endurance
<i>Ustrasana</i>	Camel pose	Stimulates endocrine glands and improves spinal flexibility
<i>Ardha Matsyendrasana</i>	Half spinal twist	Improves digestion and pancreatic function

Table 4: *Lekhana Basti* (scraping enema)

Ingredient	English/botanical name	Rasa	Guna	Veerya	Vipaka	Dosha Karma
<i>Triphala Kwatha</i>	Decoction of <i>Haritaki</i> (<i>Terminalia chebula</i>), <i>Bibhitaki</i> (<i>Terminalia bellirica</i>), and <i>Amalaki</i> (<i>Embolica officinalis</i>)	<i>Kashaya</i> , <i>Amla</i> , <i>Katu</i> , <i>Tikta</i> , <i>Madhura</i>	<i>Laghu</i> , <i>Ruksha</i>	<i>Ushna</i>	<i>Madhura</i>	<i>Tridosha Shamaka</i> (predominantly <i>Kapha-Pitta Hara</i>)
<i>Gomutra</i>	Cow's urine	<i>Katu</i> , <i>Tikta</i> , <i>Kashaya</i>	<i>Laghu</i> , <i>Tikshna</i> , <i>Ushna</i> , <i>Kshara</i>	<i>Ushna</i>	<i>Katu</i>	<i>Kapha-Vata Hara</i>
<i>Madhu</i>	Honey	<i>Madhura</i> , <i>Kashaya</i>	<i>Laghu</i> , <i>Ruksha</i>	<i>Sheeta</i>	<i>Madhura</i>	<i>Kapha Hara</i> , <i>Pitta Shamaka</i>
<i>Yavakshara</i>	Alkali prepared from barley	<i>Katu</i> , <i>Lavana</i>	<i>Laghu</i> , <i>Tikshna</i> , <i>Ruksha</i> , <i>Sukshma</i>	<i>Ushna</i>	<i>Katu</i>	<i>Kapha-Vata Hara</i>
<i>Ushaka</i>	Borax	<i>Katu</i> , <i>Lavana</i>	<i>Laghu</i> , <i>Tikshna</i> , <i>Ruksha</i>	<i>Ushna</i>	<i>Katu</i>	<i>Kapha Hara</i>
<i>Saindhava</i>	Rock salt	<i>Lavana</i>	<i>Laghu</i> , <i>Snigdha</i> , <i>Sukshma</i>	<i>Sheeta</i>	<i>Madhura</i>	<i>Tridosha Shamaka</i>
<i>Shilajatu</i>	Mineral pitch (<i>Asphaltum punjabinum</i>)	<i>Katu</i> , <i>Tikta</i>	<i>Laghu</i> , <i>Tikshna</i>	<i>Ushna</i>	<i>Katu</i>	<i>Tridosha Shamaka</i> (predominantly <i>Kapha-Vata Hara</i>)
<i>Kasisa</i>	Ferrous sulfate	<i>Kashaya</i> , <i>Amla</i>	<i>Laghu</i> , <i>Ruksha</i> , <i>Tikshna</i>	<i>Ushna</i>	<i>Katu</i>	<i>Kapha-Vata Hara</i>
<i>Hingu</i>	<i>Asafoetida</i> (<i>Ferula asafoetida</i>)	<i>Katu</i>	<i>Laghu</i> , <i>Tikshna</i>	<i>Ushna</i>	<i>Katu</i>	<i>Vata-Kapha Hara</i>
<i>Tutha</i>	Copper sulfate	<i>Kashaya</i> , <i>Tikta</i>	<i>Laghu</i> , <i>Ruksha</i> , <i>Tikshna</i>	<i>Ushna</i>	<i>Katu</i>	<i>Kapha Hara</i>

Rasa: Taste, *Guna*: Properties/qualities, *Veerya*: Potency, *Vipaka*: Post-digestive effect, *Dosha Karma*: Effect on *Doshas* (*Vata*, *Pitta*, and *Kapha*), *Laghu*: Light, *Guru*: Heavy, *Snigdha*: Unctuous, *Ruksha*: Dry, *Tikshna*: Sharp/penetrating, *Sukshma*: Subtle/penetrating, *Ushna*: Hot, *Sheeta*: Cold, *Katu*: Pungent, *Tikta*: Bitter, *Kashaya*: Astringent, *Madhura*: Sweet, *Amla*: Sour, *Lavana*: Salty. Note: *Triphala* comprises three drugs with varying *Veerya*; in formulations, it is commonly considered *Ushna* predominantly with *Lekhana* and *Tridosha Shamaka* properties

Table 5: *Kshara Basti* (alkaline enema)

Drug	Botanical/English name	Quantity	Rasa	Guna	Veerya	Vipaka	Dosha Karma
<i>Saindhava</i>	Rock salt	10 g	<i>Lavana</i>	<i>Laghu Snigdha Sukshma</i>	<i>Sheeta</i>	<i>Madhura</i>	Balances all three <i>Doshas</i>
<i>Guda</i>	Jaggery	20 g	<i>Madhura</i>	<i>Guru Snigdha</i>	<i>Ushna</i>	<i>Madhura</i>	Pacifies <i>Vata</i> ; mildly pacifies <i>Pitta</i>
<i>Chincha</i>	Tamarind (<i>Tamarindus indica</i>)	20 g	<i>Amla Madhura</i>	<i>Guru Ruksha</i>	<i>Ushna</i>	<i>Amla</i>	Pacifies <i>Vata</i> ; increases <i>Kapha</i> and <i>Pitta</i>
<i>Shatapushpa</i>	Dill (<i>Anethum sowa</i> / <i>Anethum graveolens</i>)	10 g (paste)	<i>Katu Tikta</i>	<i>Laghu Tikshna</i>	<i>Ushna</i>	<i>Katu</i>	Pacifies <i>Kapha</i> and <i>Vata</i>
<i>Gomutra</i>	Cow's urine	100 mL	<i>Katu Tikta Kashaya</i>	<i>Ushna Tikshna Kshara</i>	<i>Ushna</i>	<i>Katu</i>	Pacifies <i>Kapha</i> and <i>Vata</i>

Rasa: Taste, *Guna*: Properties/qualities, *Veerya*: Potency, *Vipaka*: Post-digestive effect, *Dosha Karma*: Effect on *Doshas* (*Vata*, *Pitta*, and *Kapha*), *Laghu*: Light, *Guru*: Heavy, *Snigdha*: Unctuous, *Ruksha*: Dry, *Tikshna*: Sharp/penetrating, *Sukshma*: Subtle/penetrating, *Ushna*: Hot, *Sheeta*: Cold, *Katu*: Pungent, *Tikta*: Bitter, *Kashaya*: Astringent, *Madhura*: Sweet, *Amla*: Sour, *Lavana*: Salty, *Kshara*: Alkaline

Table 6: Common formulations used in the management of *Sihoulya*-Induced *Vandhyatva* and their mode of action

Drug/ formulation	Mode of action
<i>Triphala Churna</i>	Exhibits <i>Lekhana</i> , <i>Medohara</i> , <i>Deepana</i> , and <i>Pachana</i> actions; improves <i>Agni</i> , digests <i>Ama</i> , regulates bowel function, and promotes healthy weight reduction.
<i>Vacha Churna</i>	Acts as <i>Kapha-Vata Hara</i> ; it enhances <i>Agni</i> , digests <i>Ama</i> , improves metabolism, and reduces excessive <i>Meda Dhatu</i> .
<i>Mustadi Kwatha</i>	Possesses <i>Deepana</i> , <i>Pachana</i> , and <i>Kapha-Medohara</i> properties; improves digestion, corrects metabolic disturbances, and reduces obesity.
<i>Mahamanjisthadi Kwatha</i>	Purifies <i>Rakta</i> , reduces inflammation and oxidative stress, improves microcirculation, and supports reproductive tissue health.
<i>Phalatrikadi Kwatha</i>	Improves <i>Agni</i> , digests <i>Ama</i> , reduces <i>Kapha</i> and <i>Meda</i> , corrects lipid metabolism, and facilitates weight reduction.
<i>Navaka Guggulu</i>	A potent <i>Lekhana</i> and <i>Medohara</i> formulation that reduces adiposity, improves lipid metabolism, enhances insulin sensitivity, and corrects <i>Kapha-Meda Dushti</i> .
<i>Triphala Guggulu</i>	Combines the <i>Lekhana</i> action of <i>Triphala</i> with the anti-inflammatory and lipid-lowering properties of <i>Guggulu</i> ; promotes weight reduction and improves metabolism.
<i>Shilajatu Rasayana</i>	Acts as a <i>Rasayana</i> ; it enhances <i>Agni</i> , improves mitochondrial function and glucose metabolism, reduces insulin resistance, and supports reproductive health.
<i>Amalaki Rasayana</i>	Provides antioxidant and <i>Rasayana</i> effects; reduces oxidative stress, improves metabolism, enhances oocyte quality, and supports hormonal balance.

Lekhana: Scraping action, *Medohara*: Fat-reducing, *Deepana*: Enhances digestive and metabolic fire, *Pachana*: Digests *Ama* (metabolic toxins), *Agni*: Digestive and metabolic fire, *Ama*: Metabolic toxins, *Kapha-Meda Dushti*: Vitiating of *Kapha Dosh* and *Meda Dhatu*, *Rasayana*: Rejuvenative therapy, *Rakta*: Blood tissue

Table 7: *Rasayana* and fertility-promoting formulation

Drug	Rasa Panchaka	Major phytochemicals/active constituents	Probable mode of action in obesity-induced <i>Vandhyatva</i>
<i>Phala Ghrita</i>	<i>Rasa</i> : Predominantly Madhura, Tikta; <i>Guna</i> : Guru, Snigdha; <i>Veerya</i> : Sheeta; <i>Vipaka</i> : Madhura; <i>Dosha</i> : Vata-Pitta Shamaka	Gallic acid, ellagic acid, emblicanin A and B, withanolides, glycyrrhizin, ghee-derived essential fatty acids (depending on ingredients)	Nourishes <i>Artava</i> , improves endometrial receptivity, reduces oxidative stress, enhances oocyte quality, and supports implantation.
<i>Pushpadhanva Rasa</i>	<i>Rasa</i> : Predominantly Katu, Tikta; <i>Guna</i> : Laghu, Tikshna; <i>Veerya</i> : Ushna; <i>Vipaka</i> : Katu; <i>Dosha</i> : Kapha-Vata Hara	Mineral constituents (processed <i>Bhasma</i>) and phytochemicals from herbal ingredients, including piperine, gingerols, and flavonoids (varies with formulation)	Stimulates ovarian function, improves folliculogenesis, enhances hormonal regulation, and promotes fertility.