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Effect of Kapalbhati vs Anulom Vilom in Naïve Hypertensive Patients Along with Standard Treatment: A Randomized Controlled Trial

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KEYWORDS

Hypertension, Pranayama, Kapalbhati, Anulom Vilom, Stress, Yoga, Blood Pressure

ABSTRACT:

Objectives:

To compare the effects of Kapalbhati and Anulom Vilom breathing techniques as add-on to standard treatment in newly diagnosed hypertensive patients.

Methods:

This randomized controlled trial enrolled 150 adults with stage-I hypertension allocated to Kapalbhati plus standard care, Anulom Vilom plus standard care, or standard care alone and followed for twelve months.

Key Findings:

Both breathing techniques significantly reduced systolic, diastolic blood pressure and perceived stress compared with standard care, with slightly greater improvement in the Anulom Vilom group.

Conclusions:

Kapalbhati and Anulom Vilom are safe and effective add-on for managing early hypertension.

Background

Hypertension continues to be one of the most important modifiable risk factors for cardiovascular disease worldwide. Mind–body approaches such as pranayama are believed to aid blood pressure control by influencing autonomic function and reducing psychological stress. Despite growing interest in these practices, evidence directly comparing different pranayama techniques remains limited. This brief report presents findings from a randomized controlled trial evaluating the use of Kapalbhati and Anulom Vilom breathing exercises as adjuncts to routine care in individuals with newly diagnosed hypertension.

Methods

This 12-month randomized parallel-group study involved 150 adults aged 20 to 60 years who were diagnosed with stage I hypertension. Participants were evenly divided into three groups: Kapalbhati plus standard care, Anulom Vilom plus standard care, or standard care alone. Those with secondary hypertension, major health issues, pregnancy, or contraindications related to yoga were excluded. All participants provided written informed consent before enrolling in the study. In the intervention groups, participants were initially guided through the techniques with supervision and then asked to continue the

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breathing practices at home. Kapalbhati was done in three rounds of five minutes each, with breaks in between. Anulom Vilom involved 15 minutes of breathing through alternate nostrils. Routine medical care followed national guidelines, and weekly follow-ups monitored adherence. The primary outcomes included changes in systolic and diastolic blood pressure and Perceived Stress Scale scores. Secondary outcomes included mean arterial pressure, pulse rate, and respiratory rate. Statistical analysis used paired t-tests and one-way analysis of variance, with significance set at $p < 0.05$. This randomized controlled trial is reported following the CONSORT 2010 guidelines. The completed CONSORT checklist has been included as supplementary material, and the participant flow diagram is shown in Figure 1.

Results

Among the 150 individuals enrolled, 140 (93.3%) completed the study, and the groups were well matched with respect to baseline demographic and clinical variable. Both pranayama intervention groups showed statistically significant reductions in systolic and diastolic blood pressure, mean arterial pressure, and perceived stress scores when compared with the control group.

The greatest proportional decrease in perceived stress was observed in the Kapalbhati plus standard care group (27.40%), closely followed by the Anulom Vilom plus standard care group (26.89%), whereas the control group showed minimal change (2.09%). Reductions in systolic blood pressure were similar between Kapalbhati (14.16%) and Anulom Vilom (14.22%) groups and were greater than those seen with standard care alone (11.05%). Diastolic blood pressure declined by 10.64% in the Kapalbhati group, 10.96% in the Anulom Vilom group, and 10.39% among controls. Among participants who smoked, both pranayama interventions led to greater reductions in systolic and diastolic blood pressure as well as mean arterial pressure compared with standard care alone.

Reductions in systolic blood pressure and stress tended to be slightly greater with Anulom Vilom, which may be related to its calming, parasympathetic-dominant breathing style. Throughout the study, no adverse events associated with the intervention were observed.

Discussion

This study points to pranayama as a solid sidekick to regular meds for tackling high blood pressure. Folks fresh off a hypertension diagnosis who did Kapalbhati or Anulom Vilom noticed real drops in their BP and dialed-back stress. It lines up with what we've seen before—deliberate breathing tweaks heart function by steadying the nervous system and chilling out that fight-or-flight overdrive.

Anulom Vilom edged out a tad more on lowering systolic pressure and easing stress, probably thanks to its slow, even flow that really calms things down. Kapalbhati packs more punch but still brought good heart perks and stress busting, so it could fit right into hypertension care.

The setup was strong: random groups, long-term check-ins, and practical health checks. Still, take it with a grain of salt—single location and trusting self-reports on home practice aren't perfect. Bigger, multi-site trials digging into the why behind it all would lock this in.

Conclusion

Both Kapalbhati and Anulom Vilom appear to be safe and useful additions to standard approaches for managing hypertension. Incorporating simple, structured breathing exercises into everyday care may help improve blood pressure regulation while also supporting psychological well-being. Anulom Vilom seems to offer a modest advantage in addressing stress-related responses, whereas Kapalbhati provides similar benefits for cardiovascular outcomes. Overall, these results encourage the broader inclusion of pranayama as part of lifestyle-based interventions in the early stages of hypertension management.

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Figure1. CONSORT flow diagram showing participant enrollment, randomization , allocation, follow-up, and analysis

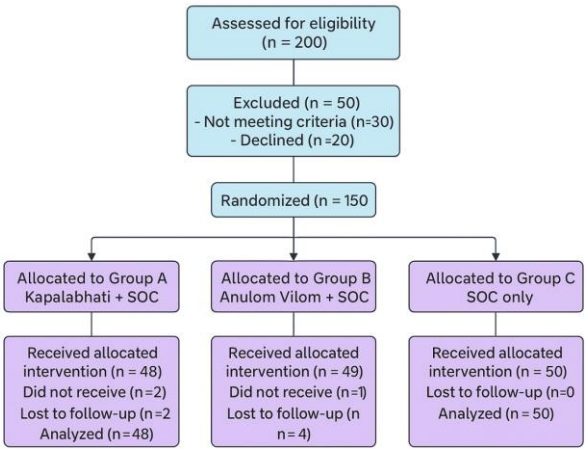

TABLE :

S.NO	GROUP	Percentage Reduction in Systolic blood pressure from baseline (%)	Percentage Reduction in diastolic blood pressure from baseline (%)	% Reduction in pss
1	KAPALBHATI + SOC	14.16	10.64	27.40%
2	ANULOM VILOM + SOC	14.22	10.96	26.89%
3	STANDARD OF CARE ONLY	11.05	10.39	2.09%

Table No. 01 : Percentage Reduction in SBP , DBP from Baseline and Percentage Reduction in pss