



Short-term reproducibility of ambulatory blood pressure measurements: A systematic review and meta-analysis of 35 observational studies

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Background and objective:

A systematic review on the reproducibility of ambulatory blood pressure measurements (ABPM) has not yet been conducted. This meta-analysis compared (i) 24-h/daytime/night-time systolic blood pressure (SBP) and diastolic blood pressure (DBP) mean values and (ii) SBP/DBP nocturnal dipping status from ABPMs in participants with or without hypertension.

Method:

Ovid MEDLINE, EMBASE, and CINAHL Complete databases were searched for articles published before May 3, 2019. Eligible studies reporting a 24-hour ABPM repeated at least once within 1 month were included. The mean daytime/night-time/24-hour BP values, percentage of nocturnal dipping, and proportion of non-dippers were compared between the first and second day of measurements, and the proportion of participants with inconsistent dipping status were estimated using a random effect model.

Results

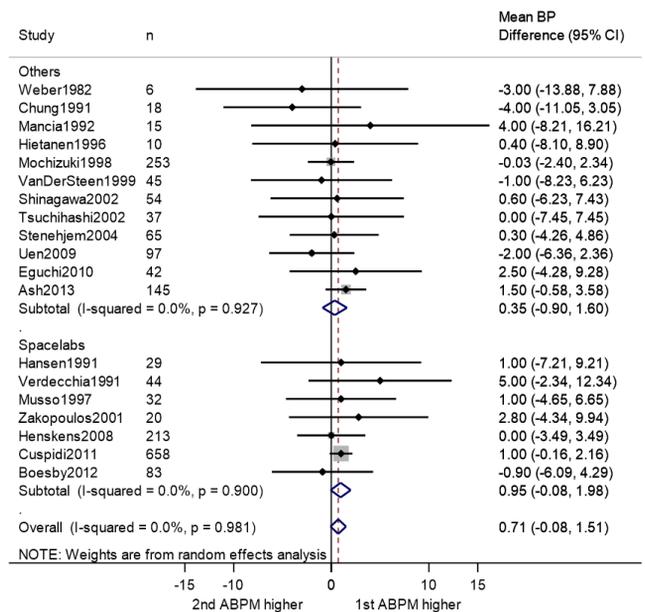
Out of 5379 articles from initial search, 35 articles comprising 4058 participants were included for the meta-analysis.

- The age of participants ranged from around 22–104 years
- Spacelab 90207 is the most commonly used ABPM

Results

Mean 24-h, daytime, night-time SBP/DBP from 1st and 2nd 24-h ABPM were similar

Meta-analysis of 24-h SBP shown



Other meta-analysis results:

- 95% limit of agreements (LOA) for SBP/DBP were wide; the 95% LOA for daytime SBP, (common reference to diagnose hypertension) ranged -16.7– to 18.4 mmHg.
- 32% of participants had inconsistent nocturnal dipping status.
- Population-based analysis found the proportion of non-dippers was similar on first and second day

Conclusion:

ABPM had excellent reproducibility at the population level, favouring its application for research purposes; but reproducibility of intra-individual BP values and dipping status from a 24-hour ABPM was limited. The available evidence was limited by the lack of high-quality studies and lack of studies in non-Western populations.