# TABLE OF CONTENTS

- HEADER .................................................. 1
- ABSTRACT ................................................ 1
- BACKGROUND .......................................... 1
- OBJECTIVES .......................................... 3
- METHODS ................................................ 3
- ACKNOWLEDGEMENTS .................................... 7
- REFERENCES ............................................. 7
- APPENDICES ........................................... 9
- CONTRIBUTIONS OF AUTHORS ....................... 13
- DECLARATIONS OF INTEREST .......................... 13
- SOURCES OF SUPPORT ................................. 13
This is a protocol for a Cochrane Review (Intervention). The objectives are as follows:

**Main objectives**

To determine the efficacy of psychological interventions in modifying health and behavioural outcomes in children with asthma, compared with usual treatment.

**Secondary objectives**

To compare efficacy of different types of psychological interventions for children with asthma.

To assess the comparative efficacy of individual and group formats of psychological therapy for children with asthma.

**BACKGROUND**

**Description of the condition**

Asthma is a complex and phenotypically diverse disease, characterised by chronic inflammation of the airways (GINA 2018). Though a universally-accepted definition of asthma is lacking, asthma is generally defined as “a history of respiratory symptoms such as wheeze, shortness of breath, chest tightness and cough that vary over time” (GINA 2018). Asthma contributes substantially to the global burden of disease. It is currently estimated that 300 million people worldwide experience symptoms of asthma (Masoli 2004). Countries with the highest prevalence rates include Brazil, the Netherlands, UK, Sweden, and Australia (To 2012).

Individuals with asthma may experience exacerbations of asthma symptoms or ‘attacks’; these attacks can be life-threatening, and therefore impose significant psychological burdens on patients and their communities (GINA 2018). Furthermore, asthma which is not under adequate control can increase this psychological burden (Goodwin 2013), and likewise psychological distress can trigger
or exacerbate symptoms of asthma (Van Lieshout 2008). Rates of asthma are high in children and adolescents. Current global prevalence rates indicate that 10.2% of children aged 6 to 7 years, and 11.3% of children aged 13 to 14 experience symptoms of asthma (ISAAC 1998b). The highest rates of asthma in these age groups were observed in the UK, Australia, New Zealand, and Republic of Ireland (ISAAC 1998a). Young people with asthma generally report poorer health outcomes than those without asthma (Blanchard 2014). A 2014 survey of Australians aged 12 to 25 years found that half of young people with asthma experienced symptoms of heightened psychological distress (the experience of symptoms of anxiety and depression at sub-clinical levels (Drapeau 2012)). This is double the rate of the wider community (Blanchard 2014); and a figure that has been significantly increasing (Mission Australia 2017). In addition, both poor asthma outcomes and poor mental health outcomes disproportionately affect those from poorer backgrounds (AIFHW 2016; Evans 2012 GINA 2019).

Contribution to their increased experience of psychological distress, a range of challenges faced by children and adolescents with asthma may include social isolation, restricted life choices, limitations on personal potential, embarrassment and shame about their condition or treatment (or both), self-consciousness, potential mortality threat, and fear of disease exacerbation (Blanchard 2014). These complex, interconnected issues compound the social, psychological and developmental challenges experienced by people during this life stage (Cohen 2003; de Benedictis 2007). This combined symptom profile contributes to higher levels of functional impairment (Akinbami 2002), lower quality of life (Goldney 2003), and higher rates of preventable hospitalisation and mortality compared to people without asthma (Calmes 1998). This can develop into chronic and excessive psychological distress (Thomas 2011). Asthma may negatively affect psychological and mental health outcomes, as individuals with asthma may experience heightened psychological distress due to the persistent fear of asthma attacks (GINA 2018).

Psychological interventions refer to theoretically informed psychological strategies underpinned by clinical formulation. Various types of interventions exist, underpinned by distinct theoretical frameworks. This review will explore the following types of intervention: behavioural, cognitive, cognitive behavioural, relaxation, psychodynamic psychotherapy, counselling, group therapy, and family therapy. Behavioural therapies focus on identifying and changing learned behaviours, cognitive therapies identify and manage thoughts and perceptions, while cognitive behavioural therapy (CBT) incorporates aspects of both of these models. Relaxation techniques are designed to control psychological distress, though in this situation may also improve respiratory functioning. Psychodynamic therapy, counselling, group therapy and family therapy all involve the discussion of issues with a licensed professional in group or individual formats. The current evidence assessing the efficacy of individual versus group therapy formats is generally mixed, and may differ based on which symptoms of psychological distress are experienced (Craigie 2009; Flannery-Schroeder 2000; Manassis 2002; Wierzbicki 1987). All interventions can be delivered in person, via printed self-help materials, or via the internet. Online or technology-delivered psychological interventions (also known as e-psychotherapy, e-health or e-mental health) have been shown to be an effective option for psychiatric care and support, which may increase access to and improve quality of care (RANZCP 2019), and can be a cost-effective treatment option for both patients and providers (Solomon 2015).

**Description of the intervention**

It is likely that a bidirectional relationship exists between asthma and symptoms of psychological distress (Baiardini 2015). Psychological factors and negative life events can exacerbate inflammation and symptoms of asthma (French 1943; Sandberg 2000; Van Lieshout 2008). It has been suggested that psychological distress may exacerbate the immune response to external stimuli via increased activation of endocrine pathways - the sympathetic and adrenomedullary (SAM) system and the hypothalamic-pituitary-adrenocortical (HPA) axis (Chen 2007). Long periods of exposure to stress hormones can lead to down-regulation of receptors to these molecules and dysregulation of inflammatory responses to asthma triggers. Production of Th2 cytokines and recruitment of eosinophils can be exaggerated under these conditions, promoting output of neurotransmitters which can increase inflammation (Wright 1998; Wright 2005).

Conversely, asthma in young people is associated with increased psychological distress and clinical diagnoses of psychological disorders (Dudenev 2017; Katon 2007; Pinquart 2010). Although some experience of anxiety in people with asthma is healthy,
discuss familial concerns and allow for increased understanding and support by family members (Duff 2001). Positive cognitive experiences regarding asthma - specifically self-efficacy, outcome expectations, and perceptions of barriers - are associated with better asthma control and adherence to medication in young people (Rhee 2018). Psychological interventions may also be effective in reducing asthma symptoms using some of the interventions described above (Kew 2016; Knapp 1978; Moore 1965).

Psychological interventions can reduce asthma-related anxiety and increase positive experiences regarding asthma. In turn, this can reduce psychological distress, which can improve behavioural outcomes such as self-efficacy and medication adherence, while reducing inflammation, with the overall effect of reducing medical contacts and asthma attacks in children and adolescents.

Why it is important to do this review

Despite evidence that psychological interventions are beneficial in the treatment of psychological distress and psychological disorders, reports indicate that four out of five young people who could potentially benefit from psychological intervention are reportedly not accessing it (Bekker 2017). This systematic review aims to fill a gap in the literature by evaluating the effectiveness of psychological interventions as a treatment method for children and adolescents with asthma. It is intended that evidence gained from this review can address these issues and be used to inform best practice guidelines and recommendations for health professionals treating patients with asthma, and aid in efforts to increase uptake of psychological interventions in this age group.

The current review builds on a previous systematic review investigating psychological interventions for children with asthma (Yorke 2005). The main objectives of these reviews are similar; however this review will use the latest Cochrane methodology and focus on different types of psychological interventions. The primary and secondary outcomes have also been amended to align with current clinical practice. Additionally, meta-analyses on primary outcomes were not possible due to limitations in number and quality of studies included in the previous review; we now plan to undertake these meta-analyses with the addition of new studies published in the 14 years since the original review.

OBJECTIVES

Main objectives

To determine the efficacy of psychological interventions in modifying health and behavioural outcomes in children with asthma, compared with usual treatment.

Secondary objectives

To compare efficacy of different types of psychological interventions for children with asthma.

To assess the comparative efficacy of individual and group formats of psychological therapy for children with asthma.

METHODS

Criteria for considering studies for this review

Types of studies

We will include randomised controlled trials (RCTs), including cluster-randomised trials where the data has been or can be adjusted for clustering. We will include studies reported as full text, abstract only, and unpublished data. We will not restrict studies by duration of follow-up.

Types of participants

We will include both male and female children and adolescents aged between 5 and 18 years with asthma diagnosed by a physician or as per international or national guidelines. Studies will be included irrespective of psychological symptoms at baseline. We will include participants from both inpatient and outpatient settings.

Types of interventions

We will include trials which assess all psychological interventions of any duration compared with a control. Psychological interventions must have been created or delivered by a qualified professional, and may include in-person or online formats. We will include studies with co-interventions (e.g. prescribed medications), provided they are not part of the randomised treatment. Treatments may include the following.

1. Behavioural therapies: concerned with identifying the processes by which behaviour has been learned via association, reward or observation and modifying behaviour using methods such as systematic desensitisation, selective reinforcement and positive modelling. The behaviour itself, rather than the underlying motivations, is the focus of behavioural interventions.

2. Cognitive therapy: identification and constructive management of damaging thoughts, such as perceptions of helplessness or disproportionate fear of asthma attack that can trigger respiratory symptoms and/or asthma symptoms.

3. Cognitive behavioural therapy (CBT): incorporating the key elements of both behavioural and cognitive models.
4. Relaxation techniques: designed to control stress and anxiety which, in asthma, may improve breathing and respiratory function. The following approaches are used:
   i) Progressive relaxation: systematically creating tension and release in different parts of the body and/or via guided imagery.
   ii) Autogenic training: focuses on attending to bodily feelings and mentally controlling them.
   iii) Hypnosis: deep relaxation that may be induced using mental imagery, often accompanied by autosuggestion to create positive thoughts and feelings.
   iv) Biofeedback: feedback of biological indicators which the subject must control via relaxation. May also be considered a behavioural intervention since the feedback can act as a reinforcer.
5. Psychodynamic psychotherapy: including psychoanalysis, psychosomatic therapy, and hypnosis.
6. Counselling: involves talking over problems with a health professional. In supportive counselling, the counsellor aims to be a good listener and provide emotional support, rather than offering a more targeted psychotherapeutic intervention.
7. Group therapy: psychotherapeutic interventions conducted in groups (e.g. group psychosomatic therapy).
8. Family therapy: works to change the relationships within families to help them better deal with a wide range of problems. We will include trials comparing psychological interventions with usual care, active control (e.g. self-help) or wait-list control groups. We will exclude treatments involving educational approaches, and breathing re-training techniques. These treatments have been independently reviewed previously (Haby 2001; Wolf 2003).

Types of outcome measures
The main objective will be explored through the following primary and secondary outcomes. The secondary objective(s) will be evaluated through subgroup analysis as appropriate.

Primary outcomes
1. Primary efficacy of intervention to reduce psychological distress: change in anxiety or depression (or both), as measured by standard validated questionnaires (e.g. the State-Trait Anxiety Inventory (STAI), Beck Anxiety Inventory (BAI), Beck Depression Inventory (BDI), Kessler Psychological Distress Scale (K10)).
2. Medical contacts, as measured by presentation to hospital, emergency room or GP, singly or in combination.
3. Asthma attacks, as measured by number of children with one or more asthma attack (defined as an acute increase in asthma symptom severity requiring use of corticosteroids or hospital admission) during follow-up, or rate of asthma attacks.

Secondary outcomes
1. Self-reported asthma symptoms (e.g. asthma symptom scale such as Asthma Control Test (ACT) or Asthma Control Questionnaire (ACQ)).
2. Medication use (e.g. frequency of use, dosage). Use of preventer inhalers. Use of reliever inhalers.
3. Self-reported quality of life as measured by validated questionnaires (e.g. Paediatric Asthma Quality of Life Questionnaire (PAQLQ)).
4. Adverse events/side effects.
We will group outcomes reported at different time points in the following way: less than 3 months from baseline; 3 months to less than 6 months from baseline; 6 months to less than 12 months from baseline; and 12 months and over from baseline. Reporting one or more of the outcomes listed here in the study is not an inclusion criterion for the review.

Search methods for identification of studies

Electronic searches
We will identify trials from the Cochrane Airways Group’s Specialised Register (CAGR) (Cochrane Airways 2019), which is maintained by the Cochrane Information Specialist for the Group.

Types of searches

We will search all sources from their inception to the present, and we will impose no restriction on language of publication.

Searching other resources
We will check reference lists of all included studies and review articles for additional references. We will also conduct a search of the World Health Organization International Clinical Trials Registry.
We will double-check that data are entered correctly by comparing the data presented in the systematic review with the study reports. A second review author (OS) will spot-check study characteristics for accuracy against the study report.

### Assessment of risk of bias in included studies

A pair of review authors (from KJS, OS, KVC, KP) will independently assess risk of bias for each study using the criteria outlined in the Cochrane Handbook for Systematic Reviews of Interventions (Higgins 2011). We will resolve any disagreements by discussion or by consultation with another author (KVC or KP). We will assess the risk of bias according to the following domains.

1. Random sequence generation
2. Allocation concealment
3. Blinding of participants and personnel
4. Blinding of outcome assessment
5. Incomplete outcome data
6. Selective outcome reporting
7. Other bias

We will grade each potential source of bias as high, low or unclear and provide a quote from the study report together with a justification for the judgement in the 'Risk of bias' table. We will summarise the risk of bias judgements across different studies for each of the domains listed. We will consider blinding separately for different key outcomes where necessary (e.g. for unblinded outcome assessment, risk of bias for asthma attack may be different than for a patient-reported symptom scale). Where information on risk of bias relates to unpublished data or correspondence with a trialist, we will note this in the 'Risk of bias' table.

When considering treatment effects, we will take into account the risk of bias for the studies that contribute to that outcome.

### Measures of treatment effect

We will analyse dichotomous data as odds ratios (OR) and continuous data as the mean difference (MD). Where appropriate, we will use standardised mean difference (SMD) to pool results from various assessment scales. We will enter data presented as a scale with a consistent direction of effect.

We will undertake meta-analyses only where this is meaningful; that is, if the treatments, participants and the underlying clinical question are similar enough for pooling to make sense.
We will narratively describe skewed data reported as medians and interquartile ranges.
Where multiple trial arms are reported in a single study, we will include only the relevant arms. If two comparisons (e.g. intervention A versus usual care and intervention B versus usual care) are combined in the same meta-analysis, we will either combine the active arms, or the control group will be halved to avoid double-counting.

If adjusted analyses are available (ANOVA or ANCOVA) these will be used as a preference in the meta-analyses. If both change-from-baseline and endpoint scores are available for continuous data, we will use change-from-baseline unless there is low correlation between measurements in individuals. If a study reports outcomes at multiple time points, we will use the latest recorded time point. Intention-to-treat (ITT) or ‘full analysis set’ analyses will be used where they are reported (i.e. those where data have been imputed for participants who were randomly assigned but did not complete the study) instead of completer or per protocol analyses.

**Unit of analysis issues**
For dichotomous outcomes we will use participants, rather than events, as the unit of analysis (i.e. number of children admitted to hospital, rather than number of admissions per child). However, if rate ratios are reported in a study, we will analyse them on this basis. We will include relevant cluster-randomised trials, but we will meta-analyse only data from cluster-RCTs that have been adjusted (or can be adjusted) to account for clustering. Based on recommendations from the Cochrane Handbook for Systematic Reviews of Interventions, we will adjust cluster-randomised data by inflating standard errors using a design effect (DE) calculated with an intracluster correlation coefficient (ICC).

**Dealing with missing data**
We will contact investigators or study sponsors in order to verify key study characteristics and obtain missing numerical outcome data where possible (e.g. when a study is identified as abstract only). Where this is not possible, and the missing data are thought to introduce serious bias, we will explore the impact of including such studies in the overall assessment of results by a sensitivity analysis.

**Assessment of heterogeneity**
We will use the I² statistic to measure heterogeneity among the studies in each analysis. If we identify substantial heterogeneity, we will report it and explore possible causes by prespecified subgroup analyses. Furthermore, to aid interpretation of the pooled estimates, we will construct a summary table which outlines the key features of the included studies to allow easy comparison between trials contributing data to the review. We will explore possible clinical heterogeneity narratively in the discussion.

**Assessment of reporting biases**
If we are able to pool more than 10 studies, we will create and examine a funnel plot to explore possible small-study and publication biases.

**Data synthesis**
We will use a random-effects model and perform a sensitivity analysis with a fixed-effect model.

**'Summary of findings' table**
We will create a 'Summary of findings’ table using the following outcomes at longest follow-up point (maximum 1-year post-treatment): medical contacts, rate of asthma attack, symptoms of anxiety and depression, asthma symptoms, medication use, and quality of life. We will use the five GRADE considerations (risk of bias, consistency of effect, imprecision, indirectness, and publication bias) to assess the quality of a body of evidence as it relates to the studies that contribute data to the meta-analyses for the prespecified outcomes. We will use methods and recommendations described in Section 8.5 and Chapter 12 of the Cochrane Handbook for Systematic Reviews of Interventions (Higgins 2011) using GRADEpro software (GRADEpro GDT). We will justify all decisions to down- or up-grade the quality of studies using footnotes, and we will make comments to aid the reader's understanding of the review where necessary.

**Subgroup analysis and investigation of heterogeneity**
We plan to carry out the following subgroup analyses.
1. Type of psychological interventions (e.g. behavioural intervention, cognitive behavioural therapy, psychodynamic therapy, etc.).
2. Individual vs group interventions.
3. Face-to-face vs online interventions.
4. School age (primary (ages 5 to 12) vs secondary (ages 13 to 18)).
We will use the following outcomes in subgroup analyses.
1. Primary efficacy of intervention to reduce psychological distress: change in anxiety and/or depression, as measured by standard validated questionnaires (e.g. the State-Trait Anxiety Inventory (STAI), Beck Anxiety Inventory (BAI), Beck Depression Inventory (BDI), Kessler Psychological Distress Scale (K10)).
2. Medical contacts, as measured by presentation to hospital, emergency room visits, GP visits, alone or in combination.
3. Asthma attacks, as measured by number of children with one or more asthma attack (defined as an acute increase in asthma symptom severity requiring use of corticosteroids or hospital admission) during follow-up, or rate of asthma attacks. We will use the formal test for subgroup interactions in Review Manager 5 (Review Manager 2014).
**Sensitivity analysis**

We plan to carry out the following sensitivity analyses.

1. Exclusion of trials with high risk of bias for randomisation, or allocation concealment, or both.
2. Exclusion of unpublished data/non-peer reviewed studies.
3. Investigation of the potential influence of study size on effect size, by removing small trials (those with fewer than 20 participants in each arm) in a sensitivity analysis (Fisher 2018).
4. Exclusion of trials in which the intervention is supportive rather than providing targeted psychotherapeutic input. The results from a fixed-effect model will be compared with the random-effects model.

**ACKNOWLEDGEMENTS**

We would like to thank all staff at the Cochrane Airways Group for their ongoing help and support. We also wish to thank the peer reviewers for their time and valuable feedback.

**REFERENCES**

Additional references

AIHW 2016

Akinbami 2002

Baiardini 2015

Bekker 2017

Blanchard 2014

Calmes 1998

Chen 2007

Cochrane Airways 2019
Cochrane Airways Trials Register. airways.cochrane.org/trials-register (accessed 26 March 2019).

Cohen 2003

Craigie 2009

de Benedictis 2007

**Moore 1965**

**Pinquart 2010**

**RANZCP 2019**

**Review Manager 2014 [Computer program]**

**Rhee 2018**

**Rietveld 2003**

**Sandberg 2000**

**Solomon 2015**

**Thomas 2011**

**To 2012**

**Van Lieshout 2008**

**Wierzbicki 1987**

**Wolf 2003**

**Wright 1998**

**Wright 2005**

**Yorke 2005**

* Indicates the major publication for the study
Appendix 1. Sources and search methods for the Cochrane Airways Register of Trials

Electronic searches: core databases

<table>
<thead>
<tr>
<th>Database</th>
<th>Dates searched</th>
<th>Frequency of search</th>
</tr>
</thead>
<tbody>
<tr>
<td>CENTRAL (via the Cochrane Register of Studies (CRS))</td>
<td>From inception</td>
<td>Monthly</td>
</tr>
<tr>
<td>MEDLINE (Ovid)</td>
<td>1946 onwards</td>
<td>Weekly</td>
</tr>
<tr>
<td>Embase (Ovid)</td>
<td>1974 onwards</td>
<td>Weekly</td>
</tr>
<tr>
<td>PsycINFO (Ovid)</td>
<td>1967 onwards</td>
<td>Monthly</td>
</tr>
<tr>
<td>CINAHL (EBSCO)</td>
<td>1937 onwards</td>
<td>Monthly</td>
</tr>
<tr>
<td>AMED (EBSCO)</td>
<td>From inception</td>
<td>Monthly</td>
</tr>
</tbody>
</table>

Handsearches: core respiratory conference abstracts

<table>
<thead>
<tr>
<th>Conference</th>
<th>Years searched</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Academy of Allergy, Asthma and Immunology (AAAAI)</td>
<td>2001 onwards</td>
</tr>
<tr>
<td>American Thoracic Society (ATS)</td>
<td>2001 onwards</td>
</tr>
<tr>
<td>Asia Pacific Society of Respirology (APSR)</td>
<td>2004 onwards</td>
</tr>
<tr>
<td>British Thoracic Society Winter Meeting (BTS)</td>
<td>2000 onwards</td>
</tr>
<tr>
<td>Chest Meeting</td>
<td>2003 onwards</td>
</tr>
<tr>
<td>International Primary Care Respiratory Group Congress (IPCRG)</td>
<td>2002 onwards</td>
</tr>
<tr>
<td>Thoracic Society of Australia and New Zealand (TSANZ)</td>
<td>1999 onwards</td>
</tr>
</tbody>
</table>

MEDLINE search strategy used to identify studies for the CAGR
Asthma search

1. exp Asthma/
2. asthma$.mp.
3. (antiasthma$ or anti-asthma$).mp.
4. Respiratory Sounds/
5. wheez$.mp.
6. Bronchial Spasm/
7. bronchospas$.mp.
8. (bronch$ adj3 spasm$).mp.
9. bronchoconstrict$.mp.
10. exp Bronchoconstriction/
11. (bronch$ adj3 constrict$).mp.
12. Bronchial Hyperreactivity/
13. Respiratory Hypersensitivity/
14. ((bronchial$ or respiratory or airway$ or lung$) adj3 (hypersensitiv$ or hyperreactiv$ or allerg$ or insufficiency))).mp.
15. ((dust or mite$) adj3 (allerg$ or hypersensitiv$)).mp.
16. or/1-15

Filter to identify RCTs

1. exp "clinical trial [publication type]/
2. (randomised or randomised).ab,ti.
3. placebo.ab,ti.
4. dt.fs.
5. randomly,ab,ti.
6. trial.ab,ti.
7. groups.ab,ti.
8. or/1-7
9. Animals/
10. Humans/
11. 9 not (9 and 10)
12. 8 not 11
The MEDLINE strategy and RCT filter are adapted to identify studies in other electronic databases.

Appendix 2. Search strategy to identify relevant studies from the Cochrane Airways Trials Register

Cochrane Register of Studies (CRS)
<table>
<thead>
<tr>
<th>#</th>
<th>MESH DESCRIPTOR Psychotherapy EXPLODE ALL</th>
<th>1081</th>
</tr>
</thead>
<tbody>
<tr>
<td>#6</td>
<td>MESH DESCRIPTOR Psychology EXPLODE ALL</td>
<td>116</td>
</tr>
<tr>
<td>#7</td>
<td>MESH DESCRIPTOR Psychophysiologic Disorders</td>
<td>23</td>
</tr>
<tr>
<td>#8</td>
<td>MESH DESCRIPTOR Psychoanalysis</td>
<td>0</td>
</tr>
<tr>
<td>#9</td>
<td>MESH DESCRIPTOR Psychosomatic Medicine</td>
<td>1</td>
</tr>
<tr>
<td>#10</td>
<td>(behavior* OR behaviour*) NEAR3 (treatment* OR therap* or intervention* OR activat* or technique* or modif* or change*)</td>
<td>5312</td>
</tr>
<tr>
<td>#11</td>
<td>cognitiv* NEAR3 (behav* or treatment* or technique* or therap* or intervention* or restructur* or reappraisal*)</td>
<td>1967</td>
</tr>
<tr>
<td>#12</td>
<td>acceptance NEAR3 commitment</td>
<td>45</td>
</tr>
<tr>
<td>#13</td>
<td>(CBT or ACT):ti,ab</td>
<td>2192</td>
</tr>
<tr>
<td>#14</td>
<td>relaxation*</td>
<td>1431</td>
</tr>
<tr>
<td>#15</td>
<td>autogenic*</td>
<td>60</td>
</tr>
<tr>
<td>#16</td>
<td>hypnosis*</td>
<td>130</td>
</tr>
<tr>
<td>#17</td>
<td>biofeedback*</td>
<td>219</td>
</tr>
<tr>
<td>#18</td>
<td>psychotherap* or psycho-therap* or psychoanalytic* or psycho-analytic* or psychodynamic* or psycho-dynamic* or psychoanalysis or psycho-analysis or psychosomatic or psycho-somatic</td>
<td>1959</td>
</tr>
<tr>
<td>#19</td>
<td>counsel* or (talk* near3 therap*)</td>
<td>2741</td>
</tr>
<tr>
<td>#20</td>
<td>(group* or family*) near3 therap*</td>
<td>2147</td>
</tr>
<tr>
<td>#21</td>
<td>MESH DESCRIPTOR Family WITH QUALIFIER PX</td>
<td>21</td>
</tr>
<tr>
<td>#22</td>
<td>anxiety or depression or panic</td>
<td>10308</td>
</tr>
<tr>
<td>#23</td>
<td>#5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19 OR #20 OR #21 OR #22</td>
<td>22345</td>
</tr>
<tr>
<td>#24</td>
<td>#23 AND #4</td>
<td>3416</td>
</tr>
</tbody>
</table>
#25 MESH DESCRIPTOR Asthma WITH QUALIFIER PX 

275

#26 #24 OR #25

3521

#27 INREGISTER

41095

#28 #26 AND #27

1563

## CONTRIBUTIONS OF AUTHORS

KJS: initiating and coordinating review, production of protocol, data collection, undertaking searches, screening search results, organising retrieval of papers, screening papers against eligibility criteria, appraising quality of papers, extracting data from papers, data management for review, entering data into Review Manager 5, analysis of data, interpretation of data, write-up.

SO: providing input with protocol, data collection, screening search results, screening papers against eligibility criteria, extracting data from papers, write-up, contributing final comments to manuscript.

KVC-C: providing input with protocol, providing general advice on the review, providing advice on analysis of data, checking data, providing assistance with write-up, contributing final comments to manuscript.

KCP: providing input with protocol, providing clinical advice for the review, providing advice on analysis of data, checking data, providing assistance with write-up, contributing final comments to manuscript.

### Contributions of editorial team

Rebecca Fortescue (Coordinating Editor): edited the protocol; advised on methodology; approved the protocol prior to publication.

Chris Cates (Coordinating Editor): checked the planned methods.

Emma Dennett (Managing Editor): coordinated the editorial process; advised on content; edited the protocol.

Emma Jackson (Assistant Managing Editor): conducted peer review; edited the references.

Elizabeth Stovold (Information Specialist): designed the search strategy.

## DECLARATIONS OF INTEREST

KJS: none known.

SO: none known.

KVC-C: none known.

KCP: I have acted as a consultant on an advisory board for Respiri for development of a symptom monitoring device for asthma.
SOURCES OF SUPPORT

Internal sources

- University of South Australia, Translational Medicine and Technology Group, Australia. Income for employment.

External sources

- The authors declare that no such funding was received for this systematic review., Other.