Family therapy for attention-deficit disorder or attention-deficit/hyperactivity disorder in children and adolescents (Review)

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Family therapy for attention-deficit disorder or attention-deficit/hyperactivity disorder in children and adolescents

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ABSTRACT

Background

Attention-deficit hyperactivity disorder (ADHD) is diagnosed in between 3% and 7% of school-age children and consists of the core symptoms of inattention, impulsivity and hyperactivity. Children are often treated with medication, usually stimulant medication such as methylphenidate. Stimulant medication has been found to be effective for alleviating ADHD symptoms, at least in the short term. ADHD is also treated with a variety of psychosocial and psychoeducational interventions for parents, children, and with multicomponent interventions combined with medication management. However, many patients (10 to 13% of patients) cannot or prefer not to take medication. Family therapy without medication may help to develop structure in the family, help to manage children’s behaviour, and may help families cope with distress from the presence of the disorder.

Objectives

This review seeks to address the question of whether family therapy without medication can reduce the core symptoms of ADHD as compared to no treatment or standard treatment.

Search methods

The following electronic databases were searched using a specific search strategy: The Cochrane Central Register of Controlled Trials (The Cochrane Library Issue 3, 2004), MEDLINE (1966 to April 2004), PsycINFO (1872 to April 2004), CINAHL (1982 to April 2004), Biosis (Biological Abstracts) (1985 to March 2004), Dissertation Abstracts (1980 to April 2004), and Sociological Abstracts (Sociofile) (1963 to April 2004). Hand searches of relevant journals and bibliographies were also conducted and experts in the field were contacted for further information.

Selection criteria

Included studies were randomised controlled trials investigating the efficacy of behavioural family therapy, cognitive behavioural family therapy, or functional family therapy for children with ADHD or ADD (Attention Deficit Disorder).

Data collection and analysis

Studies were evaluated for methodological quality and to determine whether they met the inclusion criteria.
Main results

This assessment yielded two studies. Data were extracted for both studies. The findings from Jensen 1999 (N=579) indicate that no difference can be detected between the efficacy of behavioural family therapy and treatment as usual in the community. The finding from the available data from Horn 1991 slightly favours treatment over medication placebo.

Authors' conclusions

Further research examining the effectiveness of family therapy versus a no-treatment control condition is needed to determine whether family therapy is an effective intervention for children with ADHD. There were no results available from studies investigating forms of family therapy other than behavioural family therapy.

Plain language summary

Family therapy for attention-deficit disorders in children

This review looks at whether family therapy can help children with attention-deficit hyperactivity disorder (ADHD) without medication. There are several medications and types of therapy used to treat ADHD. However, many families would rather that their children not take medication. Two studies met the criteria for quality of research method. One found no difference in children's symptoms of ADHD after either family therapy or normal treatment in the community. The second study found that family therapy was more effective than a medication placebo. Further research is needed.

Background

Description of the condition

Attention-deficit hyperactivity disorder (ADHD) is one of the most frequently diagnosed psychological disorders in children. The major symptoms of this disorder are developmentally inconsistent and chronic levels of inattention, impulsivity, and hyperactivity (APA 2000; Barkley 1998). In some cases, particular symptoms are predominant. In those cases, subtypes of the diagnosis can be indicated: attention-deficit/hyperactivity disorder, predominantly inattentive type or predominantly hyperactive-impulsive type. Where neither subtype predominates, individuals can be diagnosed with attention-deficit/hyperactivity disorder, combined type, which is the most common subtype of this disorder in children and adolescents (APA 2000). ADHD is diagnosed in approximately 3% to 7% of school-age children (APA 2000). Indeed, the number of patients visiting physicians for ADHD seems to be increasing from year to year (Goldman 1998; Swanson 1995). In England and Wales, the prevalence has been estimated to be approximately 5% of children aged 6 to 16 (NICE 2000). Adolescents with this disorder have been found to be more likely to have a comorbid oppositional defiant disorder or a comorbid conduct disorder than adolescents without a diagnosis of ADHD, and are more likely to self report more antisocial behaviour and poorer social competence than a control group (Barkley 1991). In addition, the majority of children who are diagnosed with ADHD through a rigorous set of criteria will continue to present with the core symptoms of ADHD into adolescence, and 43% will meet diagnostic criteria for conduct disorder at follow up (Barkley 1990).

Description of the intervention

The medications most frequently prescribed for patients diagnosed with ADHD are stimulant medications such as methylphenidate or dexamphetamine (Wolraich 1990). Other medications such as antidepressants, antihypertensive medication, beta-blockers, and anticonvulsants are also used, generally when stimulants are not found to be effective for patients, or when comorbid diagnoses indicate that alternative treatment methods may be more applicable to certain cases (Barkley 1998). In the United States, for example, stimulant medications are the most frequently prescribed forms of psychotropic medication for children (Wolraich 2003). While a large number of studies have indicated that stimulant medication is effective for reducing symptoms of inattention, impulsivity and hyperactivity in children and adolescents with ADHD in the short term, the long-term effectiveness of pharmacotherapy for ADHD is not known (Goldman 1998; Schachter 2001). One rigorous systematic review found that many studies lack a suffi-
 ciently long-term follow up and tend to score low on measures of quality (Jadad 1999). There is also concern that stimulant medications are overprescribed or are prescribed without sufficiently using appropriate diagnostic criteria. For example, one longitudinal community study showed that the majority of children who had been prescribed stimulants had never met diagnostic criteria for any form of ADHD, and those who were diagnosed with ADHD-Not Otherwise Specified (NOS) were more likely to be prescribed stimulants if they met diagnostic criteria for oppositional defiant disorder (ODD) than if they did not (Angold 2000). This finding gives weight to the argument that prescription of stimulants may, in some cases, be augmented by comorbid behaviour disorders, which in turn might be addressed by nonpharmacological behavioural interventions rather than stimulants. ADHD is currently treated with a variety of either training interventions or psychotherapeutic interventions for parents, children, and teachers (NICE 2000). ADHD is most often treated with pharmacological interventions, sometimes in combination with other styles of therapy. However, the effectiveness of such forms of therapy for children with ADHD and comorbid behaviour problems must be evaluated empirically to determine whether it is effective, and for which symptoms it is effective.

In the current literature, there is some evidence for the efficacy of various forms of family therapy for the treatment of attentional disorders in children (Carr 2000b). Many of these forms of family therapy can be categorised as those focused on changing problem-maintaining behaviour patterns and belief systems, and related mediating and moderating factors (Carr 2000a). Examples of these types of family therapy are: Mental Research Institute (MRI) brief therapy, strategic family therapy, structural family therapy, cognitive-behavioural family therapy, and functional family therapy, all of which are described and categorised in a review of family therapy for behaviour problems (Carr 2000a). These types of family therapy can be used to help families learn how best to support a child with this type of disability and how to avoid parenting practices, cycles of interactions, and other environmental factors that might exacerbate the problem.

How the intervention might work

Much of the evidence suggesting that family therapy is efficacious for children and adolescents with ADHD refers to multimodal forms of family therapy which include pharmacological components combined with family therapy or parent training, and sometimes individual therapy for children and school-based interventions (Carr 2000b; MTA 1999). Such evidence does not conclusively show that these types of interventions are significantly more effective than pharmacological treatment alone (MTA 1999). Unfortunately, such conclusions do not benefit patients who do not respond to medication (10% to 13% of patients (Goldman 1998)), who suffer from unpleasant side effects from medication (e.g. decreased appetite, insomnia, anxiety, irritability, or tics (DuPaul 1998)), or who are taking medications that cannot be taken along with ADHD medication (e.g. monoamine oxidase inhibitors (DuPaul 1998). In addition, the Technology Appraisal Guidance from the National Institute for Clinical Excellence limits the usage of stimulants by recommending that methylphenidate be used only with children aged six and older who do not have ‘marked anxiety, agitation or tension; symptoms or family history of tics or Tourette’s syndrome; hyperthyroidism; severe angina or cardiac arrhythmia; glaucoma; or thyrotoxicosis’ and recommends caution in treatment for children with ‘epilepsy, psychotic disorders, or a history of drug or alcohol dependence’ (NICE 2000, p.1). Furthermore, patient preference for non-pharmacological treatment is common. For example, it is reported that parents of children with ADHD tend to view parent training or support groups significantly more favourably than medication (Corkum 1999).

There is evidence of the potential effectiveness of family therapy without pharmacological components for various internalising and externalising problems in children and adolescents with ADHD. For example, one clinical trial yielded results suggesting that family therapy and two types of parent training (behaviour management training, problem-solving and communication training), and structural family therapy, all produced reductions in parent-adolescent conflicts, improvement in communication between parents and adolescents, and reduced intensity of anger during conflicts over time, according to reports by mothers and their adolescents who had been diagnosed with ADHD (Barkley 1992). These three forms of treatment were also found to produce improvements in school adjustment as reported by mothers and in various externalising and internalising problems (Barkley 1992). However, a lack of a no-treatment control group in this study prevents the researchers from drawing conclusions about the effectiveness of these interventions relative to no treatment. In addition, information was not collected from schools to determine applicability of results across settings. Moreover, standard assessment questionnaires to measure changes in the core symptoms of ADHD were not used, as the researchers were not looking directly at treating ADHD symptoms, but rather other behavioural problems.

Why it is important to do this review

Non-systematic reviews of the literature examining the effectiveness of family therapy for symptoms of inattention, hyperactivity, and impulsivity indicate that family therapy is effective when it helps parents understand and cope with their children’s disorder, decreases family distress, and improves the structural aspects of the family such as the intergenerational hierarchy, rules and routines, and communication (Carr 2000a). However, because these reviews have not been conducted systematically they are subject to a risk of bias. A systematic review that evaluates trials by taking into account their methodological quality is therefore needed.
This systematic review will evaluate the efficacy of selected family therapy interventions for symptoms of inattention, hyperactivity, and impulsivity in children with ADHD, independent of pharmacological treatments.

**OBJECTIVES**

To determine whether family therapy will reduce symptoms of inattention, impulsivity and hyperactivity for children with ADHD or ADD when compared to no treatment or standard treatment.

**METHODS**

**Criteria for considering studies for this review**

**Types of studies**

Randomised controlled trials investigating the efficacy of methods of family therapy excluding medication for children with ADHD or ADD.

**Types of participants**

Trials were considered only if the participants were children or adolescents as defined by trialists, with diagnoses of ADHD or ADD as determined by DSM-III (APA 1980; APA 1987) or DSM-IV criteria (APA 1994; APA 2000), diagnoses of Hyperkinetic Disorder as determined by ICD-9 or ICD-10 criteria (WHO 1993), or a cut-off score on a well-validated assessment measure (e.g. Conners’ Parent Rating Scale (Conners 1998)). Diagnoses must have been based on symptoms from at least two settings (APA 2000). Definition of ‘child’ or ‘adolescent’ was left up to the trialists to account for cultural differences in these definitions. Participants may have had comorbid diagnoses, given the substantial prevalence of comorbid diagnoses with ADHD such as Oppositional-Defiant Disorder or Conduct Disorder (APA 1994; APA 2000). Children must not be taking medication for their symptoms during the trials.

**Types of interventions**

Family therapy interventions which include functional family therapy, cognitive-behavioural family therapy, or behavioural family therapy, all of which must include components with at least one parent and the child participating in some therapy sessions with therapist were included. These forms of family therapy were selected because they can be logically grouped together as they all contain a component of behavioural therapy in treatment (Carr 2000a). Treatment methods which involved interventions with parents exclusively were excluded to avoid overlap with another ongoing review (Zwi 2001). Treatment methods were considered if they also included components with teachers. Trials in which medication was administered to the intervention group were excluded. Trials in which a separate group received medication were included, but analyses focused on family therapy group versus control group only.

**Types of outcome measures**

**Primary outcomes**

The primary outcomes considered in this review were the incidence or severity of symptoms of inattention, impulsivity, and hyperactivity. Outcome measures considered for inclusion were ratings on standard, psychometrically sound and validated assessment questionnaires measuring changes in attentional, impulsive, and hyperactive symptoms over time, for example, the Conners’ Rating Scale (Conners 1998).

**Secondary outcomes**

Other measures included in the protocol included those which assessed attentional problems and impulsive or disruptive behaviour at home or at school, or both. In addition, more objective measures such as school expulsions, grades in school, or juvenile offending were also considered. Results from any assessments of participant satisfaction with treatment and adverse effects were included when available.

**Search methods for identification of studies**

**Electronic searches**

The following electronic databases were searched, with no language restrictions:

- The Cochrane Central Register of Controlled Trials (The Cochrane Library Issue 3, 2004)
- MEDLINE (1966 to April 2004)
- PsycINFO (1872 to April 2004)
- CINAHL (1982 to April 2004)
- Sociological Abstracts (Sociofile) (1963 to April 2004)

The following search strategy was used to search MEDLINE and was adapted as necessary to other databases:

1. family therapy.mp. or exp Family Therapy/
2. (family adj based).mp. [mp=title, original title, abstract, name of substance, mesh subject heading]
3. family-based.mp.
4. (family adj cent$).mp. [mp=title, original title, abstract, name of substance, mesh subject heading]
5. ((family adj focused) or focussed).mp. [mp=title, original title, abstract, name of substance, mesh subject heading]
6. family-responsive.mp.
7. family-relationship$.mp.
8. (family adj3 relation$).mp. [mp=title, original title, abstract, name of substance, mesh subject heading]
9. (famil$ adj3 educat$).mp. [mp=title, original title, abstract, name of substance, mesh subject heading]
10. (famil$ adj3 program$).mp. [mp=title, original title, abstract, name of substance, mesh subject heading]
11. (famil$ adj3 therap$).mp. [mp=title, original title, abstract, name of substance, mesh subject heading]
12. (famil$ adj3 counsel$).mp. [mp=title, original title, abstract, name of substance, mesh subject heading]
13. (famil$ adj3 support$).mp. [mp=title, original title, abstract, name of substance, mesh subject heading]
14. (famil$ adj3 intervention$).mp. [mp=title, original title, abstract, name of substance, mesh subject heading]
15. (famil$ adj3 treatment$).mp. [mp=title, original title, abstract, name of substance, mesh subject heading]
16. (famil$ adj3 management$).mp. [mp=title, original title, abstract, name of substance, mesh subject heading]
17. (parent$ and (child$ adj3 therap$)).mp. [mp=title, original title, abstract, name of substance, mesh subject heading]
18. (parent$ and (child$ adj3 intervention$)).mp. [mp=title, original title, abstract, name of substance, mesh subject heading]
19. (parent$ and (child$ adj3 treatment$)).mp. [mp=title, original title, abstract, name of substance, mesh subject heading]
20. (mother$ and (child$ adj3 therap$)).mp. [mp=title, original title, abstract, name of substance, mesh subject heading]
21. (mother$ and (child$ adj3 intervention$)).mp. [mp=title, original title, abstract, name of substance, mesh subject heading]
22. (mother$ and (child$ adj3 treatment$)).mp. [mp=title, original title, abstract, name of substance, mesh subject heading]
23. (father$ and (child$ adj3 therap$)).mp. [mp=title, original title, abstract, name of substance, mesh subject heading]
24. (father$ and (child$ adj3 intervention$)).mp. [mp=title, original title, abstract, name of substance, mesh subject heading]
25. (father$ and (child$ adj3 treatment$)).mp. [mp=title, original title, abstract, name of substance, mesh subject heading]
26. (conjoint adj therapy).mp. [mp=title, original title, abstract, name of substance, mesh subject heading]
27. (fami$ adj3 communicat$).mp. [mp=title, original title, abstract, name of substance, mesh subject heading]
28. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27
29. exp Attention Deficit Disorder with Hyperactivity/ or adhd.mp.
30. addh.mp. [mp=title, original title, abstract, name of substance, mesh subject heading]
31. (attention adj3 deficit).mp. [mp=title, original title, abstract, name of substance, mesh subject heading]
32. hyperactiv$.mp. [mp=title, original title, abstract, name of substance, mesh subject heading]
33. hyperkinesis$.mp. or exp HYPERKINESIS/
34. (minimal adj brain adj3 disorder$).mp. [mp=title, original title, abstract, name of substance, mesh subject heading]
35. (minimal adj brain adj3 dysfunction$).mp. [mp=title, original title, abstract, name of substance, mesh subject heading]
36. (minimal adj brain adj3 damage$).mp. [mp=title, original title, abstract, name of substance, mesh subject heading]
37. 29 or 31 or 32 or 33 or 34 or 35 or 36
38. 28 and 37

**Searching other resources**

A hand search of the Journal of Family Therapy was undertaken, searching Volume 15, Issue 1 February 1993 through Volume 26, Issue 2 May 2004, and bibliographies of reviews and trials were scrutinised to identify further studies. Trialists and experts in the field were contacted for information on ongoing or unpublished trials.

**Data collection and analysis**

**Selection of studies**

The search strategy yielded 905 references, most of which contained abstracts. The titles and abstracts obtained were independently screened by the author (GB) and co-author (PM) for trials for possible inclusion. When such trials were identified, or when the abstract was missing from the reference, the entire articles were obtained. Full articles were obtained for 26 studies, which were then independently screened by the authors to decide whether the studies met the criteria for inclusion. In addition, one study author was contacted on 26 July 2004 to obtain information about an unpublished study presented at a conference; however, information about that study (Baumgartner 2001) was not available from the author at that time (Crimson 2004). The study is categorised as an ongoing trial until data and methods become available. Additional information from the authors of one paper was sought to resolve questions about the relevance of trials (Lalongo 2004a, Lalongo 2004b, Lalongo 2004c, Lalongo 2004d, Lalongo 2004e). This screening process yielded two studies that both authors agreed were randomised controlled trials which met the criteria for the review. The authors were not blind to the authors, institutions, or the journals of publication of the articles.
Data extraction and management

The data were extracted using a data extraction sheet including information about methods, interventions, and outcomes. The data extraction procedure included a critical appraisal of methodological quality including information about allocation, blinding, follow up, and inclusion of participants lost during the study, which was conducted by both authors. Data were then entered into RevMan by the author (GB) and checked by the co-author (PM) against original data from the publication in the case of one study (Jensen 1999) and from a report sent by the author in the case of the second study (Horn 1991).

Assessment of risk of bias in included studies

Assessment of methodological quality

Methodological quality was assessed independently by the author and co-author and any disagreements were resolved by discussion. Assessment was made of all included studies, to consider the following questions:

Was the assignment to treatment groups truly random?
Was allocation adequately concealed?
How complete was follow up?
How were the outcomes considered for people who withdrew?
Were they included in the analysis?
Were those assessing outcomes blind to the treatment allocation?

Randomisation

Randomisation was judged as ‘adequate’ when computer-generated random numbers, a random numbers table, or coin-tossing were used to allocate participants to treatment conditions.

Allocation concealment

The trials were divided into quality categories as defined in the Cochrane Reviewers’ Handbook (Alderson 2004), where:

A: adequate allocation concealment; participants and researchers were unaware of participants’ future allocation to condition until after decisions about eligibility were made and informed consent was obtained;
B: unclear concealment; allocation concealment measures were not described in detail;
C: inadequate allocation concealment; allocation was not concealed from either participants before informed consent or from researchers before decisions about inclusion were made;
D: allocation concealment not used.

For the purposes of this review, only trials meeting categories “A” or “B” were included.

Blinding of assessors

It is not possible to blind either those who deliver family therapy or those who receive it to the nature of the intervention. It was a criterion for this review that assessors be blinded. Quality of blinding was determined primarily by whether those who assessed and coded outcome measures were blind to condition, and the quality of blinding was categorised where:

Adequate = assessor blind to condition;
Unclear = blinding of assessor not reported and information not available from researchers; and
Inadequate = assessor not blind to condition.

Loss to follow up

Loss to follow up was assessed by categorising the studies by method of response to loss to follow up where:

Adequate = losses to follow up were equally distributed between treatment and comparison groups;
Unclear = information about losses to follow up unavailable; and
Inadequate = losses to follow up in excess of 30% or unevenly distributed between treatment and comparison groups.

Intention-to-treat

Assessment also took into account whether researchers used intention-to-treat analyses by including measures from all participants, even those that did not participate fully in the treatment protocol, and by replacing missing data for each participant with the last available data from that participant (e.g. using pre-test scores at pre-test and post-test if participant did not provide post-test data) or with group means. The researchers categorised studies such that:

Adequate = intention-to-treat analyses performed or could be performed using available data;
Unclear = information about whether intention-to-treat analyses were performed was not available and could not be acquired by contacting the researchers of the study; and
Inadequate = intention-to-treat analyses were not performed and could not be done using available data.

Measures of treatment effect

Dichotomous data

Dichotomous data were not presented in the included studies in the present version of this review. In future editions, where dichotomous data are presented, a relative risk ratio with a 95% confidence interval will be calculated for each trial (Alderson 2004).
Continuous data

Ordinal scale data were analysed as continuous data given that means and standard deviations were available. A weighted mean difference was calculated to determine the differences in mean scores between the treatment group and comparison group, although the weighting was irrelevant given that there was only one trial included in the analyses. In future versions of this review, where outcomes are measured using the same scale, a weighted mean difference will be calculated to determine the differences in mean scores between groups. Where the same outcomes are measured using different scales, a standardised mean difference will be calculated.

Qualitative data

Qualitative data were not included in the analyses.

Dealing with missing data

Data were available for more than 2/3 of the allocated participants in one study for all measures of ADHD symptoms (SNAP parent report, teacher report, and classroom observation) (Jensen 1999) and for more than 2/3 of the teacher responders in the second study for the teacher report measure of ADHD symptoms (Conners’ Teacher Rating of Hyperkinesis) (Horn 1991), but not for the other measures in that study (e.g. Conners’ Parent Rating of Hyperkinesis). This proportion of participants was selected in order to minimise bias by setting a limit on the amount of missing data that could be permitted when an available case analysis must be used due to incomplete data. In future revisions of this review, where data are not available for more than one third of the allocated participants, authors will be contacted to supply the missing data. If missing data cannot be obtained in this way, data will not be used due to potential bias.

Assessment of heterogeneity

The two studies were determined to be heterogeneous given that the comparison condition in one study was a medication placebo condition, whereas for the other study it was a treatment as usual in the community condition. If future studies are included and compare similar treatment conditions, heterogeneity will be determined by visual assessment of the results and through the use of the $I^2$ statistic (Higgins 2002), which will determine the percentage of variability that is due to heterogeneity rather than sampling error or chance. A Chi-squared test of homogeneity will also be carried out to confirm the results of the heterogeneity analyses. In addition, the authors will discuss the possible reasons for any heterogeneity and conduct subgroup analyses accordingly, where data permit.

Assessment of reporting biases

A funnel plot could not be used to determine the likelihood of publication bias, but may be carried out in future editions of this review when data from more studies are available. However, a thorough search of published and unpublished trials using electronic databases, handsearches, and examination of cited studies was conducted, helping to minimise the possibility of publication bias. Asymmetry of the funnel plot may indicate possible publication bias in this review, but also may indicate other methodological or sample size issues within the trials. If asymmetry of the funnel plot is found, the clinical diversity of the studies will be examined (Egger 1997).

Data synthesis

Meta-analysis was not performed given that the two included studies reported comparison conditions which were not clinically homogeneous (medication placebo versus community treatment). Meta-analysis will be performed if studies that are added to future editions of this review report similar interventions and where data are available and sufficiently clinically and statistically homogeneous. Any future meta-analyses will be conducted using a random effects model.

Subgroup analysis and investigation of heterogeneity

Subgroup analyses were considered for the following groups: Children with ADD, ADHD, or specific subtypes of ADHD; Children of different developmental levels, i.e. children versus adolescents; Children with various comorbid diagnoses; Gender; Ethnic group; Subgroups of family therapy with and without teacher participation to compare the effectiveness of treatment with and without teacher involvement. However, it was not possible to separate these subgroups given the data that were available.

Sensitivity analysis

Sensitivity analyses will be performed if required in future depending on the descriptions of methodology available in identified studies. Possible issues may include analysis of studies reporting blinding of assessor; studies reporting adherence to a treatment protocol, and studies reporting that participants met ICD-10 (WHO 1993) or DSM-IV (APA 1994) diagnostic criteria for ADHD.
Description of studies

See: Characteristics of included studies; Characteristics of excluded studies; Characteristics of ongoing studies.

Results of the search

The screening of the results of the search of this review yielded 26 relevant studies considered for possible inclusion. Of those 26 studies, one was an unpublished conference presentation and data and methodological details were not available from the researchers (Baumgartner 2001), and two met criteria for inclusion in the review (Horn 1991; Jensen 1999). Both of the studies that met the inclusion criteria examined the effectiveness of behavioural forms of family therapy for children diagnosed with ADHD. They were both randomised controlled trials that combined behavioural parent training with treatment for children and sought to generalise the effects of treatment to the home and school environments. Both studies were conducted in the United States.

Included studies


This study was a multi-site investigation of the effectiveness of behavioural treatment, medication management, and their combination relative to each other and to treatment as usual in the community. The treatment program lasted 14 months and the study included 579 children of both genders aged 7 to 9.9 years. The behavioural treatment program combined parent training, child-focused treatment, and school-based intervention (N = 144). This intervention was a behavioural family intervention in that it taught parents behavioural skills to use in the home, which were combined with therapist-administered behavioural interventions with the children including a reward system, time outs, social reinforcement, and modelling. This combination was designed to change those patterns of child and parent behaviour which maintain the child's problem behaviour. The goal was that the children would begin to learn more appropriate behaviour and would begin to respond to behavioural interventions and that the parents would be able to manage the child in the home using their new skills (Carr 2000a; Jensen 1999). The comparison condition relevant to this review was a community care group that received various treatments in their communities, often including medication (N = 146). The other treatment groups in this study are not relevant to this review (N = 289).

Additive Effects of Psychostimulants, Parent Training, and Self-Control Therapy with ADHD Children (Horn 1991):

This study looked at the relative effectiveness of behavioural therapy for families, medication, and their combination including a medication placebo condition, thereby qualifying for inclusion in this review (Horn 1991). This study allocated 96 families to one of six treatment conditions: placebo medication alone, low-dose stimulant therapy alone, high-dose stimulant therapy alone, placebo medication plus family therapy, low-dose stimulant therapy plus family therapy, and high-dose stimulant therapy plus family therapy. Only two conditions are of interest to this review: medication placebo alone (N = 16) and medication placebo plus family therapy (N = 16). The family therapy intervention was also designed to follow a behavioural family therapy model by combining behavioural interventions for children and parents to teach the children skills to regulate their behaviour while also teaching parents how to reinforce their children's appropriate behaviour and diminish coercive behaviour patterns in the family (Carr 2000a; Horn 1991). It combined behavioural parent training and child self-control training plus consultation with teachers and use of a daily school-to-home report card of disruptive behaviour in the classroom.

Risk of bias in included studies

The NIMH MTA study took care to include children of various backgrounds and with various comorbid diagnoses to promote generalisability (Jensen 1999). However, children with diagnoses which required immediate alternative treatment or which are known to respond to stimulant medication in negative ways were excluded. Children were diagnosed with ADHD Combined Type using the Diagnostic Interview Schedule for Children (Shaffer 1996), parent report, and reports from teachers on a standardised measure regarding ADHD symptoms. After screening, children were randomly assigned to conditions at the National Institute of Mental Health, although the specific method of randomisation is not clear. The allocation of participants took place after they had agreed to be randomised. Several outcome measures were used in this study to capture the many outcomes of interest; however, this weakened effect estimates in the results because multiple hypotheses were addressed simultaneously. However, Bonferroni corrections were used to raise the standard of proof and avoid making a Type I error. ADHD symptoms were measured using the inattention and hyperactivity/impulsivity subscales of the SNAP measure for parents and teachers (Swanson 1992). In addition, blind observers rated ADHD symptoms exhibited by the children whilst they were in school. The MTA researchers took a number of steps to ensure implementation fidelity, across the six sites (Jensen 1999). They utilized manualised treatments, regular supervision sessions with therapists, weekly treatment meetings, and they audiotaped all treatment sessions. In addition, the participants' compliance with medication treatment protocols was monitored. Compliance with behavioural treatment was not monitored, but attendance at treatment sessions was encouraged. Participants who did not comply fully with the treatment protocol were included in analyses in the
same group to which they were allocated using an intent-to-treat method of analysis. However, the researchers did not carry pre-test data into post-test cells for participants who did not complete post-test measures. The researchers did conduct separate analyses including all participants and including only those that completed all measures and they stated that there were no differences between the findings of those two analyses. Despite this claim, presenting data for all participants, using the most recent available scores for missing outcome data would have been the more rigorous option. The most significant methodological flaw in this otherwise rigorous study is that the community treatment group was not a proper no-treatment or waiting list control group. It was rather a group that was free to seek and receive treatment in the community, which included pharmacological treatment for approximately two thirds of participants in this group. Considering this issue on ethical grounds, this allowed the researchers to conduct this large-scale study over a long period of time without withholding treatments that have been found to be effective in previous research. However, this lowers the strength of conclusions that may be drawn about the effectiveness of each of the treatment methods of interest. It particularly inhibits conclusions being drawn about the non-pharmacological behavioural treatment as stimulant medication is known to be an effective treatment for ADHD, at least in the short term (Goldman 1998). Therefore, while it is useful to know how a well-designed behavioural treatment program compares to treatment as usual, if conclusions are to be drawn about the effectiveness of methods for patients who cannot or prefer not to take medication, a study with a no-treatment control group comparison is also needed.

The other study (Horn 1991) recruited families who had already been referred to one clinic for symptoms of ADHD, most of whom had intact marriages, were white, from the middle class, and living in the suburbs of a city in the Midwest of the United States, which limits the generalisability of the results of this study to a broad range of patients in various locations. Although the referred families were there due to symptoms of ADHD, the researchers did evaluate all potential participants for diagnoses of ADHD in a rigorous manner before inclusion in the study to ensure that they did not include any participants without a proper diagnosis. They used a clinical interview with parents, the Conners’ Rating Scales (Conners 1998) for parents and teachers, and psychometric testing of the child. A psychologist and a paediatrician then reviewed these data independently and children were invited to participate in the study only if there was agreement on a diagnosis. Children were included if they had comorbid diagnoses of conduct disorder or oppositional defiant disorder, but were excluded if they had comorbid diagnoses of anxiety, psychotic or depressive disorders, intellectual deficits, or physical disabilities. Any stimulant medications the children were taking prior to the study were discontinued two weeks before initiation of the study.

Informed consent was collected from parents before families were allocated to treatment conditions. Allocation was randomised; however, this was done in groups of 12 families at a time, by randomly allocating two of the 12 to each treatment condition. This method would have been more rigorous had all families been randomised at once, however, given the large number of conditions relative to the sample size, it was a way to ensure that the largest possible samples were present in each condition. Analyses showed that the only major demographic difference between groups was that the medication placebo only group contained significantly more non-white children than the other treatment groups.

The researchers (Horn 1991) ensured implementation fidelity in their behavioural treatment sessions by providing training for all therapists, using manualised methods and providing manuals to therapists for their reference, providing weekly supervision sessions, and audiotaping all therapy sessions for referral in supervision. Treatment compliance for behavioural therapy was not measured. Eighteen families dropped out of the study sometime between randomisation and post-testing. Dropouts were relatively balanced across treatment groups and no significant demographic differences were found between participants who completed treatment and dropouts. Data were analysed for all participants, including those that dropped out of the study after randomisation. However, the authors state that the results of those analyses were essentially the same as the results of analyses computed with only completers to justify the fact that they present only the completers’ data in their publication. The data from the entire sample remain unavailable. However, the dropouts for the teacher measures were less than a third of the sample, so the data from the Conners’ Teacher Hyperkinesis Index can be included in this review.

Effects of interventions

Many of the results reported by Jensen 1999 were not directly relevant to the interests of those interested in the effectiveness of family therapy alone, and will thus be discussed only briefly. The researchers found that their medication management program was superior to both the behavioural treatment condition \( (p \leq 0.001) \) and the community treatment condition \( (p \leq 0.001) \), and was no different from the combined behavioural treatment and medication management condition \( (p = n.s.) \) for reducing symptoms of ADHD in children. Relevant to this review, they could not detect a difference in effectiveness between the behavioural treatment condition and the community treatment condition \( (p = n.s.) \).

The major results reported by Horn 1991 were also not directly relevant to this review, but do contribute to the knowledge base in this area and will be discussed briefly here. Similar to the other included study (Jensen 1999), these researchers did not detect a difference between the combined family intervention plus medication management conditions and the medication management conditions in alleviating symptoms of ADHD \( (p\text{-values not reported for nonsignificant results}) \). They did find some evidence to support the hypothesis that a low dose of stimulant plus behavioural therapy can yield the same effects as a high dose of stim-
Ulant alone. The authors did not directly address the relative effectiveness of the medication placebo plus family therapy condition and the medication placebo alone condition in their discussion. A meta-analysis cannot be conducted for the current version of the review because the comparison conditions used in the two included studies cannot be combined; one study used a medication placebo condition as a comparison whereas the other study used a treatment-as-usual in the community condition. As Figures 1.1 to 1.5 show (Analysis 1.1, Analysis 1.2, Analysis 1.3, Analysis 1.4, Analysis 1.5) the analyses computed for Jensen 1999 indicated that the results do not favour the family therapy condition or the community care condition when based on parent ratings of symptoms, teacher ratings of symptoms, or classroom observations. Analyses of the data of the second study (Horn 1991) were possible only for the data from the Conners’ Teacher Hyperkinesis Index. This is due to the fact that the number of dropouts was larger for the parent measures than for the teacher measures in this study. Given that the dropouts for the teacher measure were less than a third of the originally randomised sample, the data for this measure can be included in this review. These results indicate that participants in the treatment condition scored lower (but not significantly) on the Conners’ Teacher Hyperkinesis Index than participants in the medication placebo condition as is shown in Analysis 2.1.

Discussion

Given data from Jensen 1999, it is possible that for some children and families a manualised family therapy intervention, implemented in a rigorous manner may be just as effective, but not more effective than treatment as usual in a community. The fact that two-thirds of participants in the community treatment condition received stimulant medication and that there was no detectable difference between outcomes in the two groups suggests that a well-designed non-pharmacological family therapy program might be just as effective as the usual treatment patients receive, even if that includes medication. However, the effectiveness of family therapy could be better assessed if it is compared with a no-treatment condition. The results from Horn 1991 indicate that family therapy with a medication placebo is significantly more effective in reducing ADHD symptoms in the classroom context than a medication placebo alone. While the information about the parents’ perception of their children’s ADHD symptoms was not available, the teacher reports are still quite valuable given that they may provide a more objective measure of the effectiveness of the intervention and indicate that the effects of the intervention extend to contexts outside the home.

If it is the case that a family therapy program is as effective as the treatment commonly provided in the community, and is more effective than medication placebo alone, it is important to consider under what conditions this type of intervention might be effective. The parent-training component of the therapy utilised in the MTA study (Jensen 1999) teaches parents effective and positive methods to increase appropriate behaviour in their children and diminish coercive interactions. It thus establishes a more authoritative role for the parents, securing the parent-child hierarchy, and teaching how the family environment can lead to the exhibition of behaviour problems in the child, diverting attributions of blame away from the child personally (Edwards 2002). The child component of the therapy implements behavioural interventions to familiarise the child with the system and initiate the child’s responses to behavioural treatment as they are simultaneously introduced in the home. In addition, the school component of the treatment program consists of consultation between the family therapist and the school, and reinforcement of appropriate school behaviours at home. The family therapy implemented in Horn 1991 was similar to that of the MTA study (Jensen 1999) in that it combined a parent training intervention, a child-training component, and school consultation. The parent-training component involved teaching parents to manage their children’s behaviour using methods based in social learning theory. The child-training component consisted of group self-control training in which children learned problem solving skills and anger management. The school consultation component consisted of updating teachers on the behaviour techniques being used in the home and having teachers utilize a daily report card to communicate to parents about their children’s behaviour at school. The combination of these components from each intervention could enable the child to be more successful in the home and at school, by providing a clear structure and clear expectations. Indeed, while this clarity would be beneficial to any child, a child with ADHD may have considerably more need for such a structure to learn to manage his or her own behaviour (Edwards 2002) given that a major manifestation of ADHD is behavioural disinhibition (Barkley 1998). Implementation of the interventions in these studies required that therapists had backgrounds in clinical psychology at the doctoral level, familiarity with social learning principles, treatment manuals, and regular supervision with clinical psychologists (Horn 1991, Wells 2000).

Authors’ Conclusions

Implications for practice

This review suggests that if practitioners are attempting to provide treatment for children with ADHD who cannot or prefer not to receive medication, a behaviourally-oriented, multicomponent family therapy program may be as effective as a normal treatment strategy for some children and their families, and possibly more effective than a medication placebo. However, it is important to note that these conclusions are based on data from only two studies. In addition, information about the effectiveness of other forms of family therapy such as structural, functional, or strategic family...
therapy is not available at this point. These methods may work as well as behavioural methods in that they will affect the interactions between family members in a way that may provide a more supportive and organised family environment in which to help the child manage his or her behaviours (Carr 2000a).

Implications for research

Further research is needed to determine the effectiveness of family therapy for children and adolescents with ADHD. Studies must be conducted investigating various forms of family therapy compared to no-treatment or waiting list control conditions over long periods of time. The studies included here both investigated the effectiveness of behaviourally-oriented treatment programs, limiting the conclusions that can be drawn about various forms of family therapy at this point. There is much need for further evidence in this area to develop an understanding of how to treat children using family therapy without medication. Specifically, future research should explore this question by comparing various forms of family therapy with no-treatment control conditions to determine which specific methods and theories are most applicable to the symptoms of ADHD. These studies should be more rigorous than those available at present by including larger sample sizes to detect effects, well-concealed randomisation, control groups that do not access treatment as usual for at least a portion of the duration of the study, and measures of compliance with treatment by patients.

ACKNOWLEDGEMENTS

We are grateful for the guidance and editorial comments from Dr Jane Dennis and Professor Geraldine Macdonald and other members of the Cochrane Developmental, Psychosocial and Learning Problems Group. We appreciate the help and advice of Eileen Brunt in the development of the search strategy. We also appreciate the thoughts and advice of Dr Frances Gardner.

REFERENCES

References to studies included in this review

Horn 1991  [published data only]

Jensen 1999  [published data only]

References to studies excluded from this review

Aman 2001  [published data only]

Bandsma 1997  [published data only]

Barkley et al 1992  [published data only]

Barkley et al 2000  [published data only]

Barkley et al 2001  [published data only]

Barkley et al 1992  [published data only]

Barkley et al 1996  [published data only]
Barkley RA, Shelton TL, Crosswait C, Moorehouse M, Fletcher K, Barrett S, Jenkins L, Metevia L. Preliminary findings of an early intervention program with aggressive...

**Bloomquist 1991** *(published data only)*


**Bor 2002** *(published data only)*


**Brown 1986** *(published data only)*


**Gittelman-Klein 1976** *(published data only)*


**Hall 2003** *(published data only)*


**Hoath 2002** *(published data only)*


**Klein 1997** *(published data only)*


**Luk 1998** *(published data only)*


**Mozo 2002** *(published data only)*


**Nixon 2001** *(published data only)*


**Perez-Nieves 2001** *(published data only)*


**Pfiffner 1997** *(published data only)*


**Ritterman 1979** *(published data only)*


**Sonuga-Barke 2001** *(published data only)*


**Strayhorn 1989** *(published data only)*


**Strayhorn 1991** *(published data only)*


**Tutty 2003** *(published data only)*


**References to ongoing studies**

**Baumgartner 2001** *(published data only)*


**Additional references**
Alderson 2004

Angold 2000

APA 1980

APA 1987

APA 1994

APA 2000

Barkley 1990

Barkley 1991

Barkley 1998

Carr 2000a

Carr 2000b

Conners 1998

Corkum 1999

Crismon 2004
Crismon ML. personal communication 26 July 2004.

DuPaul 1998

Edwards 2002

Egger 1997

Goldman 1998

Higgins 2002

Ialongo 2004a
Ialongo NS. personal communication 31 July 2004.

Ialongo 2004b

Ialongo 2004c

Ialongo 2004d
Ialongo NS. personal communication 16 September 2004.

Ialongo 2004e
Ialongo NS. personal communication 27 September 2004.

Jadad 1999

MTA 1999

NICE 2000
NICE. Guidance on the use of methylphenidate (Ritalin, Equasym) for attention-deficit/hyperactivity disorder

**Schachter 2001**

**Shaffer 1996**

**Swanson 1992**

**Swanson 1995**

**Wells 2000**

**WHO 1993**

**Wolraich 1990**

**Wolraich 2003**

**Zwi 2001**

* Indicates the major publication for the study
## Characteristics of included studies  [ordered by study ID]

### Horn 1991

| Methods | Allocation: randomised  
Blinding: Researchers were blinded to participants medication condition. Assessors were blind to treatment status at all times.  
Controls: (N=) medication placebo condition with no other treatment  
Follow-up measures given nine months after termination of treatment |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Participants | N=196 (N=32 in treatment conditions relevant to this review)  
Age: M=8.27 years (SD=1.37)  
Diagnosed with ADHD using standard teacher and parent report measures and a clinical interview plus psychometric testing. Eight participants were also diagnosed with comorbid conduct disorder and 46 were also diagnosed with comorbid oppositional defiant disorder |
| Interventions | Behavioural Treatment: Behavioural parent training plus child self-control training including at-home practice and reinforcement of skills (N=). Other groups received high or low doses of stimulant medication with or without family therapy (N=). Controls received medication placebo only (N=) |
| Outcomes | Parent and teacher reports of symptoms using standard measures. Independent observations of motor activity and inattention. Consumer Satisfaction Questionnaire for parent training only |
| Notes | |

### Jensen 1999

| Methods | Allocation: randomised  
Blinding: Observational raters blinded, other researchers not mentioned  
Controls: (N=146) - treatment as usual in community |
|---------|-------------------------------------------------------------------------------------------------------------------------------------|
| Participants | N=579 (N=290 in treatment conditions relevant to this review)  
Ages 7-9.9 yrs.  
465 Males, 114 Females  
Diagnosis: Meeting DSM-IV criteria for ADHD Combined Type, not excluded for comorbid diagnoses |
| Interventions | Behavioural Treatment: parent training, child-focused treatment, and school-based intervention (N=144)  
Control: Community care group received various treatments in their communities, often including medication (N=146). Other treatment groups not relevant to this review (N=289) |

### Risk of bias

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</tbody>
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*Family therapy for attention-deficit disorder or attention-deficit/hyperactivity disorder in children and adolescents (Review)*  
Copyright © 2010 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.
## Outcomes

Parent and teacher report of ADHD symptoms, oppositional and aggressive symptoms, and social skills on standardised measures, parent, teacher, and child reports of internalising symptoms on a standardised measure, parent-child relations on a questionnaire, and academic achievement on a standardised measure. Observational data was also collected to enhance data from measures.

## Risk of bias

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## Characteristics of excluded studies [ordered by study ID]

<table>
<thead>
<tr>
<th>Study</th>
<th>Reason for exclusion</th>
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<tbody>
<tr>
<td>Aman 2001</td>
<td>The participants were not randomised to the treatment and control conditions, rather, they were put in the treatment condition until no places remained, then the rest of the participants were placed in the wait-list control condition. This study compared family therapy with a waiting list control condition for children with ADHD. Results indicate that parents whose children received family therapy generally reported greater reductions in ADHD symptoms than those who did not receive treatment. N=124</td>
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<tr>
<td>Bandsma 1997</td>
<td>This study did not contain a control condition. Treatment was mediation group therapy for parents only, with no participation of the child in therapy. This study measured the effectiveness of group mediation therapy for parents over time. Results indicated reductions in child externalising problems and some reduction in child internalising problems at follow-up as compared to baseline measures. N=not known (text in translation)</td>
</tr>
<tr>
<td>Barkley 1992</td>
<td>There was no control group in this study and all three groups received a form of family therapy. This study compared behaviour management training, problem-solving and communication training, and structural family therapy for families with children diagnosed with ADHD. Results indicated that all three treatments reduced family conflicts from pretreatment to posttreatment. N=61</td>
</tr>
<tr>
<td>Barkley 2000</td>
<td>The participants were not properly diagnosed with ADHD. A parent rating scale was used to determine whether the children met the inclusion criteria, with no other supporting data. This study compared a parent training condition, classroom treatment, their combination and a no treatment control condition for children with parent-reported ADHD symptoms. Results indicated that children who received the classroom treatment showed greater improvement in teacher-rated behaviour and observed classroom behaviour as compared to parent training only or the control condition. There were no differences between groups in parent-reported behaviour at home or academic achievement. N=158</td>
</tr>
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</table>
| Barkley 2001   | There was no control group in this study, both groups received therapy. This study compared problem-solving communication training for parents and adolescents, behaviour management training for parents, and their combination for adolescents with ADHD. Results indicated no
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<th>Study</th>
<th>Description</th>
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<tr>
<td>Barkley et al 1992</td>
<td>There was no control group in this study, all three groups received a form of family therapy. This study compared behaviour management training, problem-solving and communication training, and structural family therapy for families with children diagnosed with ADHD. Results indicated that all three treatments reduced family conflicts from pretreatment to posttreatment.</td>
<td>97</td>
</tr>
<tr>
<td>Barkley et al 1996</td>
<td>The participants were not diagnosed with ADHD. The inclusion criteria for this study were cutoff scores on a parent rating scale of ADHD symptoms with no other supporting assessments. The interventions used did not include family therapy, but were parent training and/or school-based treatment. This study compared parent training, school-based therapy, their combination, and a no-treatment control group for children with parent-reported ADHD and ODD symptoms. Results indicated that the school-based treatment group showed the greatest reductions in symptoms, however these effects were only found in the school setting, not in the home setting. The parent training program was found to be ineffective in reducing symptoms. No results were calculated for the combined treatment group.</td>
<td>61</td>
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<tr>
<td>Bloomquist 1991</td>
<td>Intervention consisted of separate parent training and school-based CBT, but not a combined treatment for the family as a unit. This study compared school-based CBT program involving parent, teacher, and child training, a school-based CBT program involving teacher training only, and a wait-list control condition for children diagnosed with ADHD. Results indicated that the multicomponent school-based programme yielded significantly greater reductions in disruptive behaviour in the short term, but not at follow-up.</td>
<td>158</td>
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<tr>
<td>Bor 2002</td>
<td>The intervention consisted of parent training only, with no participation of the child in therapy sessions. This study compared a standard behavioural intervention, an enhanced behavioural intervention, and a waiting list control condition for parents of preschool children with ADHD. Results indicated that both interventions yielded greater reductions in child behaviour problems and improvements in parenting practices, as opposed to the control group.</td>
<td>87</td>
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<tr>
<td>Brown 1986</td>
<td>The intervention consisted of cognitive training for children, with no inclusion of parents in therapy. This study compared cognitive self-control therapy with methylphenidate, their combination, and a non-specific therapy control condition for children diagnosed with ADD. Results were similar for all conditions, with some improvement in impulsivity symptoms in the cognitive therapy plus placebo group.</td>
<td>33</td>
</tr>
<tr>
<td>Gittelman-Klein 1976</td>
<td>There was no control condition in this study. In addition, the participants were not properly diagnosed with ADHD - reports from teachers were used to determine ADHD symptoms, and no other measure of ADHD symptoms was used for inclusion in the study. This study compared behaviour therapy, methylphenidate, and their combination for teacher-reported hyperactive children. Results indicated that participants receiving methylphenidate showed reductions in behaviour problems as compared to those who did not receive medication. No differences were found between the methylphenidate group and the combined treatment group.</td>
<td>34</td>
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<tr>
<td>Hall 2003</td>
<td>There was no control condition in this study. Participants in all three conditions received treatment. This study compared child-only CBT, child and parent CBT, and child and parent CBT plus school-based behavioural treatment for children diagnosed with ADHD. Results indicated that the combined parent, child and school-based treatment condition yielded the greatest improvements in children's behaviour and parenting practices, followed by the parent and child CBT condition, with the child-only condition showing the least amount of improvement over time.</td>
<td>29</td>
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<tr>
<td>Study</td>
<td>Description</td>
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<td>Hoath 2002</td>
<td>The intervention consisted of parent training only, with no explicit involvement of the child in therapy sessions. This study compared an enhanced version of the Triple-P Positive Parenting Program with a wait list control condition for children diagnosed with ADHD. Results indicated improvements in child behaviour and parenting practices for the treatment group, as compared to the control group. N=20</td>
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<tr>
<td>Klein 1997</td>
<td>There was no control condition in this study. Participants in all three conditions received treatment. This study compared behavioural family therapy, methylphenidate, and their combination for children with cutoff scores on standardised measures for ADHD symptoms. Results indicated that methylphenidate and the combination of methylphenidate and behavioural family therapy were more likely to yield improvements in symptoms and behaviour than behavioural family therapy alone, although parents and teachers reported some improvement in the behavioural therapy clients. N=89</td>
<td></td>
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<tr>
<td>Luk 1998</td>
<td>There was no control condition in this study. The participants were not diagnosed with ADHD. This study compared cognitive-behavioural therapy, conjoint family therapy, and eclectic therapy for children with persistent conduct problems. Results indicated that there was no significant difference between groups on a variety of measures of the child's symptoms, parents' mental health, and the functioning of the family. N=32</td>
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<tr>
<td>Mozo 2002</td>
<td>The participants were not diagnosed with ADD or ADHD - inclusion criteria consisted of a teacher rating form for aggression, hyperactivity, self-esteem, anxiety, study skills, family involvement, conduct, peer relations, grades, and attitudes towards school. No other form of assessment was used to designate included participants. This study compared brief family therapy plus teacher consultation and a no treatment control condition. Results indicated that there was improvement in behaviour for children in the treatment group over time, while the behaviours of the children in the control group either remained the same or declined over time. N=6</td>
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<tr>
<td>Nixon 2001</td>
<td>The participants were not diagnosed with ADHD - they were included if they met diagnostic criteria for oppositional defiant disorder and cutoff scores on the Eyberg Child Behavior Inventory were used along with reports of disruptive behaviour from parents. This study compared parent-child interaction therapy with a waiting list control condition. Results indicated that children who had received treatment had lower levels of parent-reported ADHD symptoms than those not receiving treatment at posttreatment and at follow-up. N=34</td>
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<tr>
<td>Perez-Nieves 2001</td>
<td>The participants were not diagnosed with ADD or ADHD - all children in a special education class were invited to participate in the study. In addition, the intervention consisted of parent training only, with no participation of the child in treatment. This study compared two forms of parent training and a no treatment control condition for children in special education. Results indicated that the enhanced version of parent training yielded the greatest reductions in children's ADHD symptoms, followed by parent training, and then the control condition. N=30</td>
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<tr>
<td>Pfiffner 1997</td>
<td>The intervention implemented in this study consisted of social skills training for children with parental involvement, but was not a form of family therapy. This study compared parent-mediated social skills training, child-only social skills training, and a wait-list control condition for children diagnosed with ADHD. Results indicated that both treatment conditions yielded significantly greater improvement in parent reports of children's social skills and behaviour as compared to the control condition. N=27</td>
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<td>Study</td>
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<tr>
<td>Ritterman 1979</td>
<td>There was no control condition in this study. This study compared four treatment conditions: family therapy plus ritalin, family therapy plus medication placebo, family therapy alone, and ritalin alone. Results indicated that both groups who received Ritalin showed more positive outcomes on various child measures than those receiving only family therapy or family therapy plus a medication placebo, however, parent and screeners' ratings tended to yield more positive outcomes for children in both family therapy conditions. N=40</td>
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<tr>
<td>Sonuga-Barke 2001</td>
<td>The intervention in this study consisted of parent training only, with no direct participation of the child in therapy sessions. In addition, children were not properly diagnosed with ADHD as symptoms were reported by parents only. This study compared parent training, parent counseling and support, and a waiting list control condition for children with parent-reported symptoms of ADHD. Results indicated more favourable outcomes for participants in the parent training group than for those in the comparison groups. N=78</td>
<td></td>
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<tr>
<td>Strayhorn 1989</td>
<td>The participants in this study were not diagnosed with ADHD, rather they were included if they had, among other characteristics, complaints from parents about attention deficit symptoms, with no supporting assessments. This study compared parent-child interaction training with a 'minimal treatment' control condition for children in low-income families with complaints of behavioural or emotional problems one year after treatment. Results indicated that parental reports of ADHD and internalising symptoms showed greater improvements in the treatment group as compared to the control group, and these results were supported by videotaped observations of children's behaviour. There was no difference between groups on ratings of children's oppositional behaviours. N=96</td>
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<tr>
<td>Strayhorn 1991</td>
<td>The participants in this study were not diagnosed with ADHD, rather they were included if they had, among other characteristics, complaints from parents about attention deficit symptoms, with no supporting assessments (same sample as in Strayhorn and Weidman, 1989). This study compared parent-child interaction training with a 'minimal treatment' control condition for children in low-income families with complaints of behavioural or emotional problems one year after treatment. Results indicated that parent reports and child measures showed no difference between groups in ADHD symptoms, however, teacher ratings indicated lower levels of ADHD symptoms and behaviour problems in the treatment group as compared to the control group. N=96</td>
<td></td>
</tr>
<tr>
<td>Tutty 2003</td>
<td>All participants in this study received stimulant medication. This study compared a behavioural and social skills class for families with a medication-only condition for children diagnosed with ADHD. Results indicated that parent reports of child behaviour and parenting practices were better in the treatment condition, whereas there was no difference between groups on a measure of attentional problems. N=100</td>
<td></td>
</tr>
</tbody>
</table>
### Baumgartner 2001

<table>
<thead>
<tr>
<th>Trial name or title</th>
<th>Evaluation of a patient and family education program for children and adolescents with attention deficit hyperactivity disorder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methods</td>
<td></td>
</tr>
<tr>
<td>Participants</td>
<td>Children ages 4-17 years receiving services for ADHD.</td>
</tr>
<tr>
<td>Interventions</td>
<td>Patient and family education program. Control: Treatment as usual in the community</td>
</tr>
<tr>
<td>Outcomes</td>
<td>Standardized parent report measure of ADHD symptoms and a standardized measure of global functioning</td>
</tr>
<tr>
<td>Starting date</td>
<td>2001</td>
</tr>
<tr>
<td>Contact information</td>
<td>Dr. M. Lynn Crismon, Pharm.D.</td>
</tr>
<tr>
<td>Notes</td>
<td>Specific methods and results not available from authors, awaiting publication</td>
</tr>
</tbody>
</table>
## DATA AND ANALYSES

### Comparison 1. Family therapy vs. Treatment as usual in community

<table>
<thead>
<tr>
<th>Outcome or subgroup title</th>
<th>No. of studies</th>
<th>No. of participants</th>
<th>Statistical method</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 SNAP parent ratings for inattention</td>
<td>1</td>
<td>259</td>
<td>Mean Difference (IV, Fixed, 95% CI)</td>
<td>-0.09 [-0.25, 0.07]</td>
</tr>
<tr>
<td>2 SNAP parent ratings for hyperactivity/impulsivity</td>
<td>1</td>
<td>259</td>
<td>Mean Difference (IV, Fixed, 95% CI)</td>
<td>-0.11 [-0.29, 0.07]</td>
</tr>
<tr>
<td>3 SNAP teacher ratings for inattention</td>
<td>1</td>
<td>247</td>
<td>Mean Difference (IV, Fixed, 95% CI)</td>
<td>-0.01 [-0.21, 0.19]</td>
</tr>
<tr>
<td>4 SNAP teacher ratings for hyperactivity/impulsivity</td>
<td>1</td>
<td>247</td>
<td>Mean Difference (IV, Fixed, 95% CI)</td>
<td>-0.15 [-0.35, 0.05]</td>
</tr>
<tr>
<td>5 Classroom observations of ADHD symptoms</td>
<td>1</td>
<td>216</td>
<td>Mean Difference (IV, Fixed, 95% CI)</td>
<td>0.11 [0.05, 0.17]</td>
</tr>
</tbody>
</table>

### Comparison 2. Family Therapy vs. Medication Placebo

<table>
<thead>
<tr>
<th>Outcome or subgroup title</th>
<th>No. of studies</th>
<th>No. of participants</th>
<th>Statistical method</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Conners’ Teacher Rating of Hyperkinesis</td>
<td>1</td>
<td>25</td>
<td>Mean Difference (IV, Fixed, 95% CI)</td>
<td>-1.98 [-6.01, 2.05]</td>
</tr>
</tbody>
</table>

### Analysis 1.1. Comparison 1 Family therapy vs. Treatment as usual in community, Outcome 1 SNAP parent ratings for inattention.

Review: Family therapy for attention-deficit disorder or attention-deficit/hyperactivity disorder in children and adolescents

Comparison: 1 Family therapy vs. Treatment as usual in community

Outcome: 1 SNAP parent ratings for inattention

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Treatment</th>
<th>N</th>
<th>Mean (SD)</th>
<th>Control</th>
<th>N</th>
<th>Mean (SD)</th>
<th>Mean Difference (IV Fixed 95% CI)</th>
<th>Weight</th>
<th>Mean Difference (IV Fixed 95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jensen 1999</td>
<td>129</td>
<td>1.4 (0.68)</td>
<td>130</td>
<td>1.49 (0.67)</td>
<td></td>
<td></td>
<td>100.0 %</td>
<td>0.09 [-0.25, 0.07]</td>
<td></td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>129</td>
<td>130</td>
<td>100.0 %</td>
<td>-0.09 [-0.25, 0.07]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Heterogeneity: not applicable

Test for overall effect: Z = 1.07 (P = 0.28)

Test for subgroup differences: Not applicable
Analysis 1.2. Comparison 1 Family therapy vs. Treatment as usual in community, Outcome 2 SNAP parent ratings for hyperactivity/impulsivity.

Review: Family therapy for attention-deficit disorder or attention-deficit/hyperactivity disorder in children and adolescents

Comparison: 1 Family therapy vs. Treatment as usual in community

Outcome: 2 SNAP parent ratings for hyperactivity/impulsivity

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Treatment</th>
<th>Control</th>
<th>Mean Difference</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N Mean(SD)</td>
<td>N Mean(SD)</td>
<td>IV,Fixed 95% CI</td>
<td></td>
</tr>
<tr>
<td>Jensen 1999</td>
<td>129 1.24 (0.72)</td>
<td>130 1.35 (0.72)</td>
<td>-0.11 [-0.29, 0.07]</td>
<td>100.0 %</td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>129</td>
<td>130</td>
<td>-0.11 [-0.29, 0.07]</td>
<td>100.0 %</td>
</tr>
</tbody>
</table>

Heterogeneity: not applicable

Test for overall effect: Z = 1.23 (P = 0.22)

Test for subgroup differences: Not applicable

Analysis 1.3. Comparison 1 Family therapy vs. Treatment as usual in community, Outcome 3 SNAP teacher ratings for inattention.

Review: Family therapy for attention-deficit disorder or attention-deficit/hyperactivity disorder in children and adolescents

Comparison: 1 Family therapy vs. Treatment as usual in community

Outcome: 3 SNAP teacher ratings for inattention

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Treatment</th>
<th>Control</th>
<th>Mean Difference</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N Mean(SD)</td>
<td>N Mean(SD)</td>
<td>IV,Fixed 95% CI</td>
<td></td>
</tr>
<tr>
<td>Jensen 1999</td>
<td>119 1.47 (0.81)</td>
<td>128 1.48 (0.82)</td>
<td>-0.01 [-0.21, 0.19]</td>
<td>100.0 %</td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>119</td>
<td>128</td>
<td>-0.01 [-0.21, 0.19]</td>
<td>100.0 %</td>
</tr>
</tbody>
</table>

Heterogeneity: not applicable

Test for overall effect: Z = 0.10 (P = 0.92)

Test for subgroup differences: Not applicable
### Analysis 1.4. Comparison 1 Family therapy vs. Treatment as usual in community, Outcome 4 SNAP teacher ratings for hyperactivity/impulsivity.

Review: Family therapy for attention-deficit disorder or attention-deficit/hyperactivity disorder in children and adolescents

Comparison: 1 Family therapy vs. Treatment as usual in community

Outcome: 4 SNAP teacher ratings for hyperactivity/impulsivity

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Treatment</th>
<th>Control</th>
<th>Mean Difference</th>
<th>Weight</th>
<th>Mean Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jensen 1999</td>
<td>119</td>
<td>128</td>
<td>-0.15 [ -0.35, 0.05 ]</td>
<td>100.0 %</td>
<td></td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>119</td>
<td>128</td>
<td>-0.15 [ -0.35, 0.05 ]</td>
<td>100.0 %</td>
<td></td>
</tr>
</tbody>
</table>

Heterogeneity: not applicable
Test for overall effect: Z = 1.46 (P = 0.14)
Test for subgroup differences: Not applicable

### Analysis 1.5. Comparison 1 Family therapy vs. Treatment as usual in community, Outcome 5 Classroom observations of ADHD symptoms.

Review: Family therapy for attention-deficit disorder or attention-deficit/hyperactivity disorder in children and adolescents

Comparison: 1 Family therapy vs. Treatment as usual in community

Outcome: 5 Classroom observations of ADHD symptoms

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Treatment</th>
<th>Control</th>
<th>Mean Difference</th>
<th>Weight</th>
<th>Mean Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jensen 1999</td>
<td>107</td>
<td>109</td>
<td>0.11 [ 0.05, 0.17 ]</td>
<td>100.0 %</td>
<td></td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>107</td>
<td>109</td>
<td>0.11 [ 0.05, 0.17 ]</td>
<td>100.0 %</td>
<td></td>
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</table>

Heterogeneity: not applicable
Test for overall effect: Z = 3.80 (P = 0.00015)
Test for subgroup differences: Not applicable
Analysis 2.1. Comparison 2 Family Therapy vs. Medication Placebo, Outcome 1 Conners' Teacher Rating of Hyperkinesis.

Review: Family therapy for attention-deficit disorder or attention-deficit/hyperactivity disorder in children and adolescents

Comparison: 2 Family Therapy vs. Medication Placebo

Outcome: 1 Conners' Teacher Rating of Hyperkinesis

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Treatment</th>
<th>Control</th>
<th>Mean Difference</th>
<th>Weight</th>
<th>Mean Difference</th>
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<tr>
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<td>N</td>
<td>Mean(SD)</td>
<td>IV,Fixed,95% CI</td>
<td>IV,Fixed,95% CI</td>
<td></td>
</tr>
<tr>
<td>Horn 1991</td>
<td>13</td>
<td>17.77 (4.23)</td>
<td>-1.98 [-6.01, 2.05]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>13</td>
<td>12</td>
<td>-1.98 [-6.01, 2.05]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Heterogeneity: not applicable

Test for overall effect: Z = 0.96 (P = 0.34)

Test for subgroup differences: Not applicable

FEEDBACK

Error in text concerning Horn 1991 study

Summary
There seems to be an error in the text on p 9 about the study of Horn 1991. The authors state (last sentence before discussion) that “participants in the treatment condition scored significantly lower on the Conners' Teacher Hyperkinesis Index than participants in the medication placebo condition as is shown in Figure 2.02”. The results of this study are not in Figure 2.02 but in figure 6.02. Moreover the WMD shows a non-significant difference (95% CI includes zero) which contradicts the statement in the text.
I certify that I have no affiliations with or involvement in any organization or entity with a financial interest in the subject matter of my feedback.
Date of submission: 9 May 2005

Reply
We accept that we were in error and have amended the text accordingly.
Date of reply: 26 May 2005

Contributors
Hilde Habraken, Occupational researcher
Email Address: hilde.habraken@farmaka.be
WHAT'S NEW

Last assessed as up-to-date: 14 April 2004.

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>17 February 2010</td>
<td>Amended</td>
<td>Contact details updated.</td>
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HISTORY

Protocol first published: Issue 4, 2004

Review first published: Issue 2, 2005

<table>
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<th>Date</th>
<th>Event</th>
<th>Description</th>
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<tbody>
<tr>
<td>27 May 2008</td>
<td>Amended</td>
<td>Converted to new review format.</td>
</tr>
<tr>
<td>26 May 2005</td>
<td>Amended</td>
<td>The current version of this review (Issue 4, 2005) contains a response to</td>
</tr>
<tr>
<td></td>
<td></td>
<td>helpful comments from a researcher (see 'Comments and criticisms'). Errors</td>
</tr>
<tr>
<td></td>
<td></td>
<td>have been corrected within the text</td>
</tr>
<tr>
<td>22 February 2005</td>
<td>New citation required and conclusions have changed</td>
<td>Substantive amendment</td>
</tr>
</tbody>
</table>

CONTRIBUTIONS OF AUTHORS

Both reviewers contributed to the development of the review. The search strategy was devised together with Eileen Brunt, TSC (maternity leave cover) of the Cochrane DPLPG. Trial selection, data extraction, assessment of methodological quality, and composition of the text were performed by GB and PM.

DECLARATIONS OF INTEREST

None known.
SOURCES OF SUPPORT

Internal sources

• University of Oxford, UK.

External sources

• No sources of support supplied

INDEX TERMS

Medical Subject Headings (MeSH)

Adolescent; Attention Deficit Disorder with Hyperactivity [drug therapy; *therapy]; Family Therapy [*methods]; Randomized Controlled Trials as Topic

MeSH check words

Child; Humans