Home Versus Clinic BP Monitoring in Women with Hypertensive Disorders of Pregnancy: A Systematic Review and Meta-Analysis

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Background

- Hypertension affects 10% of all pregnancies worldwide
  - Annual incidence of 18.1 million
  - Major contributor to healthcare visits & perinatal outcomes
- Hypertensive Disorders of Pregnancy (HDP)
  - Gestational Hypertension, Superimposed Pre-eclampsia, Pre-eclampsia or Chronic Hypertension
- Home blood pressure monitoring (HBPM) as a **monitoring tool**
  - Well tolerated, reproducible and cost effective
  - Alternative to clinic blood pressure monitoring
- Validated data on HBPM use and outcomes remain sparse
  - Lack of evidence-based recommendation to inform guidelines

Aims & Methodology

- *Primary Objective*
  - To examine the safety of HBPM through a **comparison of adverse maternal and fetal clinical outcomes** in women with HDP managed with HBPM compared to standard clinic-based care
- *Main Outcomes*
  - Rates of pre-eclampsia, adverse maternal composite outcomes, severe hypertension (≥160/100mmHg) events, emergency delivery indicated for hypertension, stillbirth, preterm delivery (<34 weeks), small for gestation age (<10th centile) and neonatal mortality
- *Secondary Outcomes*
  - No. of antenatal visits, frequency of BP measurements, time to diagnosis of clinically confirmed hypertension
- *Methodology*
  - Electronic database search: Cochrane, Medline, Embase, Pubmed between Jan 1970 to Dec 2022.
  - Data extracted by two authors and analysed through Review Manager 5.4.1 (RevMan).
  - Clinical outcomes of meta-analyses reported as **Risk Ratios (RR)** with 95% CI
  - Risk of bias assessments conducted (RoB 2) & GRADE assessment

Results

- 2065 articles identified from initial literature search
  - 1983 papers excluded based on abstracts
  - Further studies excluded due to non-relevance
- Four RCTs selected: **3,533** patients identified and analysed in meta-analysis
- Risk of bias: overall deemed **moderate** in all four trials
  - Blinding not possible

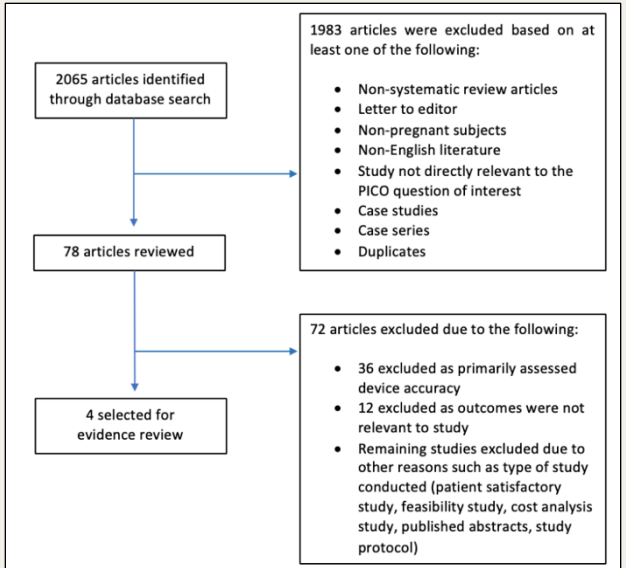


Figure 1: Study flow diagram – selection process for included studies

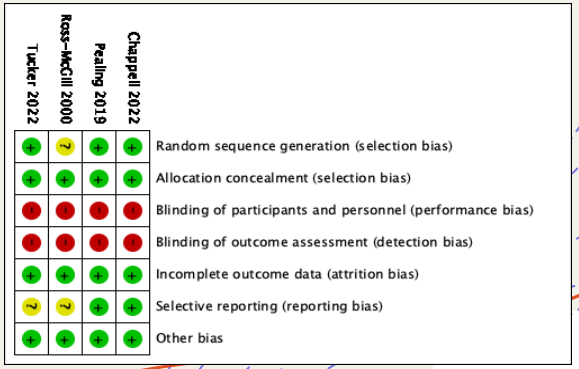


Figure 2: Risk of Bias Summary

Results

- Out of 12 outcomes analysed, there were **no statistically significant difference** in the key maternal and fetal outcomes between women who underwent HBPM compared to clinic BP monitoring

- **No statistically significant difference** was observed in rates of:
  - Pre-eclampsia
  - Combined adverse maternal composite outcomes
  - Severe hypertension (>160/110mmHg)
  - Emergency delivery for hypertension
  - Stillbirth
  - Preterm delivery (<34 weeks)
  - Neonatal mortality
  - Small for gestation age (<10th centile)

Figure 3: Rates of preeclampsia

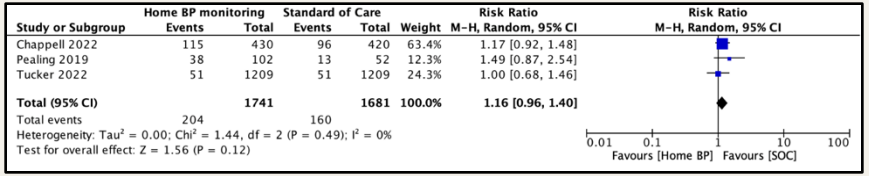


Figure 4: Combined adverse maternal composite outcomes

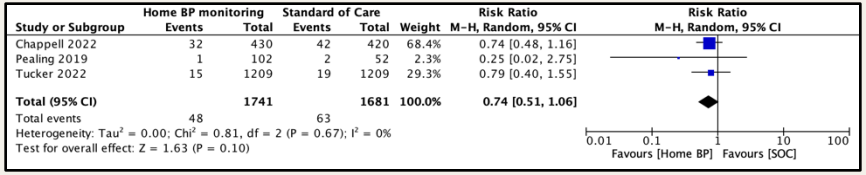
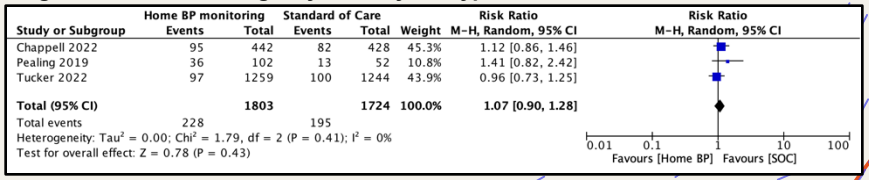


Figure 5: Rates of emergency delivery for hypertension



Results

- **Reduced frequency** of antenatal visits observed in remote BP monitoring group (mean difference of 2.9 less visits, P < 0.00001)

- **Increased frequency** of BP measurements observed in remote BP monitoring group (additional 3.1 weeks of BP recordings, P < 0.00001)

- No observed significant difference in **time to diagnosis** of clinically confirmed hypertension in both groups

Figure 6: Number of antenatal visits recorded during the study

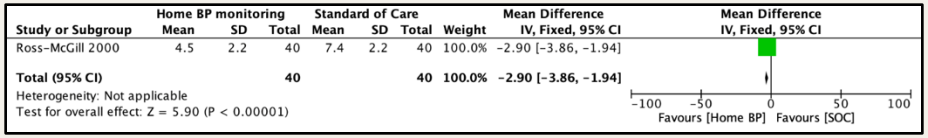
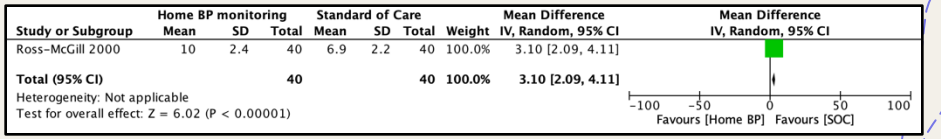


Figure 7: Frequency of blood pressure measurements performed during the study



Conclusion

- Home blood pressure monitoring may be an acceptable alternative to conventional clinic-based blood pressure monitoring
- Our review showed that HBPM compared to clinic blood pressure monitoring did not lead to increased rates of adverse maternal or fetal outcomes
- Highlights need for further studies to define diagnostic criteria, management and escalation thresholds specific to the use of HBPM