A systematic review of the effects of home blood pressure monitoring on medication adherence

Ogedegbe G, Schoenthaler A

CRD summary
The authors concluded that results about the effects of home blood-pressure monitoring (HBPM) on antihypertensive medication adherence were mixed and further research is required. This was a well-conducted review. The authors’ conclusions reflect the limited evidence about HBPM as the sole intervention and are likely to be reliable.

Authors' objectives
To evaluate the effects of home blood-pressure monitoring (HBPM) on adherence to antihypertensive medication.

Searching
The Cochrane Library, MEDLINE, EMBASE, CINAHL, PsycINFO, Web of Science and Dissertation Abstracts were searched from inception to August 2005 without any language restrictions. For key articles, the reviewers tracked further citations through the 'Related Articles' facility in PubMed and the 'Cited Reference' facility in Web of Science. In addition, reference lists of relevant studies were screened and experts were contacted for details of other trials and unpublished studies. The search strategy was described, although the specific search terms were not reported.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) were eligible for inclusion in the review.

Specific interventions included in the review
Studies that evaluated interventions that included HBPM were eligible for inclusion. Most of the included interventions were complex interventions that included the following elements in addition to HBPM: patient education; counselling on medication adherence by nurses, pharmacists, or through a telephone-linked systems; timed medication reminders; monthly home visits; and nurse case management. In the included studies, the duration of the interventions ranged from 6 weeks to 1 year.

Participants included in the review
Studies of patients with hypertension were eligible for inclusion. Where reported, the included studies recruited patients from various settings including shopping malls, community or retirement centres, a worksite, hospital-based clinics or tertiary care, and primary care practices.

Outcomes assessed in the review
Studies that measured antihypertensive medication adherence using electronic methods, self-report, pill counts or pharmacy refills were eligible for inclusion. In the review, adherence to medication was defined as the taking of at least 80% of the prescribed medication. The majority of the included studies used pill counts to measure medication adherence.

How were decisions on the relevance of primary studies made?
Two reviewers independently selected the studies and resolved any differences by discussion.

Assessment of study quality
The authors did not report any formal assessment of validity. However, aspects of methodological quality such as sample size, the methods used to measure outcomes, co-interventions and completeness of follow-up were reported. Two reviewers independently extracted information about the study design and methods.
Data extraction
Two reviewers independently extracted data from the original text, tables or graphs using a structured form. For each study, the percentage of adherent patients and the statistical significance of between-group differences and changes from baseline in medication adherence and diastolic and systolic blood-pressure were presented. The authors stated that all analyses presented for each study were adjusted for covariates, although it was not reported what the covariates were.

Methods of synthesis
How were the studies combined?
The studies were combined in a narrative.

How were differences between studies investigated?
Differences between the studies were discussed with respect to the intervention (whether complex or HBPM alone) and study setting.

Results of the review
Eleven RCTs (n=1,550) were included. The sample size ranged from 24 to 628.

In relation to study quality, the sample size exceeded 100 in 5 studies and was less than 50 in four. In 10 studies there was adequate completeness of follow-up (range: 79 to 100%). Three studies measured adherence using objective electronic monitoring.

Six of the 11 included studies reported statistically significant increases in antihypertensive medication adherence associated with the intervention. Five of these studies evaluated complex interventions.

One of the 2 studies that evaluated HBPM alone reported a statistically significant increase in adherence with HBPM at 6 weeks (6.6 versus 5.8 pills per week, p<0.05; n=628). The other study (n=60) reported no significant difference in medication adherence between HBPM alone and usual care at 8 weeks (94% versus 88%, p>0.05).

None of the 3 studies set in primary care (n=31 to n=62) reported any significant differences in medication adherence between the interventions.

Authors' conclusions
Results about the effects of HBPM on antihypertensive mediation adherence were mixed and further research is required.

CRD commentary
The review addressed a research question that was clear in terms of the participants, intervention, outcomes and study design. Several relevant sources were searched and attempts were made to minimise publication and language bias. Aspects of study validity were discussed. There was little information about the participants and this made it difficult to assess how representative the study participants were of the general hypertensive population. Methods were used to minimise reviewer errors and bias in the study selection, validity assessment and data extraction processes. In view of the differences between the studies, a narrative synthesis was appropriate. Overall, this was a well-conducted review and the authors' conclusions are likely to be reliable.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors stated the need for further studies to evaluate the effectiveness of HBPM in primary care and to examine the relationship between HBPM, antihypertensive medication adherence and blood-pressure control.
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Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.