Review: self monitoring interventions modestly reduce diastolic blood pressure (BP) but do not improve BP control in hypertension


How effective are various models of care for improving blood pressure (BP) control in patients with hypertension?

METHODS

Data sources: Medline and EMBASE/Excerpta Medica (2000 to November 2002), Cochrane Library (Issue 3, 2002); hand searches of references of retrieved articles; and experts.

Study selection and assessment: randomised controlled trials (RCTs) in any language that included patients ≥18 years of age with primary hypertension (treated or not currently treated with BP lowering drugs) in a primary care, outpatient, or community setting; and compared self monitoring, patient education, physician education, health professional (nurse or pharmacist) led care, protocol driven care (organisational interventions to improve delivery of care), or appointment reminders with no intervention or usual care. Study quality was assessed based on randomisation procedure, allocation concealment, blinding, and follow up.

Outcomes: mean systolic blood pressure (SBP) or diastolic blood pressure (DBP), control of BP, and patient follow up at the clinic.

MAIN RESULTS

59 RCTs met the selection criteria. Study quality was poor to moderate: 6 RCTs had adequate allocation concealment, 11 had blinded outcome assessors, and 12 had >20% loss to follow up. Meta-analysis of 12 RCTs (n = 1996) using a fixed effects model showed that self monitoring reduced mean DBP more than control (weighted mean difference [WMD] –0.43 mm Hg, CI –1.12 to –0.27); results for BP control were (WMD –2.03 mm Hg, CI –3.45 to –0.62) but not mean DBP (WMD showed that control groups did not differ for BP control (table). Meta-analysis showed that patient education and physician education for reducing SBP or DBP showed significant heterogeneity, but meta-analysis showed that patient education and control groups did not differ for BP control (table). Pooled results of patient education for reducing SBP or DBP showed significant heterogeneity, but meta-analysis showed that patient education and control groups did not differ for BP control (table). Meta-analysis showed that physician education (9 trials, n = 2839) reduced mean SBP (WMD –2.03 mm Hg, CI –3.43 to –0.62) but not mean DBP (WMD –0.43 mm Hg, CI –1.12 to 0.27); results for BP control were heterogeneous. Pooled results for health professional led care or protocol driven care showed significant heterogeneity. Meta-analysis showed that appointment reminders were associated with fewer patients lost to follow up than a control intervention (table).

CONCLUSIONS

Self monitoring interventions modestly reduce diastolic blood pressure but do not improve blood pressure control in patients with hypertension. Appointment reminders improve patient follow up. Other interventions had inconclusive results.

Commentary

Although the benefits of antihypertensive drugs are well established, less clarity exists about the effectiveness of approaches to organising and delivering health services in communities. However, one large trial in the review by Fahey et al (Hypertension Detection and Follow-up Program [HDFP]) showed that a combination of drug therapy and systematic follow up achieved important reductions in BP and 5 year mortality.1 The HDFP results are indicative of the success that is possible.

Fahey et al make several important observations about the definitiveness of the review’s findings. These include significant heterogeneity among studies, variability in treatment among patients, and inconsistencies in the reporting of BP’s achieved or controlled. The authors also addressed the importance of designing studies in which the effects of specific interventions can be determined. Despite these limitations, the review by Fahey et al provides an important overview of the literature on community based BP control strategies and important messages for practice and research. Education alone, of either patients or healthcare providers, is insufficient for achieving effective BP control. Reaching target BP control of <140/90 mm Hg requires organised, regular follow up and close attention to antihypertensive drug therapy adjustment based on current guidelines. The comprehensive analysis of trial quality provides specific direction for research design improvements. The evidence for patient self monitoring and nurse or pharmacist led care is promising, but further study is required. Likewise, computer based clinical support systems and attention to adherence warrant investigation.

The authors recommend that future studies include economic evaluations to aid in decision making about the adoption of new approaches to hypertension control in community settings.

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Self monitoring (SM), patient education (PeE), or appointment reminders (ARs) v control (no intervention or usual care) for hypertension*

<table>
<thead>
<tr>
<th>Outcomes at 8 weeks to 5 years</th>
<th>Number of studies (n)</th>
<th>Comparison</th>
<th>Weighted event rates</th>
<th>RRR (95% CI)</th>
<th>NNT (CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved BP control</td>
<td>4 (948)</td>
<td>SM v control</td>
<td>38% v 41%</td>
<td>8% (–9 to 21)</td>
<td>Not significant</td>
</tr>
<tr>
<td>Patients lost to follow up</td>
<td>6 (1704)</td>
<td>ARs v control</td>
<td>14% v 35%</td>
<td>44% (21 to 60)†</td>
<td>5 [3 to 15]†</td>
</tr>
</tbody>
</table>

*BP = blood pressure; other abbreviations defined in glossary. Weighted event rates, RRR, NNT, and CI calculated from data in article using a fixed effects model.

†Calculated using a random effects model.