



# Feasibility and preliminary effectiveness of mindfulness-based stress reduction program on patients with nocturnal hypertension: A pilot randomized controlled trial

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## Background:

-Nocturnal blood pressure (BP) during sleep is a stronger predictor of cardiovascular events and mortality than daytime BP. Nocturnal hypertension (HT) affects approximately 60% of patients with hypertension, yet there is no standard treatment

- Although mindfulness interventions are acceptable to patients with mood disorders, it is unclear whether HT patients (who are asymptomatic) will adhere to mindfulness interventions and find them acceptable

## Research question:

to examine feasibility and preliminary effectiveness of standard mindfulness-based stress reduction program (MBSR) in managing nocturnal HT.

## Method:

P = 78 patients with nocturnal HT and grade I daytime HT (agree no drug change during the RCT)

I = MBSR + usual care

C = usual care – lifestyle advices

O:

- Feasibility and adherence of RCT procedures, ABPM, and MBSR
- nocturnal, daytime and 24-hour SBP/DBP (HBPM every week)

S: parallel arm RCT

## Results:

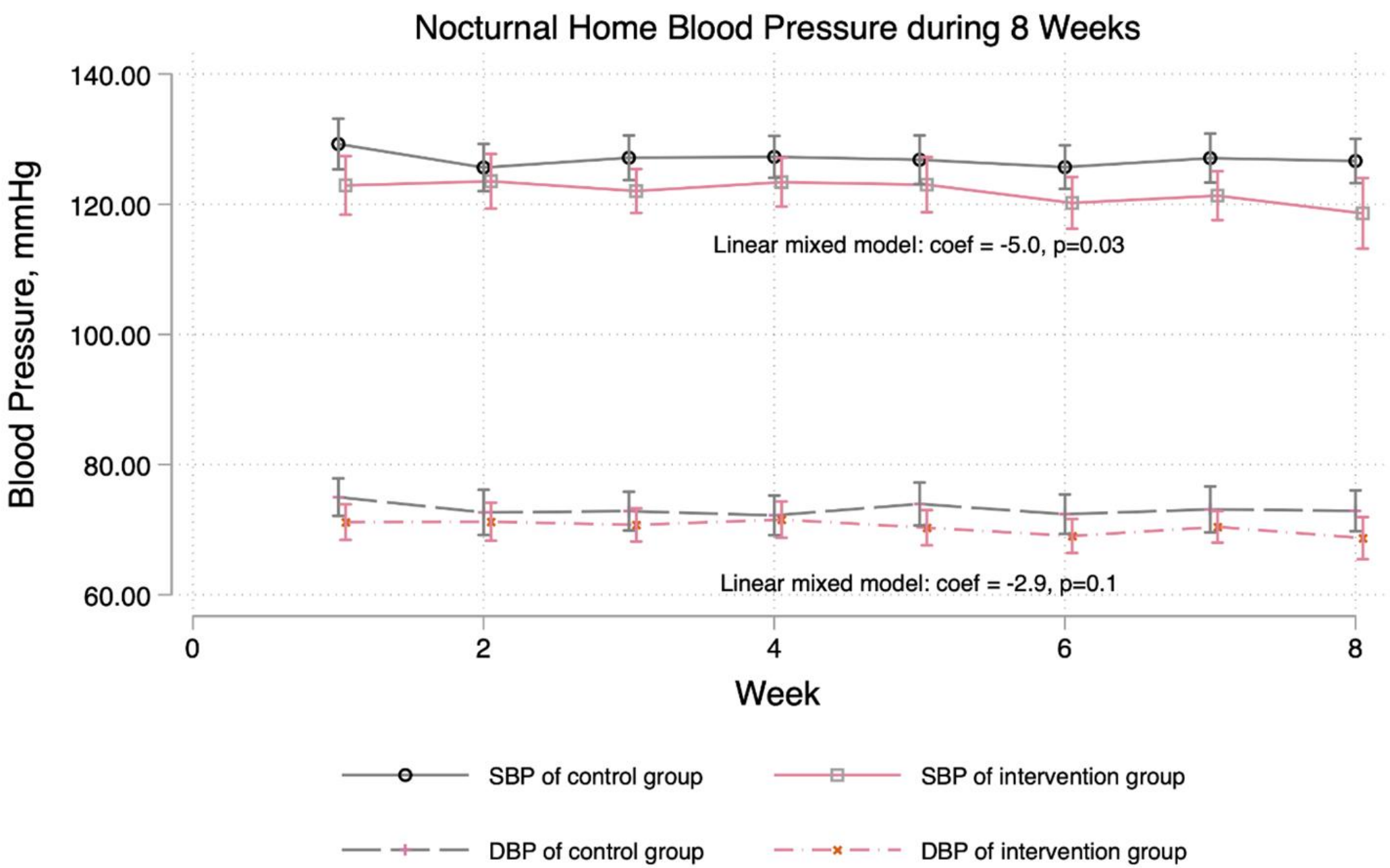
Most participants: female (60.5%), retired (53.9%), ≥secondary school (98.6%), were married (75.0%).

- mean age: 63.1+/- 7.8mmHg
- Half of the patients (50%) have received anti-HT medications.

## BP Outcomes:

| Outcome              | Intervention (n=36) | Control (n=40)     | p-value          |
|----------------------|---------------------|--------------------|------------------|
| 24h SBP              | 134.5 (10.9)        | 137.6 (9.5)        | 0.15             |
| 24h DBP              | 79.2 (9.4)          | 80.4 (8.1)         | 0.35             |
| Daytime SBP          | 139.2 (12.1)        | 142.0 (10.2)       | 0.18             |
| Daytime DBP          | 82.3 (10.2)         | 83.5 (8.3)         | 0.47             |
| <b>Nighttime SBP</b> | <b>121.9 (10.5)</b> | <b>128.6 (9.3)</b> | <b>&lt;0.001</b> |
| Nighttime DBP        | 71.3 (8.2)          | 74.0 (8.1)         | 0.05             |
| Dipping percentage   | 12.2 (6.2)          | 9.2 (6.4)          | 0.09             |
| Non-dipper           | 12 (33%)            | 22 (55%)           | 0.12             |
| Office SBP           | 148.3 (17.4)        | 151.9 (15.8)       | 0.14             |
| Office DBP           | 86.4 (12.2)         | 85.6 (10.1)        | 0.50             |

## Nocturnal HBPM results



## Conclusion:

This is the first to explore the effects of mindfulness on nocturnal BP in a Chinese population

- MBSR acceptable to HT patients
- MBSR can be a treatment for nocturnal HT (SBP drop ~7mmHg), safe

Research: Main RCT await

- ?MBSR can be main treatment for nocturnal HT
- MB-BP specific to HT developed in USA
- ?mechanisms by mindfulness meditation reduces BP
- Long term data

Publication in progress; submitted to Scientific reports

## Feasibility Outcomes:

| Parameters              | value    | Remarks                          |
|-------------------------|----------|----------------------------------|
| recruitment rate        | 13/month | ~90% from newspaper              |
| retention               | 100%     | 1 dropout provided endpoint data |
| attend ≥6 MBSR classes  | 83.30%   | mean = 7 classes                 |
| home practices          | 77%      | 31 submitted home diary          |
| 8-week endpoint ABPM    | 100%     |                                  |
| nocturnal HBPM readings | 90.80%   | 55.3% reported ≥6 readings/week  |