



The Effect of Suryanamaskara versus Kapalbhatai Pranayama on Subjective Parameters in Sthaulya (Obesity): A Randomized Clinical Trial

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Abstract : Background: Sthaulya (obesity) is a significant lifestyle disorder described in Ayurveda, characterized by excessive accumulation of Meda Dhatu (adipose tissue) and associated with several debilitating symptoms known as Ashta Dosha (eight flaws), such as Daurbalya (weakness) and Kshudraswasa (breathlessness).^{1, 2} Yogic practices are increasingly recognized for their therapeutic potential.³

Objective: This study aimed to evaluate and compare the efficacy of Suryanamaskara (Sun Salutation) and Kapalbhatai Pranayama in managing the subjective complaints associated with Sthaulya.⁴

Methods: A 60-day, open-label, randomized clinical trial was conducted on 60 patients diagnosed with Sthaulya.⁵ Patients were randomly allocated into two groups of 30. Group A performed Kapalbhatai Pranayama for 15 minutes daily, and Group B performed Suryanamaskara for 15 minutes daily.⁵ Subjective parameters, including Gatrasad (lassitude), Dorbalya (weakness), Atikshudha (excessive hunger), Kshudrashwasa (breathlessness), and Swedadhikaya (excessive sweating), were assessed using a 5-point multi-dimensional scoring system.⁶ Within-group analysis was performed using the Wilcoxon signed-rank test, and between-group comparison was done using the Mann-Whitney test.⁷

Results: Within Group A (Kapalbhatai), no statistically significant ($p > 0.05$) relief was observed in any of the subjective complaints.⁸ In contrast, Group B (Suryanamaskara) showed statistically significant within-group relief for Gatrasad ($p=0.002$), Atikshudha ($p=0.008$), Kshudrashwasa ($p=0.002$), and Swedadhikaya ($p=0.004$), and highly significant relief for Dorbalya ($p<0.001$).⁹ The comparative analysis (Group A vs. B) revealed a statistically highly significant difference in favor of Group B for Gatrasad ($p<0.001$) and Dorbalya ($p<0.001$), and a significant difference for Swedadhikaya ($p=0.012$) and Alpavyavaya ($p=0.010$).¹⁰

Conclusion: Suryanamaskara was found to be significantly more effective than Kapalbhatai Pranayama in alleviating the primary subjective complaints and improving the overall quality of life for patients with Sthaulya.

IndexTerms - Sthaulya, Obesity, Suryanamaskara, Kapalbhatai, Ayurveda, Subjective Parameters, Clinical Trial.

1. Introduction

Sthaulya, a condition described in classical Ayurvedic texts, is one of the eight "abominable" conditions (*Ashtanindita*).¹ It is defined as an excessive and abnormal increase of *Meda Dhatu* (fat tissue) and *Mamsa Dhatu* (muscle tissue), resulting in pendulous buttocks, belly, and breasts (*Chala Sphika, Udara, Stana*).¹¹ This condition is correlated with a lack of energy relative to the increased body bulk (*Ayathopachayotsaha*).¹¹ Sthaulya is considered a *Santarpanjanya Vyadhi* (a disease of over-nutrition) and is associated with eight major flaws (*Ashta Dosha*), including *Ayuhrasa* (reduced lifespan), *Daurbalya* (weakness), *Daurgandhya* (foul body odor), *Swedabadha* (excessive sweating), *AtiKshudha* (excessive hunger), and *AtiPipasa* (excessive thirst).²

The prevalence of obesity, the modern counterpart to Sthaulya, has nearly tripled globally since 1975. In India, the prevalence was estimated at 40.3%, with rates being higher in women and urban populations.¹² This condition poses a serious health risk, leading to reduced life expectancy and numerous comorbidities.¹³

Given the limitations of conventional treatments, there is a growing need for natural, safe, and effective therapies. Yoga exercises are well-known for their positive impact on health.³ Suryanamaskara (Sun Salutation) is a dynamic sequence of twelve postures described as a full-body exercise that tones muscles, channelizes energy, and improves flexibility.¹⁴ Kapalbhathi is a yogic *kriya* (cleansing technique) involving forceful, rhythmic exhalations that stimulate abdominal organs, enhance metabolism, and detoxify the body.¹⁵ While both practices are popularly used for weight management, there is a lack of comparative data on their efficacy in managing the specific symptomatology of Sthaulya. This study was designed to compare the effects of Suryanamaskara and Kapalbhathi Pranayama on the subjective parameters of Sthaulya.⁴

2. Materials and Methods

2.1. Study Design

This was an open-label, randomized, parallel-assignment clinical study conducted over a 60-day intervention period.⁵ The study was conducted at the OPD of the Swasthavritta department at the Institute for Ayurved studies and research, Kurukshetra, Haryana.⁵

2.2. Participants

A total of 60 patients with Sthaulya (obesity) were selected based on defined inclusion and exclusion criteria. Inclusion criteria included patients aged 25-50 years of either sex, a BMI above 24.9 kg/m², and willingness to sign the consent form.⁶ Exclusion criteria included obesity due to secondary causes (e.g., diabetes, hypertension), systemic illnesses, or a BMI below 24.9 kg/m².⁶

2.3. Interventions

Patients were randomly allocated into two groups (n=30 each):

- **Group A (Kapalbhathi):** Patients performed Kapalbhathi Pranayama daily for 15 minutes for 60 days.⁵
- **Group B (Suryanamaskara):** Patients performed Suryanamaskara daily for 15 minutes for 60 days.⁵

2.4. Assessment Criteria

Subjective parameters based on classical Ayurvedic descriptions of Sthaulya were assessed.⁶ These included *Chala Sphika Udara Stana* (pendulousness), *Kshudraswasa* (breathlessness), *Daurbalya* (weakness), *Swedadhikya* (excessive sweating), *Daurgandhya* (foul odor), *Atipipasa* (excessive thirst), *Atikshudha* (excessive hunger), *Alpavyavaya* (reduced sexual energy), and *Gatra Sad* (lassitude).⁶ Symptoms were graded on a 5-point scale: 0 (Absence), 1 (Mild), 2 (Moderate), 3 (Severe), and 4 (Very Severe).⁶

2.5. Statistical Analysis

Statistical calculations were performed using Sigma stat 3.5 software.⁷ The Wilcoxon signed-rank test was applied for paired, within-group analysis of subjective criteria. The Mann-Whitney test was applied for unpaired, between-group comparisons.⁷ Results were interpreted as Significant ($p < 0.05$), Highly Significant ($p < 0.001$), or Insignificant ($p > 0.05$).⁷

3. Results

3.1. Effect of Therapy Within Groups (Wilcoxon Signed-Rank Test)

Group A (Kapalbhathi): Analysis of subjective criteria for Group A showed no statistically significant change ($p > 0.05$) from baseline (BT) to after treatment (AT) for any parameter. This included *Gatrasad* ($p=1.000$), *Chal-Udarsphikstana* ($p=1.000$), *Dorbalya* ($p=0.250$), *Atikshudha* ($p=0.125$), and *Kshudrashwasa* ($p=0.250$). The overall result for Group A on all chief complaints was statistically insignificant.⁸

Group B (Suryanamaskara): Analysis of Group B showed marked improvement. Statistically significant (S) relief was observed in:

- *Gatrasad* (p=0.002)
- *Atikshudha* (p=0.008)
- *Kshudrashwasa* (p=0.002)
- *Swedadhikaya* (p=0.004)

A statistically highly significant (HS) result was observed for *Dorbalya* (p<0.001). Results for *Chal-Udarsphikstana* (p=0.250), *Daurgandhya* (p=0.500), *Atipipasa* (p=0.250), and *Alpavyavaya* (p=0.50) were insignificant.⁹

3.2. Comparative Effect of Therapies (Mann-Whitney Test)

The between-group comparison confirmed the superiority of Group B (Suryanamaskara) over Group A (Kapalbhati). A statistically highly significant (p<0.001) difference was found in the relief of *Gatrasad* and *Dorbalya*. A statistically significant difference was observed for *Swedadhikaya* (p=0.012) and *Alpavyavaya* (p=0.010). No significant difference was found between the groups for other parameters.¹⁰

4. Discussion

The results of this study clearly demonstrate that Suryanamaskara is more effective than Kapalbhathi Pranayama for alleviating the primary subjective symptoms of Sthaulya. The within-group analysis showed that 15 minutes of daily Kapalbhathi practice was insufficient to produce a statistically significant change in any of the measured complaints.⁸ Conversely, Suryanamaskara produced significant, and in the case of *Dorbalya* (weakness), highly significant, improvements.⁹

This difference can be attributed to the distinct nature of the interventions. Suryanamaskara is a dynamic, full-body workout that integrates *asanas* (postures) with rhythmic breathing.¹⁴ This practice directly addresses several symptoms:

- **Gatrasad (Lassitude):** Suryanamaskara involves dynamic stretching and movement that enhances flexibility and mobility in muscles and joints, directly reducing body stiffness.¹⁶
- **Dorbalya (Weakness):** As a comprehensive exercise, Suryanamaskara strengthens multiple muscle groups (core, legs, arms, back), improves endurance, and gradually alleviates weakness. The highly significant improvement in *Dorbalya* (p<0.001) highlights its efficacy as a strengthening regimen.¹⁶
- **Swedadhikya (Excessive Sweating):** Regular performance is thought to regulate the body's internal temperature and stabilize its thermal response, helping to control pathological sweating.¹⁶
- **Kshudrashwasa (Breathlessness):** By improving cardiovascular efficacy and respiratory competence, this rhythmic practice can reduce exertional dyspnoea.³

While Kapalbhathi is a powerful *kriya* for detoxification and metabolic stimulation,¹⁵ its effects may be more focused on internal organ function rather than the musculoskeletal and systemic complaints that define the subjective experience of Sthaulya. The lack of significant subjective improvement in Group A suggests that as a standalone 15-minute therapy, it is less suited for addressing these specific symptoms compared to the holistic, dynamic practice of Suryanamaskara.

5. Conclusion

This clinical study provides evidence that for the management of subjective complaints associated with Sthaulya (obesity), Suryanamaskara is a superior intervention to Kapalbhathi Pranayama. Patients performing Suryanamaskara for 15 minutes daily experienced significant relief from weakness, lassitude, breathlessness, excessive hunger, and excessive sweating. Kapalbhathi, at the same duration, did not produce statistically

significant subjective relief. This finding suggests that the holistic, full-body engagement of Suryanamaskara is more beneficial for improving the overall quality of life and well-being of patients with Sthaulya.

6. References

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