Review: self management education improves outcomes in children and adolescents with asthma


QUESTION: Do self management educational interventions improve lung function and decrease morbidity and healthcare use in children and adolescents with asthma?

Data sources

Studies were identified by searching the Cochrane Airways Group’s and Cochrane Schizophrenia Group’s Special Registers of Controlled Trials and reviewing bibliographies of relevant articles.

Study selection

Studies were selected if they were randomised controlled trials (RCTs) or controlled clinical trials (CCTs) comparing an educational intervention designed to teach 1 self management strategy related to prevention, attack management, or social skills with usual care; measured objective outcomes; and patients were children or adolescents (2–18 y).

Data extraction

Data were extracted on sample size, patient demographic characteristics, details of the intervention, setting, study quality, and outcomes (lung function, morbidity and functional status, self perception, and healthcare use).

Main results

25 RCTs and 6 CCTs met the selection criteria (3706 children and adolescents). The self management educational programmes evaluated in individual trials differed by type of session (group, individual, or both), intensity (single session, 2 sessions, or ≥ 3 sessions), self management strategy (peak flow or symptom based strategy), and length of the intervention (mean 3.8 mo, range 1–12). Whereas all trials focused on asthma prevention measures (eg, identification and avoidance of asthma triggers) and/or attack management plans (eg, use of an asthma action plan), 13 trials incorporated social skills development into the educational strategy.

Meta-analyses of RCTs were done using a fixed effects model. Improvements in lung function and measures of self efficacy were greater in the self management group than in the usual care group (table). The mean number of days absent from school and mean number of visits to the emergency department were lower in the self management group than in the usual care group (table). The groups did not differ for days of restricted activity, nights disturbed by asthma, asthma severity scores, number of exacerbations, or visits to a general practitioner (table).

Conclusion

Self management educational interventions improve lung function and decrease some measures of morbidity and healthcare use in children and adolescents with asthma.

**Outcomes at 1–12 months**

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Number of RCTs (n)</th>
<th>Standardised mean difference (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lung function</td>
<td>2 (106)</td>
<td>0.59 (0.20 to 0.99)</td>
</tr>
<tr>
<td>Self efficacy scale</td>
<td>5 (256)</td>
<td>0.33 (0.08 to 0.58)</td>
</tr>
<tr>
<td>Days absent from school</td>
<td>12 (1388)</td>
<td>−0.13 (−0.23 to −0.02)</td>
</tr>
<tr>
<td>Emergency department visits</td>
<td>9 (932)</td>
<td>−0.23 (−0.36 to −0.09)</td>
</tr>
<tr>
<td>Days of restricted activity</td>
<td>4 (290)</td>
<td>−0.20 (−0.43 to 0.04)†</td>
</tr>
<tr>
<td>Nights disturbed by asthma</td>
<td>2 (139)</td>
<td>−0.11 (−0.45 to 0.23)†</td>
</tr>
<tr>
<td>Asthma severity scale</td>
<td>3 (170)</td>
<td>−0.05 (−0.35 to 0.20)†</td>
</tr>
<tr>
<td>Number of exacerbations</td>
<td>3 (249)</td>
<td>−0.12 (−0.37 to 0.13)†</td>
</tr>
<tr>
<td>General practitioner visits</td>
<td>6 (619)</td>
<td>−0.15 (−0.31 to 0.01)†</td>
</tr>
</tbody>
</table>

RCTs = randomised controlled trials. CI defined in glossary.
†Not statistically significant.
Review: regular medical review is not better than written self management plans for optimising asthma control


QUESTIONS: Is regular medical review (RMR) better than written self management plans for optimising asthma control in adults with asthma who use inhaled corticosteroids? Do health outcomes differ for written self management plans based on peak expiratory flow self management (PFSM) and those based on symptom self monitoring (SSM)?

Data sources
Studies were identified by searching the Cochrane Airways Group Special Register of Controlled Trials (which comprises results of searching Medline, EMBASE/Excerpta Medica, and CINAHL), and reviewing bibliographies of relevant reviews.

Study selection
Studies were selected if they were randomised controlled trials (RCTs) of ≥2 self management asthma education interventions in adult patients with asthma who were >16 years of age, and reported relevant health outcomes.

Data extraction
2 reviewers independently extracted data on sample size, demographic characteristics, details of the intervention, setting, study quality, and outcomes. Outcomes included forced expiratory volume in 1 second (FEV1), peak expiratory flow, hospital admissions, emergency department visits, unscheduled doctor visits, days lost from work or school, and use of rescue medications.

Main results
15 RCTs (2460 patients) met the selection criteria. Meta-analyses were done using a fixed effects model. Primary comparisons included optimal self management with RMR (6 RCTs) comparing 2 interventions that optimised asthma control using dose adjustment of inhaled corticosteroids either by active RMR or an individualised written self management plan where dose adjustment was based on PFSM or SSM. Meta-analysis of 3 RCTs (n=707) showed that the groups did not differ for FEV1, or peak expiratory flow (table). The groups did not differ for hospital admissions for asthma (4 RCTs), emergency department visits (1 RCT), unscheduled doctor visits (3 RCTs), days off work or school (2 RCTs), nocturnal asthma (5 RCTs), or disrupted days (1 RCT).

The other primary comparison was PFSM with SSM (6 RCTs). Meta-analysis showed that the groups did not differ for hospital admissions (4 RCTs, n=412), emergency department visits (5 RCTs, n=512) (table), unscheduled doctor visits, days lost from work, or corticosteroid use.

Conclusions
Regular medical review is not better than written self management plans in adults with asthma who use inhaled corticosteroids. Self management plans based on peak expiratory flow self management did not differ from those based on symptom self monitoring, for optimising asthma control.

Peak expiratory flow self management (PFSM) v regular medical review (RMR) or symptom self management (SSM)*

<table>
<thead>
<tr>
<th>Outcomes at ≤6 months</th>
<th>Number of trials</th>
<th>Comparison</th>
<th>Standardised mean difference (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean forced expiratory volume in 1 second (ml)</td>
<td>3</td>
<td>PFSM v RMR</td>
<td>0.01 (-0.14 to 0.15)†</td>
</tr>
<tr>
<td>Mean peak expiratory flow (ml)</td>
<td>3</td>
<td>PFSM v RMR</td>
<td>0.06 (-0.09 to 0.21)†</td>
</tr>
<tr>
<td>Hospital admissions (patients)</td>
<td>4</td>
<td>PFSM v SSM</td>
<td>4% v 3%</td>
</tr>
<tr>
<td>Emergency department visits (patients)</td>
<td>5</td>
<td>PFSM v SSM</td>
<td>15% v 16%</td>
</tr>
</tbody>
</table>

*Abbreviations defined in glossary; RRI, RRR, NNH, NNT and CI calculated from data in article.
†Not statistically significant

COMMENTARY—continued from previous page
In summary, these reviews establish the importance of the recommendations of asthma care guidelines. Patients with asthma should receive self management education and a written action plan, based on symptoms or peak expiratory flow, which is tailored to individual needs. After determining a patient’s ability to follow an action plan and readiness to learn, nurses need to ensure that each patient has an action plan that is understood and used appropriately, and that the recommended medications are used with appropriate techniques. Asthma education should be regarded as a process, rather than a single event, with ongoing reassessment and reinforcement at each encounter.

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