NKR 17 Astma PICO 2 Education

Characteristics of studies

Characteristics of included studies

Alexander 1988

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Unclear
Allocation concealment (selection bias)	Unclear risk	Unclear
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	Low risk	
Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

Becker 2003

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Unclear
Allocation concealment (selection bias)	Unclear risk	Unclear
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	High risk	
Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

Brown 2002

Methods	
Participants	
Interventions	
Outcomes	
Identification	

Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Unclear
Allocation concealment (selection bias)	Unclear risk	Unclear
Blinding of participants and personnel (performance bias)	Unclear risk	Unclear
Blinding of outcome assessment (detection bias)	Low risk	
Incomplete outcome data (attrition bias)	High risk	
Selective reporting (reporting bias)	Unclear risk	Unclear
Other bias	Low risk	

Butz 2006

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	
Allocation concealment (selection bias)	Low risk	
Blinding of participants and personnel (performance bias)	Unclear risk	Unclear
Blinding of outcome assessment (detection bias)	Low risk	
Incomplete outcome data (attrition bias)	High risk	
Selective reporting (reporting bias)	Unclear risk	Unclear
Other bias	High risk	

Cano Garcinuno 2007

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Each center prepared a census of patients who met the inclusion criteria, stratifi ed in 5 age groups: 9, 10, 11, 12, and 13 years. The allocation was made at each center. From an opaque box, papers with the names of the patients were taken at random and assigned consecutively to each of the 4 study groups according to a previously established order: controls, group education to children and their caregivers (Ch-CG

		group), group education to children alone (Ch group), and group education to caregivers alone (CG group).
Allocation concealment (selection bias)	High risk	Each center prepared a census of patients who met the inclusion criteria, stratifi ed in 5 age groups: 9, 10, 11, 12, and 13 years. The allocation was made at each center. From an opaque box, papers with the names of the patients were taken at random and assigned consecutively to each of the 4 study groups according to a previously established order: controls, group education to children and their caregivers (Ch-CG group), group education to children alone (Ch group), and group education to caregivers alone (CG group).
Blinding of participants and personnel (performance bias)	High risk	Not blinded
Blinding of outcome assessment (detection bias)	High risk	Not blinded
Incomplete outcome data (attrition bias)	Low risk	9% lost to FU
Selective reporting (reporting bias)	Low risk	All outcomes mentioned in the methods section are reported on.
Other bias	Low risk	No other apparent sources of bias

Charlton 1994

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Unclear
Allocation concealment (selection bias)	Low risk	
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	High risk	
Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

Chen 2013

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group
Participants	**Baseline Characteristics** Structured patient education ● *Mean age (SD)*: 7.09 (1.63) ● *Duration of asthma (years)*: >0.5 Control ● *Mean age (SD)*: 7.81 (2.36) ● *Duration of asthma (years)*: >0.5 **Included criteria:** Children from allergy clinics of medical centers in North Taiwan were eligible ifthey were aged 6-14 years, were diagnosed with asthma at least half a year befare the study, and had no other serious chronic illnesses. **Excluded criteria:** No other chronic illnesses. Caregivers with significant language baniers were excluded.
Interventions	**Intervention Characteristics** Structured patient education ● *Description*: The SMIS program was developed by an interdisciplinary team that included physicians from the

	divisions of pedia- tric allergies, case management workers, respiratorythera-pists, and staff nurses, with a steering committee charged with implementing the case management system. The pro-gram included the initial three-month one-on-one multi- faceted behavioral intervention and foliow-ups conducted by telephone at 1, 3, 6, and 12 months after enrolment (Table 1). The SMIS program provided information, rein-forced leaming incentives, and encouraged self-care and maintenance of therapeutic regimens through the multi- disciplinary support of case management nurses and phar-macists. It involved a three-month multifaceted behavioral intervention including provision of asthma education appropriate to the caregiver's education, establishment af an individualized asthma self-management plan, and the provision of interactive support through meetings and telephone contact, and foliow-up appointments with pri-mary physicians as necessary.The case management nurses were supervised by pedia-tricians. Nurses took the initiative in educating the care- givers according to the guidelines in a standardized instruction hooklet and provided interactive multimedia educational programs covering the basic pathophysiology of asthma, environmental triggers, quick-relief and control medicines and strategies to control and manage asthma. The nurses focused on teaching the caregivers to recognize the signs and symptoms of asthma and understand the daily medication regimens, as well as on teaching them how to interpret peak-flow meter rates, access information on asthma, and execute separate emergency action plans for asthma and allergy episodes. Each session took 30 mmutes. The experimental group received monthly one- on-one face-to-face interactive support sessions on asthma self-management twice a month for three months. Furthermore, case management nurses contacted the parti-cipants via telephone at 1, 3, 6, and 12 months after enrollment to reinforce key educational messages regard-ing the program's main topics and concerns, to remind participants of the importance of regular medical visits, and to encourage them to inform their pediatric allergy physician of there children's symptoms. ● *Duration in weeks*: 12 weeks ● *Lenght of follow up*: 40 weeks Control ● *Description*: Usual care, not described further ● *Duration in weeks*: 12 weeks ● *Lenght of follow up*: 40 weeks
Outcomes	*Continuous*: ● Asthma control (Asthma control questionnaire, lower=better) ● Symptom score (Awakenings pr night, lower=better) *Dichotomous*: ● Correct use od devices

	● Adherence to treatment regime ● None emergency room visit last year
Identification	**Sponsorship source:** This research was supported by a grant from Chang Gung Memorial Hospital at Keelung (Grant no. CMRPG2800112) **Country:** Taiwan **Setting:** Children from allergy clinics of medical centers in North Taiwan **Authors name:** Chen et al. Correspondence author: Yun-Fang Tsai **Email:** yfts81@-mail.cgu.edu.tw
Notes	**Continuous outcomes:** *Britta Tendal* Not sure if there are data on asthma control or symptoms. No data on QoL or use of device. There are data on medication adherence in table 3

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Comment: not described
Allocation concealment (selection bias)	Unclear risk	Comment: not described
Blinding of participants and personnel (performance bias)	Low risk	Comment: No blinding.Probably it is not a problem that the participants and the personnel were not blinded in regard ER visits
Blinding of outcome assessment (detection bias)	Low risk	Comment: No blinding described
Incomplete outcome data (attrition bias)	High risk	Comment: Of the enrolled participants 21.7% were lost to follow up.Data on healthcare utilization were collected using a medical record review
Selective reporting (reporting bias)	Low risk	Comment: All outcomes mentioned in the methods section were reported in the resultssection
Other bias	Low risk	Comment: No other apparent sources of bias

Cicutto 2005

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	
Allocation concealment (selection bias)	Low risk	
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	Unclear risk	
Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

Cicutto 2013

Methods	**Study design:** Cluster randomized controlled trial **Study grouping:** Parallel group **Cluster RCT:** YES

Participants	**Baseline Characteristics** Intervention: RAP+ Ressource Kit in school setting ● *Mean age (SD)*: 8.3 (1.4) ● *Male, N (%)*: 392 (56.6) ● *Drug plan, N(%)*: 576 (86.2) ● *Poesses action plan, N(%)*: 114 (16.5) ● *Mean no. of medical visits in 3 months (SD)*: 0.67 (1.14) Control ● *Mean age (SD)*: 8.2 (1.4) ● *Male, N (%)*: 365 (58.4) ● *Drug plan, N(%)*: 479 (82.9) ● *Poesses action plan, N(%)*: 144 (18.2) ● *Mean no. of medical visits in 3 months (SD)*: 0.67 (1.18) **Included criteria:** Participant eligibility criteriaincluded parental report of physician-diagnosedasthma, use of asthma medications, asthma symptomsexperienced ≥ 3 times in the past year, enrollment inone of grades 1-5, ability to speak English. **Excluded criteria:** no other chronic conditions that could mimic asthma,such as cystic fibrosis.
Interventions	**Intervention Characteristics** Intervention: RAP+ Ressource Kit in school setting ● *Description*: six 45-60 minutes sessions during the lunch hour by public Health nurses ● *Duration in weeks*: 7-9 weeks ● *Lenght of follow up*: 52 weeks Control ● *Description*: The control schools did not receive any in-schoolasthma education nor did they receive the resourcekit or the activities associated with its implementation.The control schools, and thus children with asthma,were placed on a waiting list to receive the programfollowing completion of data collection ● *Duration in weeks*: 7-9 weeks ● *Lenght of follow up*: 52 weeks

Outcomes	*Continuous*: ● asthma control given by limitations in daily activities (%of students) ● Urgent care (ED visits) in 1yr (% of students) ● Mean QoL total score (SD). higher=better ● Mean inhalation technique score (SD). higher=better *Dichotomous*: ● Correct use od devices ● Adherence to treatment regime ● Mean total QoL score (SD). Higher =better
Identification	**Sponsorship source:** none stated **Country:** Canada **Setting:** Public schools. Ontario, Canada **Comments:** funded by theOntarioMinistry of Health and Long TermCare **Authors name:** LISA CICUTTO **Institution:** Community Outreach and Research, National Jewish Health **Email:** cicuttol@njhealth.org **Address:** University of Colorado,Denver-AnschutzMedical Campus, 1400 Jackson Street, G08a, Denver, CO80209
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	
Allocation concealment (selection bias)	Low risk	
Blinding of participants and personnel (performance bias)	High risk	
Blinding of outcome assessment (detection bias)	High risk	
Incomplete outcome data (attrition bias)	Low risk	
Selective reporting (reporting bias)	Low risk	

Other bias	High risk	

Clark 1986

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Unclear
Allocation concealment (selection bias)	Unclear risk	Unclear
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	High risk	
Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

Couriel 1999

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	
Allocation concealment (selection bias)	Low risk	
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	Unclear risk	
Selective reporting (reporting bias)	Low risk	
Other bias	Unclear risk	

Cowie 2002

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Unclear
Allocation concealment (selection bias)	Low risk	
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	High risk	
Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

Duncan 2013

Methods	**Study grouping:** Parallel group
Participants	**Baseline Characteristics** Structured patient education ● *Duration of asthma (years)*: >0.5 Control ● *Duration of asthma (years)*: >0.5 **Included criteria:** Inclusioncriteria required that the child: (a) have a diagnosis of persistentasthma for at least 6 months; (b) take Fluticasonemetered dose inhaler (MDI) daily; and (c) have no evidenceof neurological or significant cognitive impairment (per parentreport). Participants did not need to have a suspectedhistory of medication non-adherence; rather, they werechosen within the stated age range because previous research(e.g., Munzenberger et al., 2010) has documentedthese ages as relevant for youth taking on more or fullresponsibility for asthma management.
Interventions	**Intervention Characteristics** Structured patient education ● *Description*: Asthma EducationSimilar to the TI group, families in the AE group receivedand reviewed written materials with the researcher duringsessions. These materials covered topics often found in AEprograms (see

	Table II). Time spent with families generallywas equivalent to that of its parallel TI session, therebycreating an attention control condition.Table II:Physiological mechanisms of asthma Common asthma medicationsRole of allergens and allergen controlRole of irritants and trigger controlYouth telling others about their asthma ● *Duration in weeks*: 8 weeks ● *Lenght of follow up*: 12 weeks Control ● *Description*: Standard CareYouth in the SC group completed all assessments at thesame time interval as TI and AE participants, but did notreceive any guidance beyond usual care. On completion offollow-up, these families were provided feedback on theirchild's medication adherence and offered an opportunityto receive either of the two interventions (their choice). ● *Duration in weeks*: 8 weeks ● *Lenght of follow up*: 12 weeks
Outcomes	*Continuous*: ● Asthma control (Asthma control questionnaire, lower=better) ● Symptom score (Awakenings pr night, lower=better) ● mean daily adherence *Dichotomous*: ● Correct use od devices ● Adherence to treatment regime
Identification	**Sponsorship source:** This work was supported by the National Institute of ChildHealth and Human Development (R03-HD039767-02),Christina L. Duncan, PhD (formerly Christina D.Adams), Principal Investigator. **Country:** US **Setting:** Participants were recruited from asthma clinics at a rural, university-based hospital in the northeastern United States and an urban-based children's hospital in the Midwest; **Comments:** ClinicalTrials.govIdentifier is NCT00166582. **Authors name:** Duncan et al **Email:** Christina.Duncan@mail.wvu.edu

Notes	**Study design:** *Britta Tendal* Also an arm with 'Teamwork intervention' not used in the review **Baseline characteristics:** *Britta Tendal* Participants were 48 youth, aged 9–15 years (M:11.1;SD:1.9), **Continuous outcomes:** *Britta Tendal* Asthma control measured with FSI, lower better, mean daily adherence high better. No data on QoL, but some on Conflict behaviour questionaie, relevant?

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Quote: "youth were randomly assigned (via computer- generated number sequence)" Quote: "Initially, youth were randomly assigned (via computer- generated number sequence) to one of three parallel groups (n ¼ 16 each): TI, AE (an attention control condi- tion), or SC. Approximately half-way through recruitment, groups were contrasted for four key variables (i.e., age, gender, disease severity, dosing schedule), and subsequent participants were assigned using a randomized block design to maintain group balance across these variables."
Allocation concealment (selection bias)	High risk	Quote: "The sequence was available to the research assistant who recruited participants into the study, as participants were immediately randomized."
Blinding of participants and personnel (performance bias)	High risk	Comment: no blinding. As increasing adherence was the primary aim of the study, allocation could interfere with behaviour
Blinding of outcome assessment (detection bias)	High risk	Comment: Not blinded
Incomplete outcome data (attrition bias)	Low risk	Comment: Randomized to education: 19 lost 3 end of treatment lost 1 to FU Randomized to standard care : 17 lost 1 end of treatment lost 1 to FU. Reasons similar
Selective reporting (reporting bias)	Low risk	Comment: Match to protocol NCT00166582
Other bias	Low risk	Comment: No other apparent biases

Farber 2004

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	
Allocation concealment (selection bias)	Low risk	
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	High risk	
Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

Fisher 2009

Methods	
Participants	
Interventions	
Outcomes	

Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	
Allocation concealment (selection bias)	Unclear risk	Unclear
Blinding of participants and personnel (performance bias)	Unclear risk	Unclear
Blinding of outcome assessment (detection bias)	Low risk	
Incomplete outcome data (attrition bias)	Unclear risk	Unclear
Selective reporting (reporting bias)	Unclear risk	Unclear
Other bias	Unclear risk	Unclear

Galbreath 2008

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	
Allocation concealment (selection bias)	Low risk	
Blinding of participants and personnel (performance bias)	Unclear risk	Unclear
Blinding of outcome assessment (detection bias)	Unclear risk	Unclear
Incomplete outcome data (attrition bias)	Low risk	
Selective reporting (reporting bias)	Unclear risk	Unclear
Other bias	Low risk	

Garrett 1994

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	
Allocation concealment (selection bias)	Low risk	
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	Low risk	

Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

Gorelick 2006

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	
Allocation concealment (selection bias)	Low risk	
Blinding of participants and personnel (performance bias)	Unclear risk	Unclear
Blinding of outcome assessment (detection bias)	Low risk	
Incomplete outcome data (attrition bias)	High risk	
Selective reporting (reporting bias)	High risk	
Other bias	Low risk	

Greineder 1999

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	
Allocation concealment (selection bias)	Unclear risk	Unclear
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	Low risk	
Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

Gustafson 2012

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group
Participants	**Baseline Characteristics** Structured patient education ● *Mean age (SD)*: 7.65 (2.6)

	Control ● *Mean age (SD)*: 8.18 (2.45) **Included criteria:** Eligible participants were parents or other adults functioning as parents, such as grandmothers, who were able to read at a sixth-gradelevel and had children ages 4–12 years with a diagnosis of asthma (International Classification of Diseases, 9th revision code 493) orwheezing (code 786.07); a prescribed asthma controller medication; and poor medication adherence, defined as having missed morethan one medication refill or having an emergency department visit or hospitalization because of poor asthma control.
Interventions	**Intervention Characteristics** Structured patient education ● *Description*: The year-long intervention called CHESS+CM consisted of an eHealth program, Comprehensive Health Enhancement Support System(CHESS), and a monthly telephone call to the parent from an asthma nurse case manager (CM). CHESS is an umbrella name forseveral eHealth systems developed and tested for the past 25 years at the University of Wisconsin-Madison. CHESS modules provideinformation, adherence strategies, decision-making tools, and support services in attractive, easy-to-use formats. The most importantstrength of CHESS modules may be the closed, guided universe of tailored information and support in an integrated package withefficient navigation, eliminating the need for complicated search and discovery...The CHESS module used in this study was designed specifically for asthma. ● *Duration in weeks*: 52 ● *Lenght of follow up*: 0 Control ● *Description*: treatment as usual plus asthma information ● *Duration in weeks*: 52 ● *Lenght of follow up*: 0
Outcomes	*Continuous*: ● ACQ ● Comp Adherence score (%) ● Asthma control (Asthma control questionnaire, lower=better) ● Symptom score (Awakenings pr night, lower=better) *Dichotomous*: ● Correct use od devices

	● Adherence to treatment regime
Identification	**Sponsorship source:** National Institute for Nursing Research 5R01 NR007889-03.Conflicts of Interest:The authors have no financial interests in the eHealth system evaluated here, although Gustafson, Wise, and Hawkins were lead members of the development team. **Country:** US **Setting:** Originally children were identified through the health care utilization and pharmacy claim databases at four MCOs (MCOs 1–4) and the Wisconsin Medicaid Program from one urban–rural county (Dane County, which is also the home of the University of Wisconsin- Madison) and seven surrounding rural counties (Columbia, Dodge, Green, Iowa, Jefferson, Rock, and Sauk). MCO 5 in Milwaukee was added after it became clear that MCOs 1–4 could not produce enough participants with poorly controlled asthma. MCO 5 served an entirely Medicaid population in Milwaukee County and had the state's highest rates of asthma-related emergency department visits and overnight hospital stays **Comments:** Clinicaltrials.gov NCT00214383; Study data is posted **Authors name:** Gustafson **Email:** dhgustaf@wisc.edu
Notes	**Baseline characteristics:** *Britta Tendal* table 2 ,mean age at first asthma diagnosis: intervention 3.16 sd 2.57, control 2.79 sd 2.45 **Continuous outcomes:** *Britta Tendal* ACQ and adherence change data available obs negative values covidence not able to handle

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Quote: "Researchers at the University of Wisconsin generated the random allocation sequence." Quote: "Participants were equally randomized according to their MCO and then blocked by severity and by Medicaid status. Randomization occurred upon receipt of the run in diaries for MCO 1-4 subject and after just the intake for MCO 5 participants [40]. The CHESS+CM group received a 45-minute training session."

Allocation concealment (selection bias)	Low risk	Quote: "Nurses conducting consent, assent, and pretests were given sequentially numbered envelopes containing the random assignment for each participants."
Blinding of participants and personnel (performance bias)	High risk	Quote: "It was not possible to blind participants or outcome assessors."
Blinding of outcome assessment (detection bias)	High risk	Quote: "It was not possible to blind participants or outcome assessors. We did blind those analyzing the data."
Incomplete outcome data (attrition bias)	Low risk	Quote: "301 were randomly assigned: 153 to the control group and 148 to the CHESS+CM group. Finally, 259 dyads (86.1%) completed the study. After randomization, 42 dropped out: 26 (17%) from the control group and 16 (11%) from the CHESS+CM group. The between-group dropout rate was not significant (P = .12). However, participants who dropped out were significantly less likely to be white or married, and more likely to be significantly younger, have lower asthma quality of life, and have less education. Children of dropouts had no significant differences in baseline ACQ scores, but had significantly lower pharmacy refill rates and more asthma- related school absences."
Selective reporting (reporting bias)	Low risk	Comment: Match to protocol Clinicaltrials.gov NCT00214383;
Other bias	Low risk	Comment: No other apparent sources of bias

Harish 2001

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	High risk	
Allocation concealment (selection bias)	High risk	
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	Unclear risk	Unclear
Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

Indinnimeo 2009

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	High risk	Each center prepared a census of patients who met the inclusion criteria, stratifi ed in 5 age groups: 9, 10, 11, 12, and 13 years. The allocation was made at each center. From an opaque box, papers with the names of the patients were taken at random and assigned consecutively to each of the 4 study groups according to a previously established order: controls, group education to children and their caregivers (Ch-CG

		group), group education to children alone (Ch group), and group education to caregivers alone (CG group).
Allocation concealment (selection bias)	High risk	Each center prepared a census of patients who met the inclusion criteria, stratifi ed in 5 age groups: 9, 10, 11, 12, and 13 years. The allocation was made at each center. From an opaque box, papers with the names of the patients were taken at random and assigned consecutively to each of the 4 study groups according to a previously established order: controls, group education to children and their caregivers (Ch-CG group), group education to children alone (Ch group), and group education to caregivers alone (CG group).
Blinding of participants and personnel (performance bias)	High risk	Probably not blinded
Blinding of outcome assessment (detection bias)	High risk	Probably not blinded
Incomplete outcome data (attrition bias)	Low risk	No loss to FU
Selective reporting (reporting bias)	Low risk	All outcomes mentioned in the methods section are reported on
Other bias	Low risk	No other apparent sources of bias

Joseph 2007

Methods	**Study design:** Randomized controlled trial
Participants	**Baseline Characteristics** Intervention: education children alone Intervention: education children+caregiver Control: no education Intervention: education caregivers alone
Interventions	**Intervention Characteristics** Intervention: education children alone ● *Description*: ● *Duration (weeks)*: 180 days ● *Follow up (weeks)*: 52

	Control: no education ● *Description*: ● *Duration (weeks)*: 180 days ● *Follow up (weeks)*: 52
Outcomes	*Continuous*: ● Total AQLQ ● QoL (PAQLQ) ● QoL (AQLQ) ● Symptom score ● Asthma control score ● Daily adherence ● Hospitalizations ● Inhalation-technique score ● ED visits ● Symptoms night last 2 weeks ● School days missed last 30 days *Dichotomous*: ● ED visits ● Hospital admissions ● Controller medication adherence, positive behavior ● Hospital admissions/12 mo ● ED visits/12 mo ● Controller medication, positive behaviour ● Rescue inhaler availability, positive behaviour ● Symptom days/2 wk ● Symptom nights/2 wk ● School days missed/30 d ● Days restricted activity/2 wk ● Days had to change plans ● QOL, cumulative score

Identification	**Sponsorship source:** Supported by the National Institutes of Health, National Heart, Lung, and Blood Institute.Conflict of Interest Statement : C.L.M.J. does not have a financial relationship with a commercial entity that has an interest in the subject of this manuscript. E.P. does not have a financial relationship with a commercial entity that has an interest in the subject of this manuscript. S.H. does not have a financial relationship with a commercial entity that has an interest in the subject of this manuscript. C.C.J. does not have a financial relationship with a commercial entity that has an interest in the subject of this manuscript. S.H. does not have a financial relationship with a commercial entity that has an interest in the subject of this manuscript. S.S. does not have a financial relationship with a commercial entity that has an interest in the subject of this manuscript. W.G.-S. does not have a financial relationship with a commercial entity that has an interest in the subject of this manuscript. D.R.O. has served on a consulting basis to the Chlorine Council of America since January 2005, concerning the effects of chlorination on the risks of asthma in children, for $1,500. In November 2004, he also lectured on the use of Xolair inasthma for Genentech for $1,000. He has also served on an advisory board for Greer Laboratories on the use of sublingual immunotherapy in allergic disease since April 2005 for $2,000 and received $5,000 for an Allergy Fellowship Reviewfrom GlaxoSmithKline. J.E.-L. received $400,000 for 2005–2006 from Sanofi-Aventis as a research grant, served as a coinvestigator on research grants totaling $562,877 from Teva from 2005 to 2007, received $373,414 from Merck & Co.for 2003–2005, and received $124,000 from GlaxoSmithKline in 2003. U.P. does not have a financial relationship with a commercial entity that has an interest in the subject of this manuscript. V.S. does not have a financial relationship with acommercial entity that has an interest in the subject of this manuscript. **Authors name:** Joseph 2007
Notes	**Identification:** *Anna Ogstrup* Det ser ikke ud til der en funder, men tilgengæld er der modtaget penge fra mange forskellige parter. **Continuous outcomes:** *Anna Ogstrup* Table 3: Outcomes are not given in SDs or means. Relevant outcomes would be: Controller medication adherence - Positive behaviour, Rescue inhaler availability - Positive behaviour, Symptom days, Symptom nights, School days missed, Days restricted activity, Days had to change plans, Hospitalizations, ED visits, QOL cumulative score. **Dichotomous outcomes:** *Anna Ogstrup* n er ikke angivet i tabel 3

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Quote: "Randomization was stratified by school, grade, sex, and report of a physician diagnosis of asthma. A random number generator was used within each unique stratum to assign each new individual to either the treatment or control group."
Allocation concealment (selection bias)	Low risk	Quote: "Students randomized to the control group were directed to existing generic asthma websites using a combi- nation of Windows (Microsoft Corp., Redmond, WA) system policies and the DPS proxy server." Comment: Allocation was done via a computer
Blinding of participants and personnel (performance bias)	High risk	Comment: No information
Blinding of outcome assessment (detection bias)	High risk	Comment: No information
Incomplete outcome data (attrition bias)	Low risk	Comment: 87% followed up. Drop out evenly distributed
Selective reporting (reporting bias)	Low risk	Comment: The study protocol is not available but it is clear that the published reports include all expected outcomes
Other bias	Low risk	Comment: No other apparent biases

Kamps 2008

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group **Open Label:** YES
Participants	**Baseline Characteristics** Intervention: education children+caregiver ● *mean age in years (SD)*: ● *Mean duration of asthma (SD)*: ● *Gender, N=male (%)*: Control: no education

	● *mean age in years (SD)*: ● *Mean duration of asthma (SD)*: ● *Gender, N=male (%)*
Interventions	**Intervention Characteristics** Intervention: education children+caregiver ● *Description*: Metered Dose Inhalator records for "shake" inhalator, correct Education 6x60 minutes, weekly intervals. Sessions covering inhalation techniqueICS.temperature, activated.Both underdosed and overdosed=non adherence (% of described) ● *Duration (weeks)*: 6 weeks ● *Follow up (weeks)*: 2 weeks Control: no education ● *Description*: 6x60 minutes education, but only general about lungs and asthma ● *Duration (weeks)*: 6 weeks ● *Follow up (weeks)*: 2 weeks
Outcomes	*Continuous*: ● Total PAQLQ ● QoL (PAQLQ) ● Symptom score ● Inhalation-technique score ● Daily adherence score (higher=better) ● Hospitalizations ● Asthma control score ● ED visits ● QoL (AQLQ) ● no of night symptoms/awakenings ● no. of school days missed *Dichotomous*: ● ED visits ● Hospital admissions ● ED visits

	● Hospital admissions
Identification	**Sponsorship source:** This work was funded, in part, by National Institute of Child Health and Human Development Grant # HD34784 to Michael A. Rapoff. **Authors name:** Kamps JL
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	
Allocation concealment (selection bias)	Unclear risk	Unclear
Blinding of participants and personnel (performance bias)	Unclear risk	Unclear
Blinding of outcome assessment (detection bias)	Unclear risk	Unclear
Incomplete outcome data (attrition bias)	Unclear risk	Unclear
Selective reporting (reporting bias)	Unclear risk	Unclear
Other bias	Low risk	

Karnick 2007

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Unclear
Allocation concealment (selection bias)	Unclear risk	Unclear
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	Unclear risk	Unclear
Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

Kelly 2000

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	High risk	
Allocation concealment (selection bias)	High risk	
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	

Incomplete outcome data (attrition bias)	High risk	
Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

Khan 2004

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Unclear
Allocation concealment (selection bias)	Unclear risk	Unclear
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	High risk	
Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

Madge 1997

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	
Allocation concealment (selection bias)	High risk	
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	Low risk	
Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

McGhan 2010

Methods	**Study design:** Cluster randomized controlled trial **Cluster RCT:** YES
Participants	**Baseline Characteristics** Intervention: education children+caregiver Control: no education

Interventions	**Intervention Characteristics** Intervention: education children+caregiver ● *Description*: ● *Duration (weeks)*: 6 months ● *Follow up (weeks)*: 12 months Control: no education ● *Description*: ● *Duration (weeks)*: 24 ● *Follow up (weeks)*: 52
Outcomes	*Continuous*: ● Total PAQLQ ● QoL (PAQLQ) ● Symptom score ● Inhalation-technique score ● Daily adherence ● Hospitalizations ● Asthma control score ● ED visits, mean per patient ● Missed school days in past year ● Limitation in amount of play ● used short acting bronchodilator *Dichotomous*: ● ED visits ● Hospital admissions ● ED visits ● Hospitalizations ● Limitation in nature of play ● Limitation in amount of play ● Used short acting bronchodilators

Identification	**Sponsorship source:** Funded by the Alberta Heritage Foundation for Medical Research – Health Research Fund. **Authors name:** McGhan 2010
Notes	**Intervention characteristics:** *Anna Ogstrup* i tvivl om forældre indgår? *Tina Povlsen* Duration is unclear. So I have stated the duration time to 6 month due to the flow chart **Continuous outcomes:** *Tina Povlsen* Table 3 and 4 have not reported SD. Quality of life Emengency department visits in past years. Missed school days in past years. Limitation in nature of playLimitation in amount of play *Anna Ogstrup* Table 3 and 4 do not give SDs. Relevant outcomes woul be: Emergency department visits in past year, Missed school days in past year, Limitation in nature of play, Limitation in amount of play and Used short-acting bronchodilators.

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Quote: "From a listing of all public schools in participating health regions (Capital Health, Westview and Northwest), 34 schools were randomly selected and agreed to participate in the study (a response rate of 79%)." Comment: Randomly selected from a list.
Allocation concealment (selection bias)	Unclear risk	Quote: "Schools were randomly assigned to either the RAP educational intervention or usual care (control group) using a random number table." Comment: Allocation not described.
Blinding of participants and personnel (performance bias)	High risk	Comment: Blinding not described. But likely not blinded
Blinding of outcome assessment (detection bias)	High risk	Comment: Blinding not described. But likely not blinded

Incomplete outcome data (attrition bias)	High risk	Comment: They do not state all the reasons why people were lost to follow-up's. No intention-to threat analysis. Number of dropouts from the intervention group was 20 at end of trial. At follow uo at 12 months the drop outs were 13.Number of dropouts from the control group was 26 at end of trial. At follow uo at 12 months the drop outs were 10.
Selective reporting (reporting bias)	Low risk	Comment: There is no study protocol available. However all of the study's described outcomes have been reported.
Other bias	Low risk	Comment: No other apparent bias.

McNabb 1985

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	
Allocation concealment (selection bias)	Unclear risk	
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	Unclear risk	
Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

Mitchell 1986

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	
Allocation concealment (selection bias)	Low risk	
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	Low risk	
Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

Mosnaim 2011

Methods	**Study design:** Cluster randomized controlled trial **Study grouping:** Parallel group **Open Label:** YES **Cluster RCT:** YES

Participants	**Baseline Characteristics** Intervention: education youth alone (8-12 years old) Control: no education youth
Interventions	**Intervention Characteristics** Intervention: education youth alone (8-12 years old) ● *Description*: ● *Duration (weeks)*: 4 days ● *Follow up (weeks)*: no FU Control: no education youth
Outcomes	*Continuous*: ● Total PAQLQ ● QoL (PAQLQ) ● QoL (AQLQ) ● Symptom score ● Asthma control score ● Daily adherence ● Hospitalizations ● Inhalation-technique score ● ED visits *Dichotomous*: ● ED visits ● Hospital admissions ● Hospital admissions ● ED visits
Identification	**Sponsorship source:** This study was supported by an unrestricted educational grant from Abbott Laboratories. **Authors name:** Mosnaim 2011
Notes	**Continuous outcomes:** *Tina Povlsen* Table 5 - the adjusted model don't give the exact p-value. The unadjusted table, table 4 gives outcome in median and not mean. *Anna Ogstrup* Table 5 doesn't have exact values. Table 4 doesn't have means. Therefore we can't extract any data.

	Anna Ogstrup Outcomes for correct use of devises (Spacer comp...) Table 5: The adjusted model does not give the exact p-value. Table 4 does not give any outcomes in mean. Therefore we can't extract any data.

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Comment: Not described. Probably done on computer as the allocation scheme took school (cluster) into account
Allocation concealment (selection bias)	Unclear risk	Comment: Not described
Blinding of participants and personnel (performance bias)	High risk	Comment: No blinding
Blinding of outcome assessment (detection bias)	High risk	Comment: No blinding
Incomplete outcome data (attrition bias)	Low risk	Comment: App 15% missing data. Main reason was no show on the post-test evaluation day. More missing in the intervention group, but the researchers judged the data to be missing at random
Selective reporting (reporting bias)	Low risk	Comment: The study protocol is not available but it is clear that the published reports include all expected outcomes
Other bias	Low risk	Comment: No other apparent biases

NCICAS

Methods	
Participants	
Interventions	
Outcomes	
Identification	

Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Unclear
Allocation concealment (selection bias)	Unclear risk	Unclear
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	Unclear risk	Unclear
Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

Ng 2006

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	
Allocation concealment (selection bias)	Unclear risk	Unclear
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	Unclear risk	Unclear
Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

Otsuki 2009

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	
Allocation concealment (selection bias)	Low risk	
Blinding of participants and personnel (performance bias)	Unclear risk	Unclear
Blinding of outcome assessment (detection bias)	Low risk	
Incomplete outcome data (attrition bias)	Low risk	

Selective reporting (reporting bias)	Unclear risk	Unclear
Other bias	High risk	

Rikkers Mutsaerts 2012

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group **Open Label:** YES
Participants	**Baseline Characteristics** Structured patient education Control
Interventions	**Intervention Characteristics** Structured patient education Control
Outcomes	*Continuous*: ● inhalation technique ● Asthma control (Asthma control questionnaire, lower=better) ● Symptom score (Awakenings pr night, lower=better) ● QoL ● symptom free days *Dichotomous*: ● Correct use od devices ● Adherence to treatment regime
Identification	**Country:** The Netherlands
Notes	**Baseline characteristics:** *Henning Keinke Andersen* Age reported as year (range): Con (usual care) 13.8 (12-17) N=44, and exp (IBSM) 13.4 (12-17) N=46I have inserted the very rough estimated SD - as one fourth of the range interval.Information on duration of Asthma years at baseline not provided

	Continuous outcomes: *Henning Keinke Andersen* ISBM group: ACQ Longests FU (12 months) change: mean value -0.46 - FU (3months) change: -0.33Control group: ACQ Longests FU (12 months) change: mean value -0.41 - FU (3months) change: -0.01Symptom free days calculated from percentages to days, assumption 365 days for 12 months

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	
Allocation concealment (selection bias)	Low risk	
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	Low risk	
Selective reporting (reporting bias)	Low risk	
Other bias	Low risk	

Seid 2010

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group **Open Label:** YES
Participants	**Baseline Characteristics** Intervention: education children+caregiver (CC) Control: no education Intervention: education caregivers + child (PST)
Interventions	**Intervention Characteristics** Intervention: education children+caregiver (CC) ● *Description*: ● *Duration (weeks)*: 6

	● *Follow up (weeks)*: 9 mounth Control: no education ● *Description*: ● *Duration (weeks)*: 6 ● *Follow up (weeks)*: 9 mounth Intervention: education caregivers + child (PST) ● *Description*: ● *Duration (weeks)*: 6 ● *Follow up (weeks)*: 9 mounth
Outcomes	*Continuous*: ● Total PAQLQ ● QoL (PAQLQ) ● Symptom score ● Inhalation-technique score ● Daily adherence score ● Hospitalizations ● Asthma control score ● ED visits ● QoL (AQLQ) ● no of night symptoms/awakenings ● no. of school days missed *Dichotomous*: ● ED visits ● Hospital admissions ● ED visits ● Hospital admissions
Identification	**Sponsorship source:** This research was supported by a grant from the Maternaland Child Health Bureau of the Health Resources andServices Administration (R40 MC01214/08044). Thefunder had no role in the design nor conduct of thestudy, in the collection, analysis, nor interpretation ofthe data, nor in the preparation, review, nor approval ofthe manuscript. The principal investigator had full accessto all the data in the study and takes responsibility for theintegrity of

	the data and the accuracy of the data analysis.Conflict of Interest: Dr Varni holds the copyright and thetrademark for the PedsQL and receives financial compensationfrom the Mapi Research Trust, which is a non-profitresearch institute that charges distribution fees to for-profitcompanies that use the Pediatric Quality of LifeInventoryTM. **Authors name:** Seid, 2010
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	
Allocation concealment (selection bias)	Low risk	
Blinding of participants and personnel (performance bias)	Unclear risk	Unclear
Blinding of outcome assessment (detection bias)	Low risk	
Incomplete outcome data (attrition bias)	High risk	
Selective reporting (reporting bias)	Unclear risk	Unclear
Other bias	High risk	

Shames 2004

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Unclear
Allocation concealment (selection bias)	Unclear risk	Unclear
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	Unclear risk	Unclear
Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

Smith 2004

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Unclear
Allocation concealment (selection bias)	Low risk	
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	

Incomplete outcome data (attrition bias)	Low risk	
Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

Smith 2006

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	
Allocation concealment (selection bias)	Unclear risk	Unclear
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	High risk	
Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

Sockrider 2006

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Unclear
Allocation concealment (selection bias)	Unclear risk	Unclear
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	High risk	
Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

Stevens 2002

Methods	
Participants	
Interventions	
Outcomes	
Identification	

Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Unclear
Allocation concealment (selection bias)	Low risk	
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	Unclear risk	Unclear
Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

Talabere 1993

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	
Allocation concealment (selection bias)	High risk	
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	Low risk	
Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

Teach 2006

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	
Allocation concealment (selection bias)	Low risk	
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	Unclear risk	Unclear

Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

Walders 2006

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Unclear
Allocation concealment (selection bias)	Unclear risk	Unclear
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	Unclear risk	Unclear
Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

Wesseldine 1999

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	
Allocation concealment (selection bias)	Low risk	
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	Low risk	
Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

Wilson 2001

Methods	
Participants	
Interventions	
Outcomes	
Identification	

Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Unclear
Allocation concealment (selection bias)	Unclear risk	Unclear
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	Low risk	
Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

Zarei 2013

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group **Open Label:** YES
Participants	**Baseline Characteristics** Structured patient education ● *Mean age (SD)*: 13.8 (2.3) ● *Male(female), N*: 18 (12), 30 ● *Mean duration of asthma in years (SD)*: 4.43 (3.2) Control ● *Mean age (SD)*: 14.4 (2.4) ● *Male(female), N*: 14 (16), 30 ● *Mean duration of asthma in years (SD)*: 4.0 (3.0) **Included criteria:** The inclusion criteria of the study were adolescents of 12 to 18 years of age, diagnosed with asthma a year or more earlier, resident of Tabriz, moderate and severe asthma diagnosed by a physician and literacy.

	Excluded criteria: The exclusion criteria included other acute illnesses, gastroesophageal reflux, rhinitis, sinusitis and mental problems.
Interventions	**Intervention Characteristics** Structured patient education ● *Description*: The intervention consisted of four sessions on the asthma triggers and their types, methods of determining triggers, and methods of control and avoidance of triggers through lectures, discussion, and questions and answers using slides and educational booklets. During the additional session, the asthma triggers of each adolescent in the experimental group were individually identified and the necessary measures tocontrol it were planned with the adolescents' partnership. During each session, there was a20-30 minute lecture and 10-15 minutes of discussion and answering of questions. ● *Duration in weeks*: Apparently, it is a one-day event. ● *Lenght of follow up*: 5 weeks Control ● *Description*: Control participants of this study had routine treatment and interventions, and were giventhe educational booklet. identification form ● *Duration in weeks*: 0 ● *Lenght of follow up*: 5 weeks
Outcomes	*Continuous*: ● Asthma control score (lower=better) *Dichotomous*: ● Correct use od devices ● Adherence to treatment regime
Identification	**Country:** Iran **Authors name:** Leila Valizadeh
Notes	**Baseline characteristics:** *Henning Keinke Andersen* Girls: exp (40.0%) - con (53.3%)Boys: exp (60.0%) - con (46.7%) **Continuous outcomes:**

	Henning Keinke Andersen change value for exp gr pre-post IV is -0.67 (0.57)

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	High risk	
Allocation concealment (selection bias)	Unclear risk	Unclear
Blinding of participants and personnel (performance bias)	High risk	
Blinding of outcome assessment (detection bias)	Unclear risk	Unclear
Incomplete outcome data (attrition bias)	Low risk	
Selective reporting (reporting bias)	Low risk	
Other bias	Low risk	

Footnotes

Characteristics of excluded studies

Alsheyab 2012

Reason for exclusion	Wrong intervention

Bowen 2013

Reason for exclusion	Wrong setting

Bozorgzad 2013

Reason for exclusion	Wrong intervention

Carpenter 2014

Reason for exclusion	Wrong intervention

Clarke 2014

Reason for exclusion	Wrong study design

Damon 2014

Reason for exclusion	Wrong intervention

Huang 2013

Reason for exclusion	abstract for poster

Joseph 2013

Reason for exclusion	Wrong setting

Nelson 2012

Reason for exclusion	Wrong outcomes

Rhee 2012

Reason for exclusion	Wrong outcomes

Srof 2012

Reason for exclusion	Wrong setting

Terpstra 2012

Reason for exclusion	Wrong outcomes

Valizadeh 2013

Reason for exclusion	wrong language

Zuniga 2012

Reason for exclusion	Wrong study design

Footnotes

Characteristics of studies awaiting classification

Footnotes

Characteristics of ongoing studies

Footnotes

References to studies

Included studies

Alexander 1988

[Empty]

Becker 2003

[Empty]

Brown 2002

[Empty]

Butz 2006

[Empty]

Cano Garcinuno 2007

[Empty]

Charlton 1994

[Empty]

Chen 2013

Chen,S. -H; Huang,J. -L; Yeh,K. -W; Tsai,Y. -F. Interactive support interventions for caregivers of asthmatic children.. Journal of Asthma 2013;50(6):649-657. [DOI: http://dx.doi.org/10.3109/02770903.2013.794236]

Cicutto 2005

[Empty]

Cicutto 2013

Cicutto L.; To T.; Murphy S.. A randomized controlled trial of a public health nurse-delivered asthma program to elementary schools.. The Journal of school health 2013;83(12):876-84. [DOI: 10.1111/josh.12106]

Clark 1986

[Empty]

Couriel 1999

[Empty]

Cowie 2002

[Empty]

Duncan 2013

Duncan CL.; Hogan MB.; Tien KJ.; Graves MM.; Chorney JM.; Zettler MD.; Koven L.; Wilson NW.; Dinakar C.; Portnoy J.. Efficacy of a parent-youth teamwork intervention to promote adherence in pediatric asthma.. Journal of pediatric psychology 2013;38(6):617-28. [DOI: 10.1093/jpepsy/jss123]

Farber 2004

[Empty]

Fisher 2009

[Empty]

Galbreath 2008

[Empty]

Garrett 1994

[Empty]

Gorelick 2006

[Empty]

Greineder 1999

[Empty]

Gustafson 2012

Gustafson,David; Wise,Meg; Bhattacharya,Abhik; Pulvermacher,Alice; Shanovich,Kathleen; Phillips,Brenda; Lehman,Erik; Chinchilli,Vernon; Hawkins,Robert; Kim,JeeSeon. The effects of combining web-based eHealth with telephone nurse case management for pediatric asthma control: A randomized controlled trial.. Journal of Medical Internet Research 2012;14(4):41-59. [DOI: http://dx.doi.org/10.2196/jmir.1964]

Harish 2001

[Empty]

Indinnimeo 2009

[Empty]

Joseph 2007

[Empty]

Kamps 2008

[Empty]

Karnick 2007

[Empty]

Kelly 2000

[Empty]

Khan 2004

[Empty]

Madge 1997

[Empty]

McGhan 2010

McGhan,S. L.; Wong,E.; Sharpe,H. M.; Hessel,P. A.; Mandhane,P.; Boechler,V. L.; Majaesic,C.; Befus,A. D.. A children's asthma education program: Roaring Adventures of Puff (RAP), improves quality of life.. Canadian Respiratory Journal 2010;17(2):67-73. [DOI:]

McNabb 1985

[Empty]

Mitchell 1986

[Empty]

Mosnaim 2011

Mosnaim GS.; Li H.; Damitz M.; Sharp LK.; Li Z.; Talati A.; Mirza F.; Richardson D.; Rachelefsky G.; Africk J.; Powell LH.. Evaluation of the Fight Asthma Now (FAN) program to improve asthma knowledge in urban youth and teenagers.. Annals of allergy, asthma & immunology : official publication of the American College of Allergy, Asthma, & Immunology 2011;107(4):310-6. [DOI: 10.1016/j.anai.2011.07.008]

NCICAS

[Empty]

Ng 2006

[Empty]

Otsuki 2009

[Empty]

Rikkers Mutsaerts 2012

Rikkers-Mutsaerts,E. R. V. M.; Winters,A. E.; Bakker,M. J.; Van Stel,H. F.; Van Der Meer,V.; De Jongste,J. C.; Sont,J. K.. Internet-based self-management compared with usual care in adolescents with asthma: A randomized controlled trial.. Pediatric pulmonology 2012;47(12):1170-1179. [DOI: http://dx.doi.org/10.1002/ppul.22575]

Seid 2010

[Empty]

Shames 2004

[Empty]

Smith 2004

[Empty]

Smith 2006

[Empty]

Sockrider 2006

[Empty]

Stevens 2002

[Empty]

Talabere 1993

[Empty]

Teach 2006

[Empty]

Walders 2006

[Empty]

Wesseldine 1999

[Empty]

Wilson 2001

[Empty]

Zarei 2013

Zarei,Soheila; Valizadeh,Leila; Bilan,Nemat. The Effect of Educational and Modifying Intervention on Asthma Control among Adolescents: a Randomized Clinical Trial. Journal of caring sciences 2013;2(1):73-82. [DOI: 10.5681/jcs.2013.009]

Excluded studies

Alsheyab 2012

Alsheyab,Nihaya; Gallagher,Robyn; Crisp,Jackie; Shah,Smita. Peer-led education for adolescents with asthma in Jordan: A cluster-randomized controlled trial.. Pediatrics 2012;129(1):e106-e112. [DOI: http://dx.doi.org/10.1542/peds.2011-0346]

Bowen 2013

Bowen F.. Asthma education and health outcomes of children aged 8 to 12 years.. Clinical nursing research 2013;22(2):172-85. [DOI: 10.1177/1054773812461914]

Bozorgzad 2013

Bozorgzad P.; Ebadi A.; Moin M.; Sarhangy F.; Nasiripour S.; Soleimani MA.. The effect of educating the use of spray by visual concept mapping method on the quality of life of children with asthma.. Iranian journal of allergy, asthma, and immunology 2013;12(1):63-7. [DOI: 012.01/ijaai.6367]

Carpenter 2014

Carpenter,D.; Geryk,L.; Blalock,S.; Lee,C.; Weaver,M.; Reuland,D.; Coyne-Beasley,T.; Loughlin,C.; Sleath,B.. Using videos to improve children's inhaler technique: A randomized controlled trial.. Journal of the American Pharmacists Association 2014;54(2):e99-e100. [DOI: http://dx.doi.org/10.1331/JAPhA.2014.14511]

Clarke 2014

Clarke,S. -A; Calam,R.; Morawska,A.; Sanders,M.. Developing web-based Triple P ' Positive Parenting Programme' for families of children with asthma. Child: Care, Health & Development 2014;40(4):492-497. [DOI: 10.1111/cch.12073]

Damon 2014

Damon,Scott A.; Tardif,Richard R.. Asthma education: different viewpoints elicited by qualitative and quantitative methods. J Asthma 2014;(Journal Article):1-4. [DOI: 10.3109/02770903.2014.966112]

Huang 2013

Huang,J. -L; Chen,S. -H; Yeh,K. -W. Health outcomes, education, healthcare delivery and quality-3056. Constructed supporting program improves asthma treatment outcomes in children.. World Allergy Organization Journal 2013;6(Journal Article). [DOI:]

Joseph 2013

Joseph,Christine, L.M.; Ownby,Dennis, R.; Havstad,Suzanne, L.; Saltzgaber,Jacqueline; Considine,Shannon; Johnson,Dayna; Peterson,Ed; Alexander,Gwen; Lu,Mei; Gibson-Scipio,Wanda; Johnson,Christine, Cole. Evaluation of a Web-Based Asthma Management Intervention Program for Urban Teenagers: Reaching the Hard to Reach. Journal of Adolescent Health 2013;52(4):419-426. [DOI: 10.1016/j.jadohealth.2012.07.009]

Nelson 2012

Nelson KA.; Highstein G.; Garbutt J.; Trinkaus K.; Smith SR.; Strunk RC.. Factors associated with attaining coaching goals during an intervention to improve child asthma care.. Contemporary clinical trials 2012;33(5):912-9. [DOI: 10.1016/j.cct.2012.05.012]

Rhee 2012

Rhee, H.; McQuillan, B. E.; Belyea, M. J.. Evaluation of a peer-led asthma self-management program and benefits of the program for adolescent peer leaders. Respiratory Care 2012;57(12):2082-2089. [DOI: 10.4187/respcare.01488]

Srof 2012

Srof BJ.; Velsor-Friedrich B.; Penckofer S.. The effects of coping skills training among teens with asthma.. Western journal of nursing research 2012;34(8):1043-61. [DOI: 10.1177/0193945911406290]

Terpstra 2012

Terpstra JL.; Chavez LJ.; Ayala GX.. An intervention to increase caregiver support for asthma management in middle school-aged youth.. The Journal of asthma : official journal of the Association for the Care of Asthma 2012;49(3):267-74. [DOI: 10.3109/02770903.2012.656866]

Valizadeh 2013

Valizadeh,L.; Bilan,N.; Zarei,S.; Sharifi,A.. Effect of education and controlling asthma triggers on quality of life among adolescents with asthma: A randomized clinical trial.. Journal of Mazandaran University of Medical Sciences 2013;23(98):48-57. [DOI:]

Zuniga 2012

Zuniga,Genny Carrillo; Kirk,Sarah; Mier,Nelda; Garza,Norma I.; Lucio,Rose L.; Zuniga,Miguel A.. The impact of asthma health education for parents of children attending Head Start centers.. Journal of Community Health: The Publication for Health Promotion and Disease Prevention 2012;37(6):1296-1300. [DOI: http://dx.doi.org/10.1007/s10900-012-9571-y]

Other references

Additional references

Other published versions of this review

Classification pending references

Data and analyses

1 Structured patient education vs Control

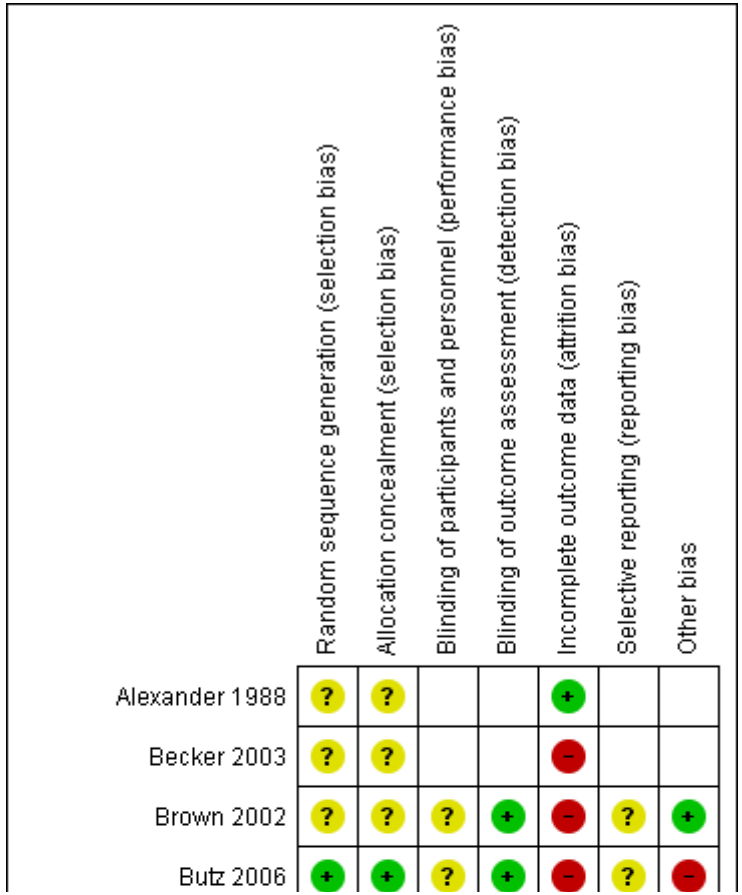
Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
1.1 Asthma control questionnaire (lower=better)	3		Mean Difference (IV, Random, 95% CI)	Subtotals only
1.1.1 End of treatment	2	136	Mean Difference (IV, Random, 95% CI)	-0.89 [-2.00, 0.23]
1.1.2 Longest FU	2	318	Mean Difference (IV, Random, 95% CI)	-0.19 [-0.45, 0.06]
1.2 Asthma Control Questtionnaire, mellemregning	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
1.2.2 Longest FU	1	60	Mean Difference (IV, Random, 95% CI)	-1.46 [-1.77, -1.15]
1.4 Hospital admissions	24		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
1.4.1 End of treatment	4	872	Risk Ratio (M-H, Random, 95% CI)	1.09 [0.71, 1.67]
1.4.2 Longest FU	23	4929	Risk Ratio (M-H, Random, 95% CI)	0.75 [0.59, 0.95]

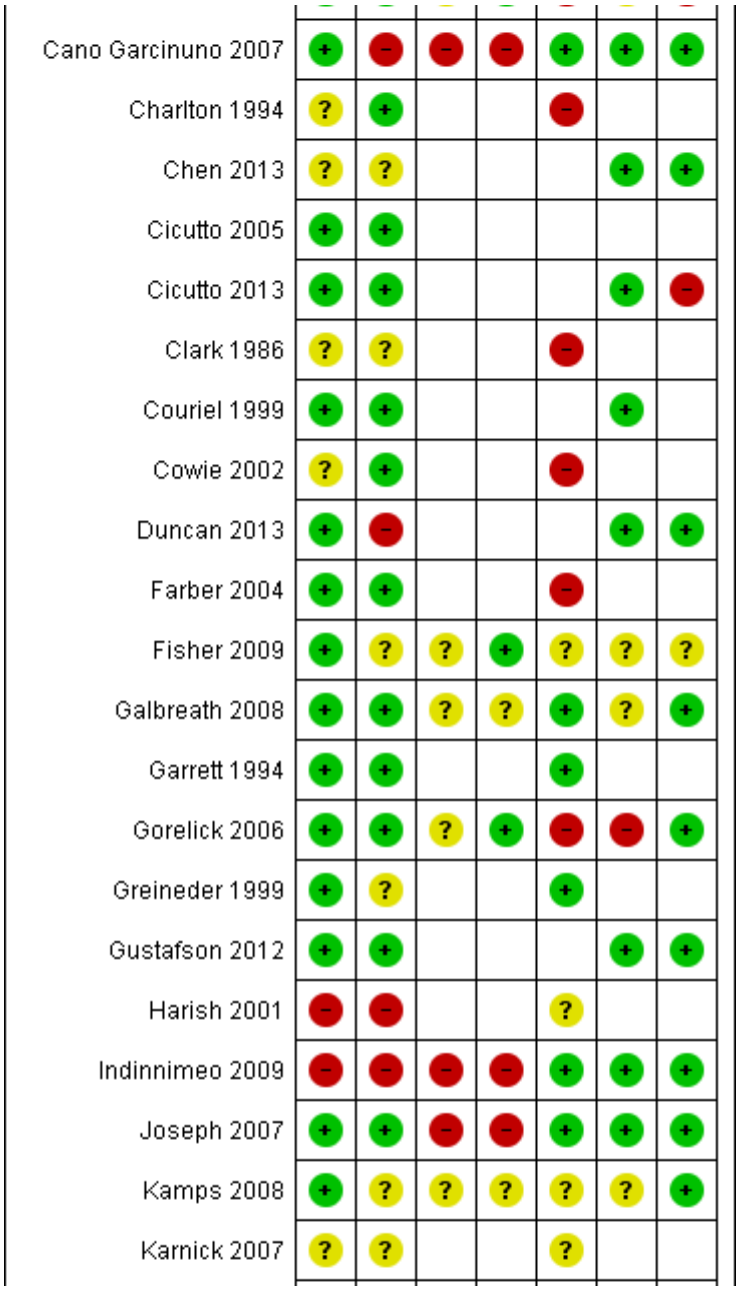
1.8 symptom nights (14 days period)	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
1.8.1 Longest FU (12 month))	2	370	Mean Difference (IV, Random, 95% CI)	-0.62 [-1.14, -0.10]
1.9 inhaler technique (0 to 5, higher=better))	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
1.9.1 End of treatment (final value)	1	1303	Mean Difference (IV, Random, 95% CI)	1.50 [1.38, 1.62]
1.9.2 Longest FU (final value)	1	1303	Mean Difference (IV, Random, 95% CI)	0.90 [0.77, 1.03]
1.11 Quality of life	12		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
1.11.1 End of treatment	6	1015	Std. Mean Difference (IV, Random, 95% CI)	0.11 [-0.03, 0.26]
1.11.2 Longest FU	11	3165	Std. Mean Difference (IV, Random, 95% CI)	0.17 [0.03, 0.31]
1.13 Children with any school absenteeism	4		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
1.13.1 End of treatment	2	471	Risk Ratio (M-H, Random, 95% CI)	0.61 [0.44, 0.83]
1.13.2 Longest FU (6 to 12 month)	3	1937	Risk Ratio (M-H, Random, 95% CI)	0.91 [0.72, 1.16]
1.15 Asthma control, interrupted daily activity due to asthma	1	1303	Risk Ratio (M-H, Fixed, 95% CI)	0.81 [0.74, 0.89]
1.16 Emergency department visits	22		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
1.16.1 End of treatment	1	204	Risk Ratio (M-H, Random, 95% CI)	0.91 [0.39, 2.08]
1.16.2 Longest FU	22	5152	Risk Ratio (M-H, Random, 95% CI)	0.74 [0.61, 0.90]
1.17 Composite adherence score in %, change, 12 month FU	1	218	Mean Difference (IV, Fixed, 95% CI)	-1.48 [-11.11, 8.15]
1.18 Mean exacerbations requiring a course of oral corticosteroids	1	250	Mean Difference (IV, Fixed, 95% CI)	-0.72 [-1.51, 0.07]
1.18.2 Mean exacerbations between 12 and 18 months from baseline	1	250	Mean Difference (IV, Fixed, 95% CI)	-0.72 [-1.51, 0.07]

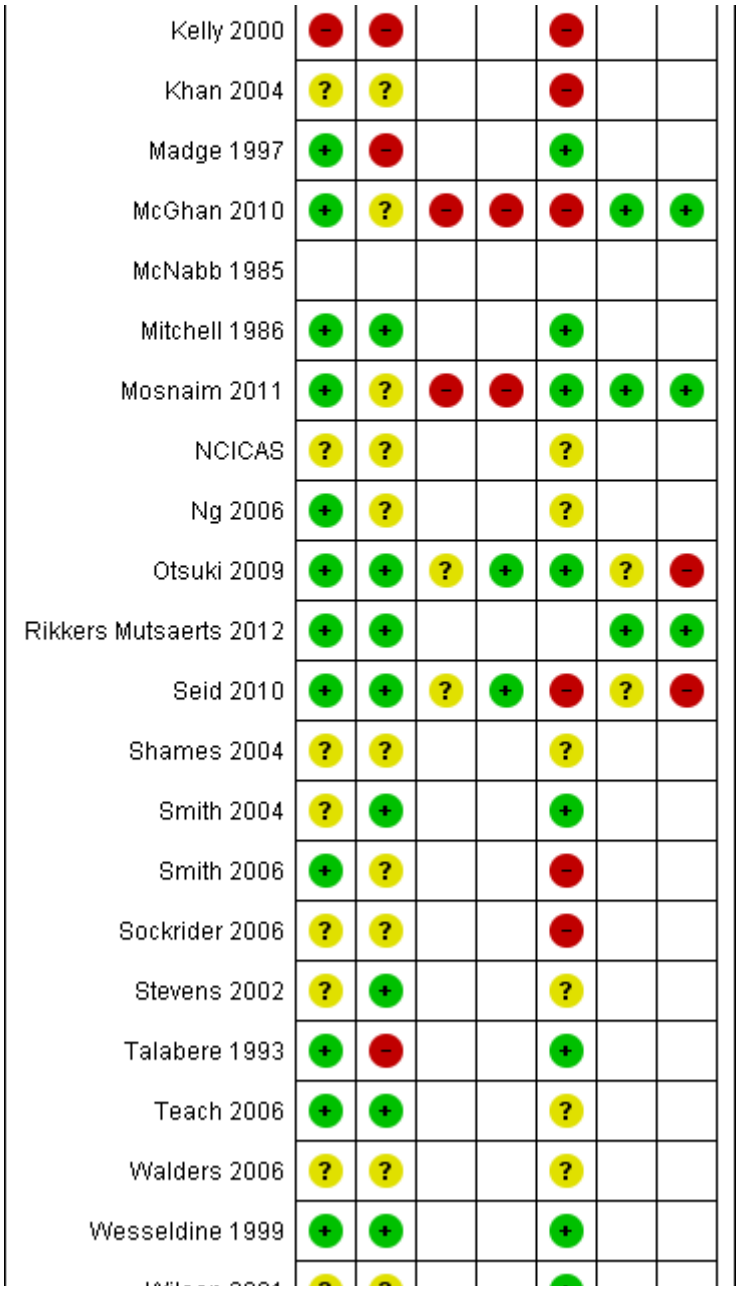
1.19 Asthma symptoms	3		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
1.19.1 End of treatment	3	588	Std. Mean Difference (IV, Random, 95% CI)	-0.03 [-0.20, 0.13]
1.19.2 Longest FU (9 to 18 month)	3	592	Std. Mean Difference (IV, Random, 95% CI)	0.01 [-0.16, 0.17]
1.20 Rescue medication use (puffs/d)	1	62	Mean Difference (IV, Fixed, 95% CI)	-1.00 [-2.20, 0.20]

Figures

Figure 1

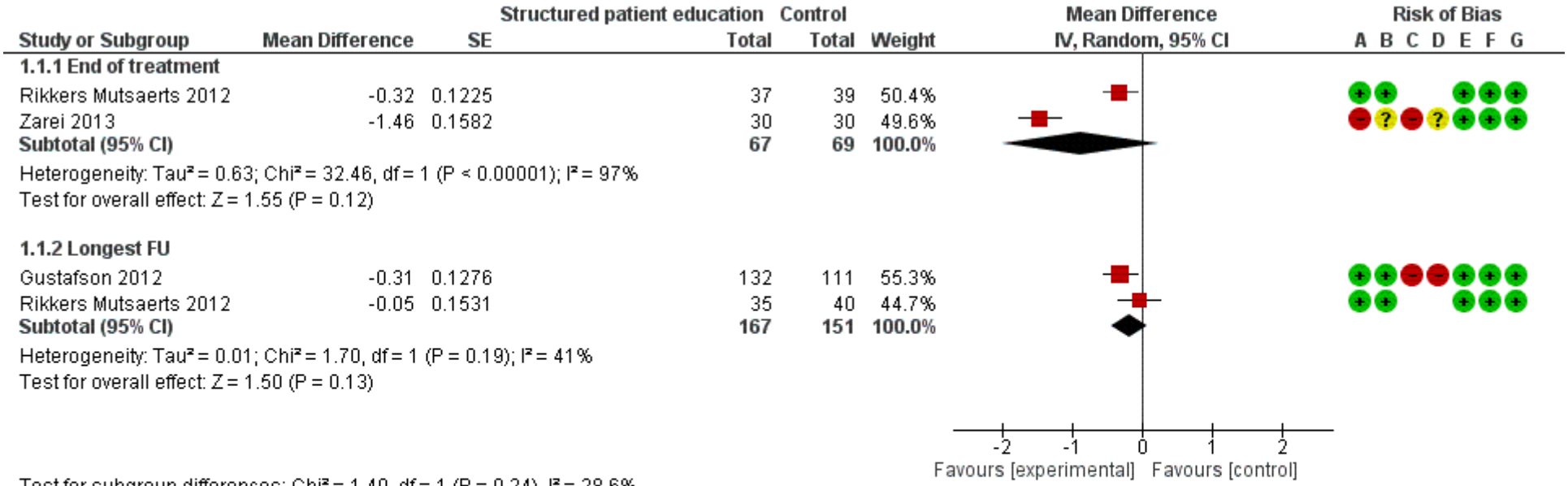



Cano Garcinuno 2007
Charlton 1994
Chen 2013
Cicutto 2005
Cicutto 2013
Clark 1986
Couriel 1999
Cowie 2002
Duncan 2013
Farber 2004
Fisher 2009
Galbreath 2008
Garrett 1994
Gorelick 2006
Greineder 1999
Gustafson 2012
Harish 2001
Indinnimeo 2009
Joseph 2007
Kamps 2008
Karnick 2007


Kelly 2000
Khan 2004
Madge 1997
McGhan 2010
McNabb 1985
Mitchell 1986
Mosnaim 2011
NCICAS
Ng 2006
Otsuki 2009
Rikkers Mutsaerts 2012
Seid 2010
Shames 2004
Smith 2004
Smith 2006
Sockrider 2006
Stevens 2002
Talabere 1993
Teach 2006
Walders 2006
Wesseldine 1999

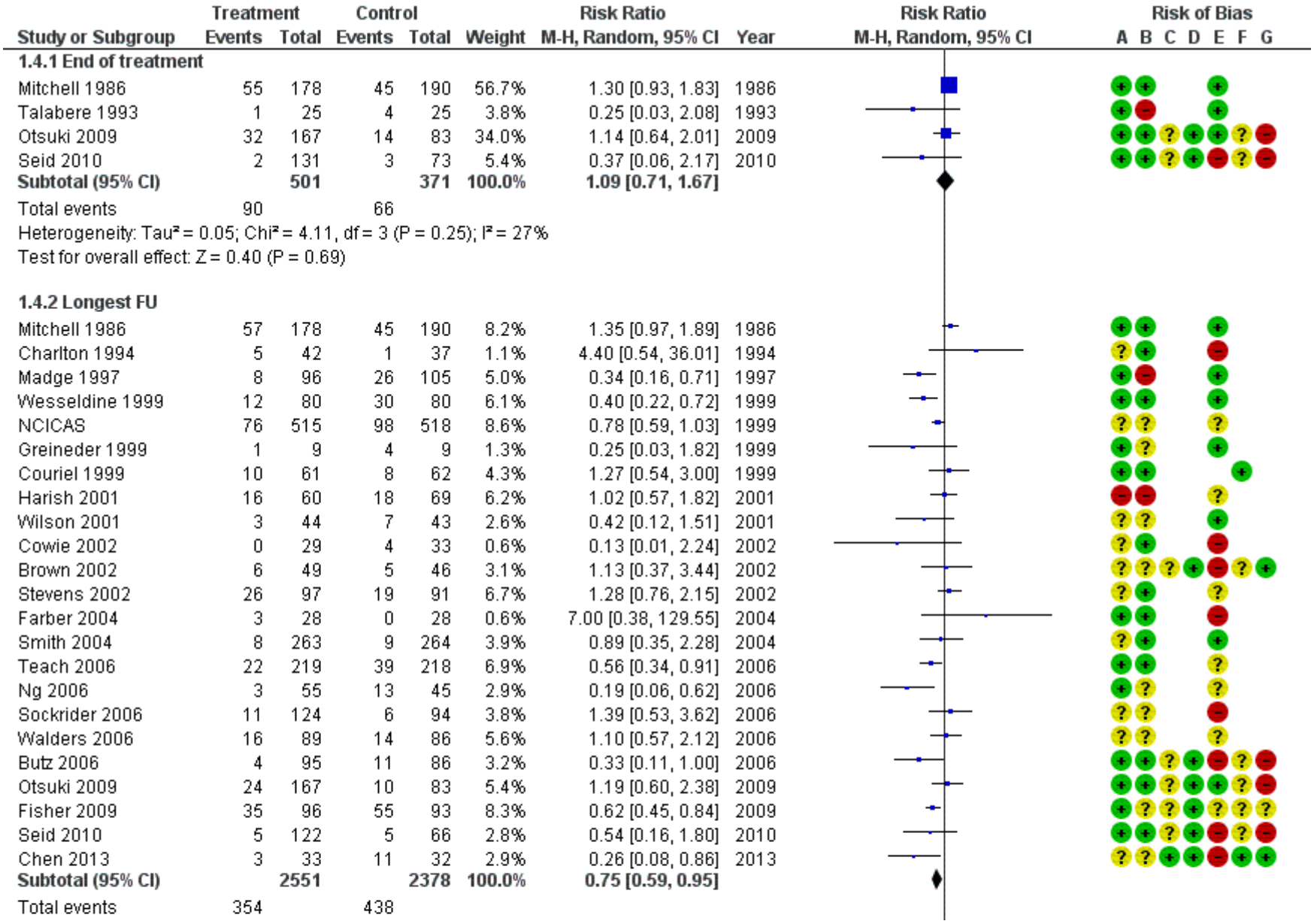
Risk of bias summary: review authors' judgements about each risk of bias item for each included study.

Figure 2 (Analysis 1.1)

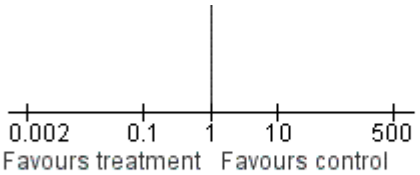


Forest plot of comparison: 1 Structured patient education vs Control, outcome: 1.1 Asthma control questionnaire (lower=better).

Figure 4 (Analysis 1.4)



Heterogeneity: Tau² = 0.15; Chi² = 54.12, df = 22 (P = 0.0002); I² = 59%
Test for overall effect: Z = 2.41 (P = 0.02)

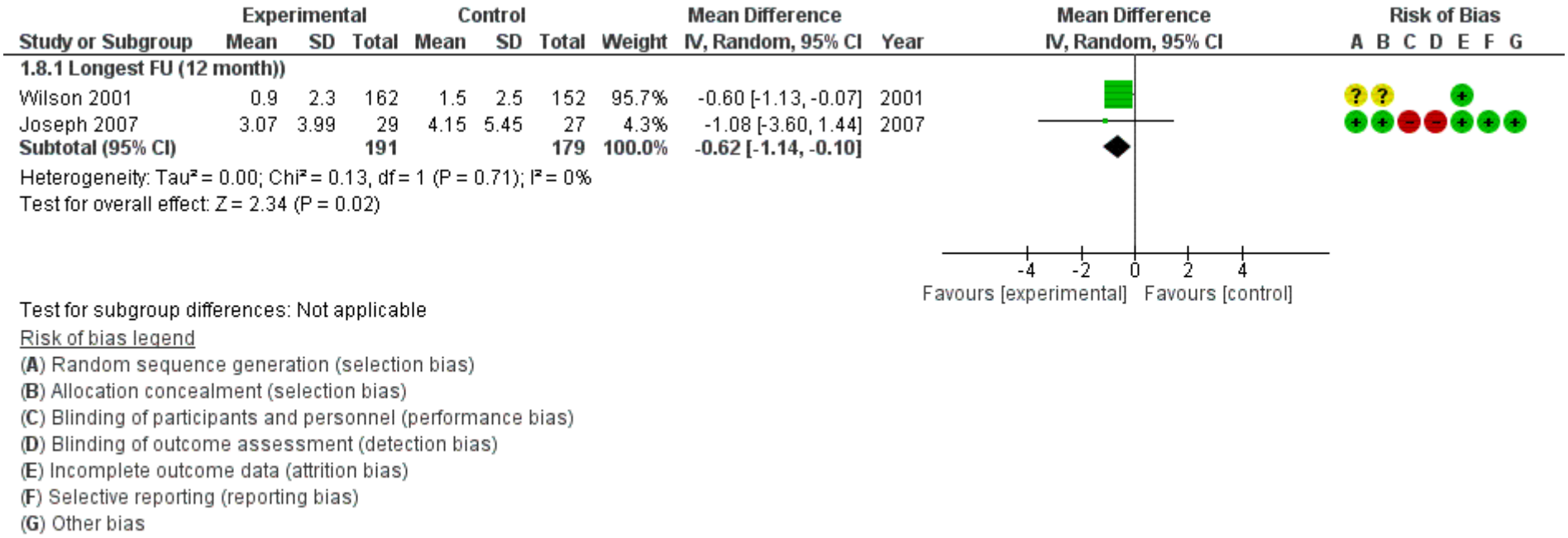


Test for subgroup differences: Chi² = 2.35, df = 1 (P = 0.13), I² = 57.4%

Risk of bias legend
(**A**) Random sequence generation (selection bias)
(**B**) Allocation concealment (selection bias)
(**C**) Blinding of participants and personnel (performance bias)
(**D**) Blinding of outcome assessment (detection bias)
(**E**) Incomplete outcome data (attrition bias)
(**F**) Selective reporting (reporting bias)
(**G**) Other bias

Forest plot of comparison: 1 Structured patient education vs Control, outcome: 1.4 Hospital admissions.

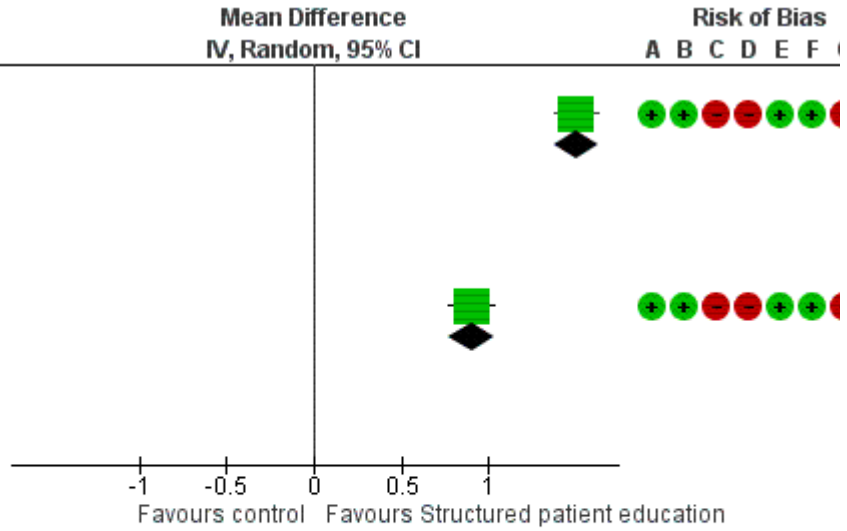
Figure 8 (Analysis 1.8)



Forest plot of comparison: 1 Structured patient education vs Control, outcome: 1.8 symptom nights (14 days period).

Figure 9 (Analysis 1.9)

Study or Subgroup	Structured patient education Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
1.9.1 End of treatment (final value)								
Cicutto 2013	4	1	686	2.5	1.2	617	100.0%	1.50 [1.38, 1.62]
Subtotal (95% CI)			**686**			**617**	**100.0%**	**1.50 [1.38, 1.62]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 24.36 (P < 0.00001)								
1.9.2 Longest FU (final value)								
Cicutto 2013	3.4	1.2	686	2.5	1.2	617	100.0%	0.90 [0.77, 1.03]
Subtotal (95% CI)			**686**			**617**	**100.0%**	**0.90 [0.77, 1.03]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 13.52 (P < 0.00001)								



Test for subgroup differences: Chi² = 43.77, df = 1 (P < 0.00001), I² = 97.7%

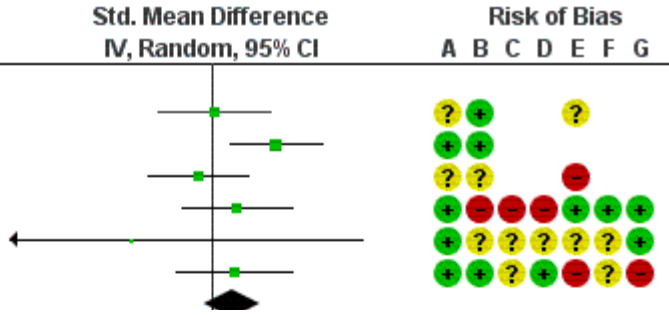
Risk of bias legend

(**A**) Random sequence generation (selection bias)
(**B**) Allocation concealment (selection bias)
(**C**) Blinding of participants and personnel (performance bias)
(**D**) Blinding of outcome assessment (detection bias)
(**E**) Incomplete outcome data (attrition bias)
(**F**) Selective reporting (reporting bias)
(**G**) Other bias

Forest plot of comparison: 1 Structured patient education vs Control, outcome: 1.9 inhaler technique (0 to 5, higher=better)).

Figure 10 (Analysis 1.11)

Study or Subgroup	Treatment Mean	SD	Total	Control Mean	SD	Total	Weight	Std. Mean Difference IV, Random, 95% CI	Year
1.11.1 End of treatment									
Stevens 2002	5.41	1.34	81	5.38	1.39	81	17.9%	0.02 [-0.29, 0.33]	2002
Cicutto 2005	5.5	1.4	123	5	1.4	124	24.0%	0.36 [0.10, 0.61]	2005
Sockrider 2006	78.8	23.7	121	80.4	20.4	93	21.7%	-0.07 [-0.34, 0.20]	2006
Cano Garcinuno 2007	6.2335	0.997	167	6.09	1.09	56	18.4%	0.14 [-0.16, 0.44]	2007
Kamps 2008	86.67	12.64	5	93.33	14.91	5	1.4%	-0.44 [-1.70, 0.83]	2008
Seid 2010	78.2149	14.5133	101	76.3	15.7	58	16.6%	0.13 [-0.20, 0.45]	2010
Subtotal (95% CI)			**598**			**417**	**100.0%**	**0.11 [-0.03, 0.26]**	

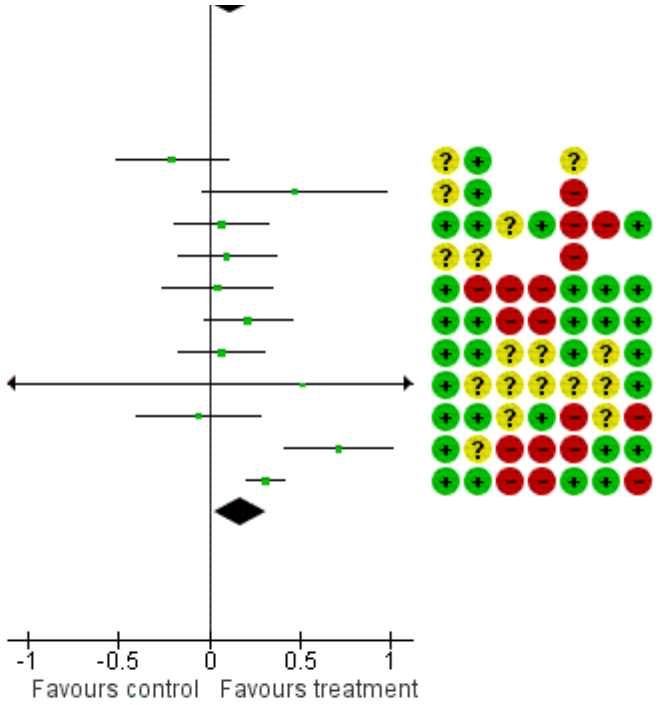


Heterogeneity: Tau² = 0.01; Chi² = 6.46, df = 5 (P = 0.26); I² = 23%
Test for overall effect: Z = 1.50 (P = 0.13)

1.11.2 Longest FU

Stevens 2002	5.45	1.45	81	5.73	1.28	81	9.2%	-0.20 [-0.51, 0.11]	2002
Cowie 2002	5.8	1.1	29	5.2	1.4	33	5.3%	0.47 [-0.04, 0.97]	2002
Gorelick 2006	77.7	23.4	81	76.1284	23.363	194	10.5%	0.07 [-0.19, 0.33]	2006
Sockrider 2006	77.1	21.8	124	74.9	23.4	94	10.3%	0.10 [-0.17, 0.37]	2006
Cano Garcinuno 2007	6.3363	0.9548	167	6.29	0.89	56	9.3%	0.05 [-0.25, 0.35]	2007
Joseph 2007	5.3	1.3	139	5	1.5	134	11.1%	0.21 [-0.02, 0.45]	2007
Galbreath 2008	5.6969	1.4	194	5.6	1.4	107	11.2%	0.07 [-0.17, 0.31]	2008
Kamps 2008	100	0.1	2	97.22	4.81	3	0.5%	0.51 [-1.40, 2.43]	2008
Seid 2010	81.0358	17.1423	95	82	14.6	51	8.4%	-0.06 [-0.40, 0.28]	2010
McGhan 2010	5.9	1.4	71	4.9	1.4	126	9.4%	0.71 [0.41, 1.01]	2010
Cicutto 2013	5.8	1.2	686	5.4	1.4	617	14.8%	0.31 [0.20, 0.42]	2013
Subtotal (95% CI)			**1669**			**1496**	**100.0%**	**0.17 [0.03, 0.31]**	

Heterogeneity: Tau² = 0.03; Chi² = 28.53, df = 10 (P = 0.001); I² = 65%
Test for overall effect: Z = 2.34 (P = 0.02)

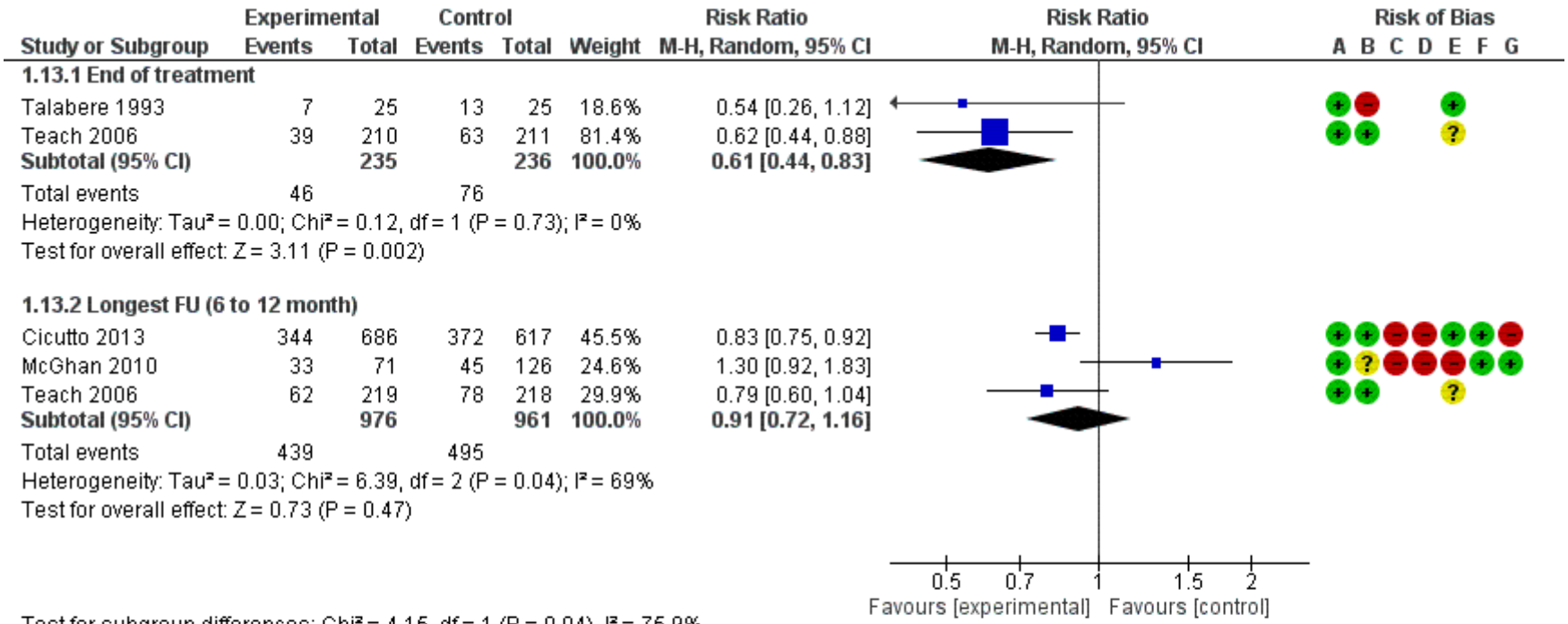


Test for subgroup differences: Chi² = 0.27, df = 1 (P = 0.60), I² = 0%

Risk of bias legend
(**A**) Random sequence generation (selection bias)
(**B**) Allocation concealment (selection bias)
(**C**) Blinding of participants and personnel (performance bias)
(**D**) Blinding of outcome assessment (detection bias)
(**E**) Incomplete outcome data (attrition bias)
(**F**) Selective reporting (reporting bias)
(**G**) Other bias

Forest plot of comparison: 1 Structured patient education vs Control, outcome: 1.11 Quality of life.

Figure 11 (Analysis 1.13)



Test for subgroup differences: Chi² = 4.15, df = 1 (P = 0.04), I² = 75.9%

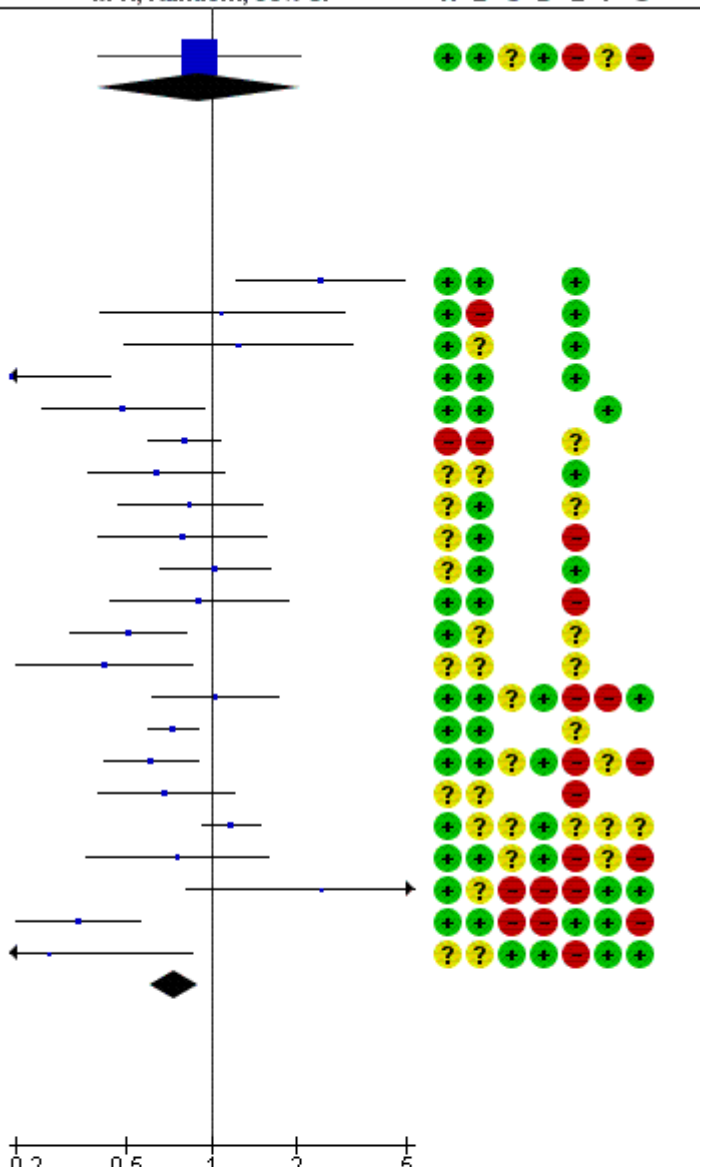
Risk of bias legend

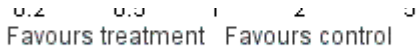
(**A**) Random sequence generation (selection bias)
(**B**) Allocation concealment (selection bias)
(**C**) Blinding of participants and personnel (performance bias)
(**D**) Blinding of outcome assessment (detection bias)
(**E**) Incomplete outcome data (attrition bias)
(**F**) Selective reporting (reporting bias)
(**G**) Other bias

Forest plot of comparison: 1 Structured patient education vs Control, outcome: 1.13 Children with any school absenteeism.

Figure 13 (Analysis 1.16)

Study or Subgroup	Treatment Events	Treatment Total	Control Events	Control Total	Weight	Risk Ratio M-H, Random, 95% CI	Year	Risk Ratio M-H, Random, 95% CI	Risk of Bias A B C D E F G
1.16.1 End of treatment									
Seid 2010	13	131	8	73	100.0%	0.91 [0.39, 2.08]	2010		
Subtotal (95% CI)		**131**		**73**	**100.0%**	**0.91 [0.39, 2.08]**			
Total events	13		8						
Heterogeneity: Not applicable									
Test for overall effect: Z = 0.23 (P = 0.82)									
1.16.2 Longest FU									
Mitchell 1986	26	133	10	126	4.1%	2.46 [1.24, 4.90]	1986		
Madge 1997	7	96	7	105	2.6%	1.09 [0.40, 3.00]	1997		
Greineder 1999	5	9	4	9	2.9%	1.25 [0.49, 3.19]	1999		
Wesseldine 1999	6	80	31	80	3.4%	0.19 [0.09, 0.44]	1999		
Couriel 1999	10	61	21	62	4.2%	0.48 [0.25, 0.94]	1999		
Harish 2001	32	60	46	69	6.8%	0.80 [0.60, 1.07]	2001		
Wilson 2001	13	44	20	43	4.9%	0.64 [0.36, 1.11]	2001		
Stevens 2002	17	97	19	91	4.7%	0.84 [0.47, 1.51]	2002		
Cowie 2002	9	29	13	33	4.1%	0.79 [0.40, 1.57]	2002		
Smith 2004	34	263	33	264	5.7%	1.03 [0.66, 1.62]	2004		
Farber 2004	9	28	10	28	3.8%	0.90 [0.43, 1.87]	2004		
Ng 2006	16	55	26	45	5.4%	0.50 [0.31, 0.82]	2006		
Walders 2006	9	89	21	86	3.9%	0.41 [0.20, 0.85]	2006		
Gorelick 2006	36	194	17	95	5.1%	1.04 [0.62, 1.75]	2006		
Teach 2006	88	219	120	218	7.3%	0.73 [0.60, 0.89]	2006		
Butz 2006	27	95	40	86	6.1%	0.61 [0.41, 0.90]	2006		
Sockrider 2006	19	124	21	94	4.9%	0.69 [0.39, 1.20]	2006		
Fisher 2009	61	96	50	93	7.1%	1.18 [0.93, 1.51]	2009		
Seid 2010	14	122	10	66	3.7%	0.76 [0.36, 1.61]	2010		
McGhan 2010	7	71	5	126	2.3%	2.48 [0.82, 7.54]	2010		
Cicutto 2013	19	686	51	617	5.2%	0.34 [0.20, 0.56]	2013		
Chen 2013	3	33	11	32	2.1%	0.26 [0.08, 0.86]	2013		
Subtotal (95% CI)		**2684**		**2468**	**100.0%**	**0.74 [0.61, 0.90]**			
Total events	467		586						
Heterogeneity: Tau² = 0.13; Chi² = 67.05, df = 21 (P < 0.00001); I² = 69%									
Test for overall effect: Z = 2.96 (P = 0.003)									





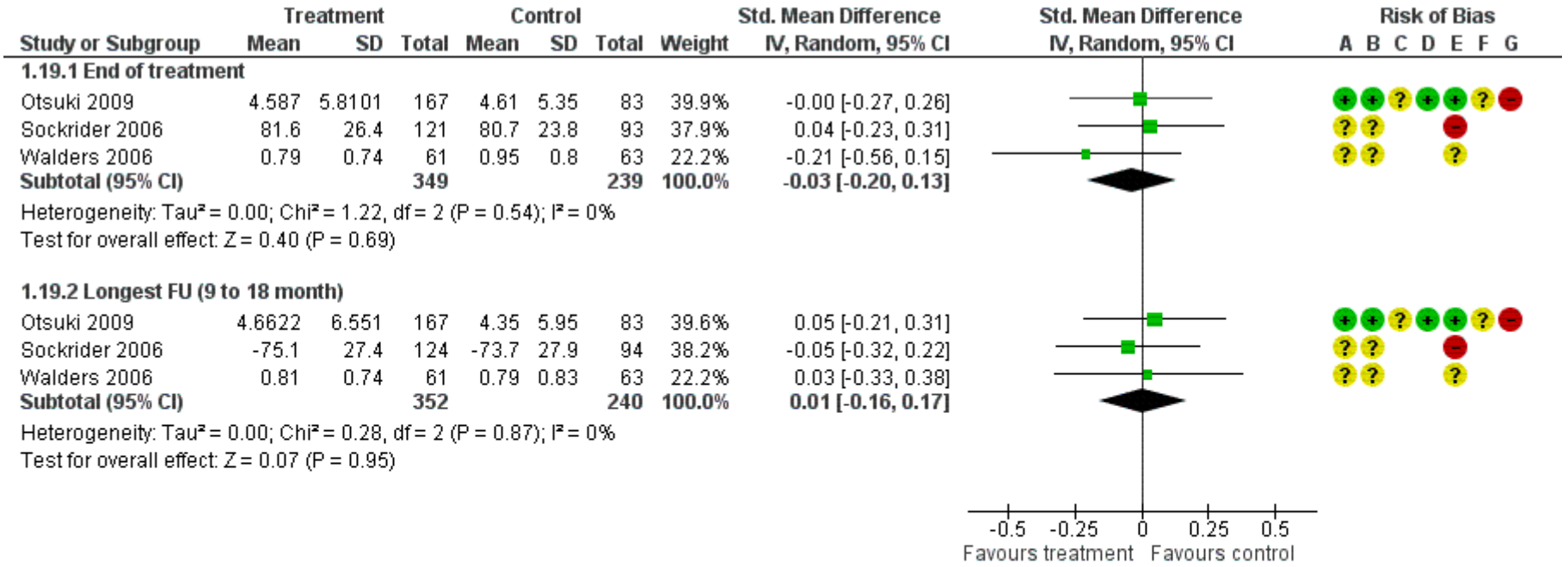
Test for subgroup differences: Chi² = 0.21, df = 1 (P = 0.64), I² = 0%

Risk of bias legend

(**A**) Random sequence generation (selection bias)
(**B**) Allocation concealment (selection bias)
(**C**) Blinding of participants and personnel (performance bias)
(**D**) Blinding of outcome assessment (detection bias)
(**E**) Incomplete outcome data (attrition bias)
(**F**) Selective reporting (reporting bias)
(**G**) Other bias

Forest plot of comparison: 1 Structured patient education vs Control, outcome: 1.16 Emergency department visits.

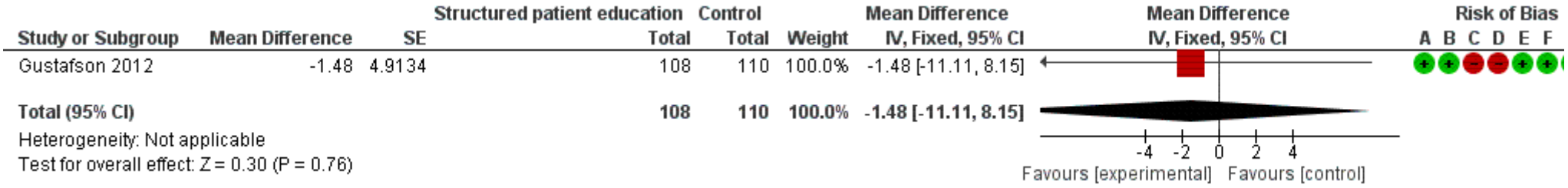
Figure 14 (Analysis 1.19)



Risk of bias legend
(**A**) Random sequence generation (selection bias)
(**B**) Allocation concealment (selection bias)
(**C**) Blinding of participants and personnel (performance bias)
(**D**) Blinding of outcome assessment (detection bias)
(**E**) Incomplete outcome data (attrition bias)
(**F**) Selective reporting (reporting bias)
(**G**) Other bias

Forest plot of comparison: 1 Structured patient education vs Control, outcome: 1.19 Asthma symptoms.

Figure 15 (Analysis 1.17)



Risk of bias legend
(**A**) Random sequence generation (selection bias)
(**B**) Allocation concealment (selection bias)
(**C**) Blinding of participants and personnel (performance bias)
(**D**) Blinding of outcome assessment (detection bias)
(**E**) Incomplete outcome data (attrition bias)
(**F**) Selective reporting (reporting bias)
(**G**) Other bias

Forest plot of comparison: 1 Structured patient education vs Control, outcome: 1.17 Composite adherence score in %, change, 12 month FU.