Cognitive-behavioral therapy for anxiety disorders in children and adolescents: a systematic review of follow-up studies

Roberta Davis1,2, Maria Augusta Mansur de Souza1, Roberta Rigatti1, Elizeth Heldt1,2,3

ABSTRACT

Objective: To conduct a systematic review about the long-term response to cognitive-behavioral therapy (CBT) for anxiety disorders (ADs) in children and adolescents. Methods: The PubMed and ISI Web of Science databases were consulted. Search in the databases was performed in November 2012 and included cohort studies after CBT for ADs in children and adolescents with a follow-up period over 12 months. Results: A total of 10 papers met the inclusion criteria. The follow-up period ranged from 12 months to 13 years and the results generally showed maintenance of the short-term benefits with CBT. However, the studies presented limitations, especially regarding methods, such as lack of a control group and losses to follow-up. Conclusion: The long-term benefits of CBT were identified, however it would be interesting to conduct other studies with more frequent assessment periods, in order to minimize losses to follow-up, in addition to evaluating children and adolescents in the various stages of their development.

RESUMO

Objetivo: Realizar uma revisão sistemática sobre a resposta em longo prazo à terapia cognitivo-comportamental (TCC) para transtornos de ansiedade (TAs) em crianças e adolescentes. Métodos: Foram consultadas as bases PubMed e ISI Web of Science. A pesquisa nas bases de dados foi realizada em novembro de 2012 e incluíram-se estudos de coorte após TCC para TAs na infância e adolescência com período de seguimento superior a 12 meses. Resultados: Um total de 10 artigos preencheu os critérios de inclusão. O período de seguimento variou entre 12 meses e 13 anos e, em geral, os resultados indicaram a manutenção dos ganhos com a TCC em curto prazo. No entanto, os estudos apresentaram limitações, principalmente em relação ao método, como ausência de grupo controle e perdas de seguimento. Conclusão: Foram identificados os benefícios da TCC em longo prazo, porém seria interessante a realização de outros estudos que mantivessem períodos de avaliação mais frequentes a fim de minimizar perdas de seguimento, além de avaliar a criança e o adolescente nas diferentes etapas de seu desenvolvimento.

Keywords
Cognitive-behavioral therapy, anxiety disorders in children and adolescents, follow-up studies.

Palavras-chave
Terapia cognitivo-comportamental, transtornos de ansiedade na infância e adolescência, estudos de seguimento.

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INTRODUCTION

Anxiety and fear are emotions inherent to human nature, which become pathological when they are disproportionate to the stimulus or qualitatively differ from that which is observed in a given age group, characterizing anxiety disorders (ADs). These disorders are currently classified as: separation anxiety disorder (SepAD), panic disorder (PD), social anxiety disorder or social phobia (SAD), generalized anxiety disorder (GAD), specific phobia (SP), post-traumatic stress disorder (PTSD) and obsessive-compulsive disorder (OCD). A recent study observed that ADs are among the major disorders affecting children and adolescents, and up to 24.9% of them could experience these disorders over the course of their life, with symptoms impairing their academic and social performance.

Retrospective and prospective studies show that ADs in childhood and adolescence are chronic conditions that do not spontaneously present remission over time. If these disorders are not treated in their early stages, they increase the risk of school dropout or predict significant setbacks in academic life, as well as psychopathologies in adulthood, such as depression and substance abuse.

Despite its high prevalence and substantial associated morbidity, ADs in children and adolescents are still underdiagnosed and undertreated, even though there is evidence of effective treatment, such as pharmacotherapy and cognitive-behavioral therapy (CBT). In a meta-analysis involving 10 randomized controlled trials that compared CBT for ADs in childhood and adolescence with a waiting list, the remission rate in the CBT group was 56.5% versus 34.8% in the control group, suggesting a clinically significant benefit associated with the treatment. In another meta-analysis, with 13 randomized controlled trials (498 patients and 311 controls), the response to CBT for any AD was 56%, compared to 28.2% in the control group (RR: 0.6; CI 95%: 0.53-0.69), with a number needed to treat (NNT) of 3 (CI 95%: 2.5-4.5).

Follow-up studies evaluating long-term response to CBT are considerably more scarce when compared to studies evaluating short-term response. A recent review study about ADs showed that the short-term benefits of CBT are extended into late adolescence. However, the authors suggest that more follow-up studies are needed in order to confirm the predictors of long-term results.

Considering these gaps, which are still observed in the literature, this study aims to carry out a systematic review of follow-up studies assessing CBT for ADs in children and adolescents.

METHODS

This is a systematic review, with queries to the PubMed and ISI Web of Science databases. As inclusion criteria, researchers looked for cohort studies after CBT for ADs in childhood and adolescence; in English, Spanish or Portuguese languages. There was no limitation regarding ADs types and publication date. Studies with a follow-up period under one year were excluded. The following search terms were used: “childhood”; “anxiety or anxiety disorders”; “cognitive-behavioral therapy”; “follow-up”.

Search in the databases and selection of the articles were conducted separately by two researchers. Studies mentioned in more than one database were computed only once. The abstracts of all the articles found in the search were preliminarily read; upon meeting the inclusion criteria, the entire article was read prior to its final inclusion.

In order to present the study’s findings, results with p < 0.05 were considered as significant. Due to the heterogeneity of study designs (CBT format – individual or group; with or without parents) and variables (follow-up time), it was not feasible to conduct a meta-analysis of the studies included.

RESULTS

Search in the databases was conducted in November 2012 and 72 abstracts were found: 34 in PubMed (with eight selected to be read in full) and 38 in ISI Web of Science (with four selected to be read in full). A total of 10 articles met the inclusion criteria (Figure 1). Most studies that were excluded used follow-up periods of 3 to 6 months after CBT to reassess patients.

The characteristics and demographics of the studies included are shown in Table 1. It can be observed that the follow-up period in the study ranged from 12 months to 13 years after CBT. Patients were diagnosed through instruments and 9 studies used the Anxiety Disorders Interview Schedule: Child Version (ADIS-C), which follows the criteria of the Diagnostic and Statistical Manual of Mental Disorders (DSM)18,24,26,27. In addition to the ADIS, 7 articles used Child Behavior Checklist (CBCL) completed by parents. The four oldest studies were based on DSM-III18,21.
### Table 1. Characteristics of the studies and follow-up sample

<table>
<thead>
<tr>
<th>Studies*</th>
<th>Intervention Protocol</th>
<th>Format</th>
<th>Time* Mean (SD)</th>
<th>Total sample</th>
<th>♂</th>
<th>♀</th>
<th>Age* Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cobham et al., 2010</td>
<td>CBT</td>
<td>GCBT x GCBT + Parents</td>
<td>35 and 28 months</td>
<td>60 (89.6%)</td>
<td>31</td>
<td>29</td>
<td>10 to 17</td>
</tr>
<tr>
<td>Saavedra et al., 2010</td>
<td>CBT</td>
<td>Individual (self control) x Individual (contingency management)</td>
<td>8 to 13 years</td>
<td>67 (81%)</td>
<td>35</td>
<td>32</td>
<td>16 to 26</td>
</tr>
<tr>
<td>O’Leary; Barrett; Fjermestad, 2009</td>
<td>FOCUS</td>
<td>GCBT + Parents x CBT Individual + Parents</td>
<td>7 years</td>
<td>38 (49%)</td>
<td>20</td>
<td>18</td>
<td>13 to 24</td>
</tr>
<tr>
<td>Bernstein et al., 2008</td>
<td>FRIENDS</td>
<td>GCBT x GCBT + Parents x Waiting list</td>
<td>1 year</td>
<td>51 (84%)</td>
<td>NI</td>
<td>NI</td>
<td>8 to 12</td>
</tr>
<tr>
<td>Kendall et al., 2004</td>
<td>Coping Cat</td>
<td>GCBT</td>
<td>5.5 to 9.3 years</td>
<td>85 (90%)</td>
<td>53</td>
<td>32</td>
<td>15 to 22</td>
</tr>
<tr>
<td>Manassis et al., 2004</td>
<td>Coping Bear</td>
<td>Psychoeducation children x GCBT + Parents</td>
<td>6 to 7 years</td>
<td>43 (68%)</td>
<td>14</td>
<td>29</td>
<td>14 to 19</td>
</tr>
<tr>
<td>Barret et al., 2001</td>
<td>CBT</td>
<td>GCBT x GCBT + Parents</td>
<td>5 to 7 years</td>
<td>52 (67%)</td>
<td>28</td>
<td>24</td>
<td>13 to 21</td>
</tr>
<tr>
<td>Cobham; Dadds; Spence, 1998</td>
<td>Coping Cat</td>
<td>GCBT x GCBT + Parents</td>
<td>1 year</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>8 to 15</td>
</tr>
<tr>
<td>Barrett, 1998</td>
<td>Coping Cat</td>
<td>GCBT x GCBT + Parents</td>
<td>1 year</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>8 to 15</td>
</tr>
<tr>
<td>Barrett; Dadds; Rapee, 1996</td>
<td>Coping Koala</td>
<td>GBTG x GBTG + Parents</td>
<td>1 year</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>8 to 15</td>
</tr>
</tbody>
</table>

CBT: cognitive-behavioral therapy; GCBT: group cognitive-behavioral therapy; NI: not informed.

* At the period of intervention, all studies had a randomized clinical trial design. ** Follow-up studies without a control group, with the exception of Bernstein et al., 2008. * Time of follow-up in months and age in years.

Among the scales used to assess the anxiety and depression symptoms, the most commonly used were the Revised-Children Manifest Anxiety Scale (R-CMAS), the Multidimensional Anxiety Scale for Children (MASC) and the Children’s Depression Inventory (CDI). Most follow-up interviews were conducted in person, but some took place by telephone or email. Patients were generally evaluated at the baseline (before starting CBT), after completing the sessions, within 3-6 months, and at the follow-up point, which ranged from 12 months to 13 years.

Regarding the format of the intervention, two studies compared individual CBT versus group CBT22,23. The remaining studies analyzed group CBT versus CBT including the family, with or without a waiting list. In the study of CBT for OCD, researchers compared individual CBT + family counseling to group CBT + family counseling20. Three studies describe offering a reward in exchange for cooperation in the follow-up; in two studies this reward was monetary24,25 and, in another study, the reward consisted of movie tickets20. Additional treatment was after CBT deemed necessary in four studies20,21,25, taking place on an outpatient basis or even with hospitalization, and also with medication. Only in one study the participants who received additional therapy were excluded from the follow-up evaluation21.

The results of the follow-up studies after CBT regarding symptoms and diagnosis are presented in table 2. It is observed that, in most studies, the benefits of therapy regarding anxiety and depression symptoms were maintained over time; in three of them, improvement was greater at the follow-up18,20,23, in five there was an improvement compared to the baseline, but no significant difference regarding the evaluation after the end of the sessions19,21,24,26,27, and in two studies no difference in the anxiety symptoms was observed at the follow-up22,25.

It was also found that CBT can have a positive impact on the diagnosis of ADs over time, i.e., in eight of the studies, most patients no longer met the diagnostic criteria for the ADs, except in two studies, in which no significant difference was found25,26.

Out of the seven studies that included the family in therapy, four found significantly better results for CBT + family when compared to CBT only for the patients18,20,26,27 and in three of the studies the no difference was found in the results19,21,25.

These studies presented limitations, primarily in terms of method. For instance, most of them lacked a control group. Furthermore, the waiting list ended up receiving treatment, which rendered it useless as a control. Out of the ten studies, only one had a waiting list that was not treated; this was the only clinical trial with a controlled follow-up26. The lack of control for variables, such as the use of additional therapies, was also observed, which may indicate a bias in the interpretation of results.
Table 2. The results of the follow-up studies after CBT regarding symptoms and diagnosis

<table>
<thead>
<tr>
<th>Studies*</th>
<th>Diagnosis</th>
<th>Instruments</th>
<th>Follow-up outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cobham et al., 2010</td>
<td>Anxiety disorder</td>
<td>ADIS-C, CBCL, RCMAS-S</td>
<td>Anxiety — significant improvement maintained, compared to the baseline</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No longer met the criteria for the ADs = 48 (80%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>There was a significant difference between the interventions: GCBT = 23 (69%) without a diagnosis of ADs; GCBT + family = 25 (92%) without a diagnosis of ADs</td>
</tr>
<tr>
<td>Saavedra et al., 2010</td>
<td>Social phobia, Specific phobia, Panic disorder/Agoraphobia, Depressive disorder</td>
<td>ADIS-C, ADIS-P, ADIS-IV, RCMAS-S, RCMA-S, CDI, BDII, CBCL, YASR</td>
<td>Anxiety and depression symptoms — significant improvement after 1 year of follow-up, maintained up to 9 years after CBT</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>62 (92.5%) no longer met the criteria for the ADs</td>
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<td></td>
<td></td>
<td></td>
<td>61 (91%) did not meet the criteria for depression</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>55 (82.1%) did not meet the criteria for any disorder</td>
</tr>
<tr>
<td>O’Leary; Barrett; Fjermestad, 2009</td>
<td>OCD</td>
<td>ADIS – C &amp; ADIS-P, NIMH-GOCS, Y-BOCS-SR, MASC, MASC-OC, CDI, BDI, CBCL, YASR</td>
<td>Anxiety — no significant improvement. Depression symptoms — significant improvement in individual CBT and in older individuals</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No diagnosis of OCD after 7 years of CBT (87%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Individual CBT (79%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>GCBT (95%)</td>
</tr>
<tr>
<td>Kendall et al., 2004</td>
<td>Primary Anxiety disorder</td>
<td>ADIS—C &amp; ADIS—P, ADIS—IV—L, CASI, RCMAS, CDI, CDI, CQ-C, APES, CBCL, CQ-P, STAI-C</td>
<td>Anxiety and depression symptoms — significant improvement maintained, compared to the baseline</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No longer met the criteria for the ADs: After the CBT sessions = 51.2% At follow-up = 80.5%</td>
</tr>
<tr>
<td>Manassis et al., 2004</td>
<td>GAD</td>
<td>DICA-R-P, RCMA</td>
<td>Anxiety and depression symptoms — persisted at the follow-up, did not require clinical care in 70% of the individuals treated</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No significant difference regarding the diagnosis of ADs</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Baseline (n = 63): GAD = 32 (52%) Other ADs = 21 (49%) Follow-up (n = 43): GAD = 31 (48%) Other ADs = 22 (51%)</td>
</tr>
<tr>
<td>Barrett et al., 2001</td>
<td>Separation anxiety disorder, Social phobia, Simple phobia, Depression, Oppositional defiant disorder</td>
<td>ADIS-C, RCMAS, FSSC-R, CDI, CBCL</td>
<td>Anxiety and depression symptoms — significant improvement maintained at 6-year follow up, compared to the baseline, but greater than at the 12-month evaluation</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>No longer met the criteria for the ADs: After 12 months = 79.6% and after 6 years = 85.7% CBT and CBT+FAM interventions were equally effective</td>
</tr>
<tr>
<td>Cobham; Dadds; Spence, 1998</td>
<td>GAD</td>
<td>ADIS-C, ADIS-P, RCMAS, STAIC, CBCL</td>
<td>Anxiety — overall improvement observed in the four conditions of treatment and significant difference maintained, compared to the baseline</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No longer met the criteria for the ADs: CBT = 82% and CBT+FAM = 80%</td>
</tr>
<tr>
<td>Barrett, 1998</td>
<td>Separation anxiety disorder, Secondary diagnosis of simple phobia, Depression</td>
<td>ADIS-C, ADIS-P, FSSC-R, CBCL</td>
<td>Anxiety — significant improvement maintained at follow-up</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No longer met the criteria for the ADs: After CBT and CBT+FAM = 64.8% versus 25.2% waiting list After 12 months: GCBT = 64.5% versus GCBT+FAM = 84.8% The intervention that included the family proved more effective than GCBT only with the children</td>
</tr>
</tbody>
</table>
in this review have done 20,23,24.

Elizeth Heldt – Planning and supervising all phases of research and critical review of the manuscript.

All authors approved the final version of the article.

CONFLICTS OF INTEREST

The authors have no conflicts of interest to be declared.

Only one study describes the use of additional therapies as an exclusion criterion 21. Three other studies have described the use of additional therapies, but maintained the patients in the follow-up evaluation 20,24,29.

DISCUSSION

This review was conducted with scientific rigor and it has confirmed that there are very few follow-up studies of CBT for ADs in children and adolescents covering a period over 12 months. The main finding of the studies included is that the benefits of therapy are maintained over time, even for the cases in which the difference was in relation to the baseline 19,21,24,26,27.

Among the studies that compared CBT + Family and CBT only with the children, the results of more recent studies found that interventions including the family were more favorable 26,27. On the other hand, in two studies, no differences were found between the groups, even though these are older studies 19,21.

Losses to follow-up studies are another common limitation that may somehow compromise the results. This confirms the need for evaluations with shorter intervals and for the consideration of rewarding participants, as three studies in this review have done 20,23,24.

In all the studies, there was a clear focus on clinical outcomes, such as the severity of symptoms and the maintenance of the diagnosis of AD at follow-up. Therefore, studies that focus on evaluating psychosocial aspects, such as school performance and quality of life over time, still need to be conducted. These other parameters say much about the functioning of children and adolescents, including the way they feel about themselves, the environments to which they are exposed and how satisfied they are with their lives. Also, considering that one of the goals of AD treatment is to reduce the risk of psychopathology in adulthood, follow-up studies to define response predictors are yet to be developed 1.

Some limitations of this study must be considered. The search was carried out on only two databases, and might, therefore, have left some studies aside, leading to more limited conclusions. Besides, the lack of long term follow-up studies makes it difficult to establish comparisons.

CONCLUSIONS

Despite these limitations, the long-term benefits of CBT were identified, regardless of whether the format was individual or in group, with or without the inclusion of the family. It would be interesting to conduct further studies that used more frequent evaluation intervals, in order to minimize losses to follow-up, in addition to evaluating children and adolescents in the different stages of their development.

INDIVIDUAL CONTRIBUTIONS

Robert Davis – Planning, review of literature, reading of selected articles and writing of the manuscript.

Maria Augusta Mansur de Souza – Reading of selected articles, and critical review of the manuscript.

Robert Rigatti – Review of literature, and critical review of the manuscript.

Elizeth Heldt – Planning and supervising all phases of research and critical review of the manuscript.

All authors approved the final version of the article.

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The authors have no conflicts of interest to be declared.
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REFERENCES