Doctors make blood pressure higher than nurses: systematic review and meta-analysis

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Introduction
• The “White Coat Effect” is the rise in blood pressure associated with a clinic or surgery visit. It is common (up to 75% of hypertensives) and may affect any hypertensive patient.
• Nurse-led hypertension clinics demonstrate lower outcome blood pressures compared to doctor-led or usual care. Some studies in our previous review lacked blinding by reporting blood pressures measured by the doctors or nurses themselves.¹
• Blood pressures measured by doctors appear to elicit a larger white coat effect than those measured by nurses.²

Therefore improved outcomes in nurse-led hypertension care could reflect a differential white coat effect. We undertook this systematic review, in preparation for our review of hypertension care,³ to quantify the magnitude of any difference in white coat effect between doctors and nurses.

Methods
• Text word searches of Medline, Embase, CINAH and CENTRAL for “White coat”. Hand searching of included studies, hypertension journal collections, conference abstracts and personal archives.
• Inclusion criterion: studies reporting blood pressures measured in adults by doctors and nurses during the same clinic visit.

Primary outcome measures were differences in mean systolic and diastolic blood pressures measured by nurses and doctors.

For sensitivity analysis studies were classed as ‘high risk of bias’ if they failed to demonstrate more than one of the following criteria:
- i. randomisation of measurement order
- ii. blinding of doctors and nurses to each other’s measurements
- iii. blinding of measurements by use of an automated or random-zero sphygmomanometer

We extracted nurse and doctor blood pressure measurements adjusted for within-person correlations. Given substantial statistical heterogeneity, we pooled differences across studies with random effects meta-analysis.

Results
1899 unique citations were screened, 32 full texts were identified for review, and 14 contributed to the meta-analyses presented (see flow chart). Six of these were classified as being at low risk of bias. Forest plots for the primary outcome measures are presented:

Differences in systolic blood pressure measurements

Differences in diastolic blood pressure measurements

Conclusions
• On average, blood pressure is 7.0/3.8mmHg lower when measured by nurses than by doctors.
• For studies at low risk of bias: systolic blood pressure is 4.6mmHg lower, diastolic blood pressure is 1.7mmHg lower.
• Differences of this magnitude can confound studies comparing doctor and nurse-led care.
• Outcome blinding is essential to minimise bias in future studies.
• Blood pressure measurements by doctors may need cautious interpretation in clinical decision making due to a potentially greater white coat effect.

References:

REAL benefits of nurse-led blood pressure measurement


Flow of studies through review

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