Effectiveness of Interpersonal Psychotherapy for Adolescent Depression: A Systematic Review and Meta-Analysis

Yilin Xiong

Shanxi Medical University, Shanxi, 030012, China

Abstract. IPT focuses on solving current relationship problems and tries to help individuals change their maladaptive patterns of interaction. This review was designed to evaluate RCTs of the efficiency of IPT in adolescents with depression in the last 25 years. Methods: A comprehensive search of a pertinent database (PubMed) was carried out. Studies examining the effectiveness of IPT on depressive symptoms in individuals aged 7 to 18 were included. The findings were synthesized through a narrative overview and meta-analysis approach. Results: 10 studies meeting the inclusion criteria were analyzed. The meta-analysis revealed a significant improvement in participants’ depressive symptoms following IPT intervention (SMD: -0.42, 95% CI: -0.65 to -0.19). Subgroup analysis confirmed sustained noticeable results for IPT based on the 6-month follow-up data (SMD: -0.29, 95% CI: -0.46 to -0.13), while no statistical significance was noted at the 12-month follow-up (SMD: -0.04, 95% CI: -0.31 to -0.22). Additionally, IPT-A (SMD: -0.46, 95% CI: -0.83 to -0.10) demonstrated similar efficacy to IPT-AST (SMD: -0.26, 95% CI: -0.43 to -0.09) in reducing depressive symptoms. Different assessment scales influenced the treatment effect assessment, with results indicating a lower treatment effect with the CES-D scale (SMD: -0.26, 95% CI: -0.43 to -0.09), in comparison with other scales (SMD: -0.70, 95% CI: -1.34 to -0.06). Conclusion: This study evaluated the evidence on the effectiveness of IPT in as a treatment protocol for youth depression before and after treatment, and during a 6-month follow-up period. The outcomes suggest that IPT is effective in curing depression in teens, consistent with multiple previous studies.

Keywords: Interpersonal psychotherapy, adolescent depression, meta-analysis.

1. Introduction

Depression is a prevalent mental disorder globally, as reported by the World Health Organization (WHO), affecting an estimated 121 million individuals worldwide (Leis et al. 2019). Depressive disorders are the primary cause of “years lost due to disability” (YLD), a measure of the years lived with a disability multiplied by its severity (Jack et al. 2020). Depressive disorders can occur at an early stage in life, impacting 3% of children before puberty and 6% of those after puberty, including adolescents (Otto et al. 2021). These disorders appear in episodes of varying lengths and are often long-lasting, significantly affecting psychological and social development. An adolescent who experiences one episode has a 50% to 70% chance of having another within five years (Whittier et al. 2016). However, the effectiveness of clinical interventions for adolescent depression varies. Combined with these features of depressive disorders, there is an urgent need for reliable interventions to address depression in young people.

Interpersonal Psychotherapy (IPT) is a structured mental intervention that treats depression by emphasizing social and interpersonal factors in order to alleviate symptoms of depression (Sloan et al. 2009). Initially used to treat adult outpatients with depression who are not bipolar or psychotic, Interpersonal Psychotherapy (IPT) targets the connection between human relationships and depressive disorder (Sloan et al. 2009). Due to the concise feature of IPT and its relevance to the developmental stages of adolescents, Mufson modified and updated it to produce a version tailored for young individuals experiencing depression (Moreau et al. 1991). IPT underlines that depression is a disease, not the patient’s flaw or handicap, and underlines that it is a treatable condition. Therapists collaborate with patients to resolve interpersonal issues surrounding the patients’ current problems or dilemma, which are typically grouped into 4 areas: grieving, inadequate interpersonal communication, role reversal, and role conflict (Markowitz and Weissman 2012).
Recent study (Ijaz et al. 2018) has illustrated that IPT is an efficient therapy for adults, reducing symptoms of depression and helping to preclude the onset and relapse of depression. Beyond that, clinical trials have verified that IPT also has a significant therapeutic effect on adolescents (Young et al. 2016a). For example, Interpersonal Psychotherapy–Adolescent Skills Training (IPT-AST) is a prospective precautionary measure (Young et al. 2016b). IPT-AST builds upon interpersonal theories of depression, which propose that risk factors within relationships, including insufficient social abilities and hurdles in relationships, increase the chances of experiencing depression (Rudolph 2008). IPT-AST is designed to alter interpersonal relationship factors that lead to adverse feelings and enhance the probability of depression during adolescence. The suggested mechanisms for change in interpersonal treatments involve enhancing social support, reducing interpersonal conflicts, and enhancing social ability (Lipsitz and Markowitz 2013). The majority of research has concentrated on the influence of IPT on overall functioning and social connections, overlooking the crucial examination of its effectiveness in addressing depression.

As a result, this investigation was structured to evaluate the effects of IPT on teenagers experiencing depression, with the goal of laying the groundwork for improving and optimizing clinical intervention strategies.

2. Methods

We carried out our investigation following the guidelines outlined in the Cochrane Handbook for Systematic Reviews of Interventions (Michaelis et al. 2018) and the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) statement (Hutton et al. 2015).

2.1 Search strategy

We conducted a keyword search in PubMed from October 1, 1999, to November 25, 2023. The search terms used were “Interpersonal Psychotherapy” or “IPT” along with “Depression” or “Depressive symptoms” and “Adolescent*” or “Teen*”.

2.2 Inclusion criteria

All randomized controlled trials (RCTs) included adolescents (ages 7 to 18) who met the inclusion criteria.

Adolescents with depression (age from 7 to 18 years old) were eligible in this study. Depression’s definition is a diagnosis of major depression, mild or interim depression, or depression, as defined by standardized diagnostic criteria, such as the Diagnostic and Statistical Manual of Mental Disorders (Battle 2013) and the International Classification of Diseases (Krawczyk and Święcicki 2020); or as a state of depression indicated by a score exceeding the designated threshold on a standardized rating scale for depression (Smith 2014).

2) The experimental group received treatments involving IPT or variations of IPT, including Interpersonal Psychotherapy for Depressed Adolescents (IPT-A), IPT-AST, and Family-Based Interpersonal Psychotherapy (FB-IPT).

IPT-A is a therapeutic approach intended for alleviating depression through the instruction of particular social abilities that are vital for forming intimate bonds and managing the interpersonal pressures linked to depression (Mufson et al. 2004).

IPT-AST is a group intervention on account of IPT-A. The idea to develop IPT-AST was inspired by research on the positive results of IPT-A and the risk and protective factors of depression (Young et al. 2010).

FB-IPT is an adaptation of IPT-A that directly emphasizes parent-child dispute and interpersonal dysfunction, two areas that can lead to pre-adolescent depression, through weekly engagement with parents (Dietz et al. 2015a).

3) Treatments in the control group included group counseling (GC), child-centered therapy (CCT), school counseling (SC), cognitive-behavioral therapy (CBT), treatment as usual (TAU).
2.3 Exclusion criteria

1) Non-RCTs (such as reviews, systematic reviews, case reports, questionnaires and etc.) and non-clinical trials (such as animal studies, cell studies, etc.) were excluded.
2) The treatment method was self-controlled trial, including dose, course of treatment and etc.
3) There were no relevant indicators required for this study.
4) Other organic or drug-induced secondary depression could not be ruled out.
5) Participants with currently severe suicidal or impulsive tendencies were excluded.
6) Participants with a history of other serious mental disorders [e.g. schizophrenia (Tandon et al. 2013), bipolar (Phillips and Kupfer 2013)] were excluded.
7) Participants who have experienced alcohol or substance dependency or abuse in the past were not considered.
8) Participants with severe physical disease and organic brain disease were excluded.
9) Participants who received other antidepressant therapy within the last 1 month were excluded.

2.4 Outcomes

We selected the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff 1977), Children's Depression Rating Scale, Revised CDRS-R (Mokros et al. 1987), Children's Depression Inventory (Smucker et al. 1986) and Hamilton Depression Scale (HAMD). The most commonly used self-rated depression scales for adolescents have strong psychometric properties for evaluating depressive symptoms. The main measure of effectiveness in the studies included was the change in standardized scale scores from pre-intervention to post-intervention or follow-up.

2.5 Study selection

The results of the search were collected in the data management tool. Two reviewers (XYL and WJY) individually evaluate the chosen research to gather information. If there are inconsistencies, a final conclusion is reached after a discussion.

2.6 Assessment of study quality

The evaluator conducted a fair assessment of the potential bias in the studies that were incorporated, utilizing the Risk of Bias tool from the Cochrane Collaboration (Hutton et al. 2015). The assessment examined the generation of sequences, allocation concealment, participant and healthcare provider blinding, outcome assessor blinding, incomplete outcome data, outcome reporting selectivity, and other biases that could exist. Every aspect was categorized as displaying either a “high”, “unclear” or “low” bias risk, following the guidelines outlined in the Cochrane Handbook (Michaelis et al. 2018).

2.7 Data items

The research collected the subsequent information: details of the study (author, year, design of the study, duration of follow-up); demographics of participants (size of sample, gender, age); conditions of the experiment (experimental group, control group); and results [mean and Standardized Mean Difference (SMD) of scale scores at the beginning, after prevention, and follow-up].

2.8 Statistical analysis

This review focused on depression outcomes measured using validated scales. The reviewer independently gathered the data, entering information for each measure into Review Manager 5.4. Baseline and post-intervention score across groups were compared to evaluate the efficacy of depression interventions and their lasting impacts.
3. Results

3.1 Selection and inclusion of studies

At first, 2307 articles were found in the databases. After eliminating duplicates and non-journal papers, implementing the inclusion criteria on the titles yielded 1050 articles. After thorough examination of the complete texts, 101 articles were selected for further evaluation, ultimately resulting in the incorporation of 10 studies in the conclusive analysis (Fig. 1). The overall participants count across all trials was 1036, ranging from 7 to 18 years old, with a majority being female. This consisted of 541 individuals in the experimental group and 495 in the control group.

![Fig. 1](image-url)  
Fig. 1. The selection process of study in the Prisma flow diagram.

3.2 Study characteristics

In the ten studies included in the analysis, participants aged between 7 and 18 years (Table 1). The experimental group received IPT while the control group was administered alternative treatments. Evaluation of participants’ depressive symptoms at baseline and post-prevention was conducted using the CES-D, CDRS-R, CDI, and HAMD scales in the studies.

<table>
<thead>
<tr>
<th>References</th>
<th>Participants</th>
<th>Age</th>
<th>Experimental</th>
<th>Control</th>
<th>Scales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jones 2021</td>
<td>186</td>
<td>14.01±1.12</td>
<td>IPT-AST</td>
<td>GC</td>
<td>CES-D</td>
</tr>
</tbody>
</table>
Abbreviations: IPT-AST, Interpersonal Psychotherapy-Adolescent Skills Training; FB-IPT, Family-Based Interpersonal Psychotherapy; IPT-A, interpersonal psychotherapy for depressed adolescents; GC, group counseling; CCT, child-centered therapy; SC, school counseling; CBT, cognitive-behavioral therapy; TAU, treatment as usual; CES-D, the self-report Center for Epidemiologic Studies-Depression Scale; CDRS-R, Childhood Depression Rating Scale-Revised; HAMD, Hamilton Depression Rating Scale; CDI, Children's Depression Inventory.

3.3 Risk of bias

The quality of the included studies is assessed by the RevMan software and the results are presented (Fig. 2).

Fig. 2. A chart depicting the quality of the included studies.

3.4 The effect of IPT on depression in adolescents

After pooling the outcomes of all 10 studies for meta-analysis, obvious improvement in symptoms of depression was observed following IPT. The first forest plot (Fig. 3) included data from the 10 studies comparing scores between IPT and other treatment groups pre and post-treatment. Analysis applying a random-effects model indicated a significant score difference of -0.42 [-0.65, -0.19] between the two groups (p < 0.005), favoring the IPT group as a higher score signifies better depression improvement.
Publication bias within the study was potentially indicated by some dispersion among the included experiments, as assessed using a funnel plot. This suggests a possibility of publication bias (Fig. 4).

Fig. 3. A forest plot depicting the overall score difference in IPT and control groups.

3.5 Subgroup analyses

3.5.1 Different IPT treatments compared with other treatments

To investigate the effect of the treatments on effects, we categorized our findings by treatment type in the experimental group. Treatments were divided into IPT-AST group, IPT-A group, and FB-IPT group (Fig. 5). The IPT-AST group (SMD -0.26, 95% Confidence Interval CI [-0.43, -0.09]) comprised 6 studies with a total of 860 participants. The IPT-A group (SMD -0.46, 95% CI [-0.83, -0.10]) comprised 3 studies with 131 participants altogether. The FB-IPT group comprised 1 study with 38 participants altogether. In the FB-IPT group (SMD -1.79, 95% CI [-2.58, -0.99]) showed the best efficacy compared to other treatments group. The scatter plot displayed a distribution of studies, suggesting potential publication bias in the research included (Fig. 6).
Fig. 5. Forest plots depicting differences in scores in the experimental groups using IPT-AST, IPT-A, and FB-IPT.

Abbreviations: IPT-AST, Interpersonal Psychotherapy-Adolescent Skills Training; FB-IPT, Family-Based Interpersonal Psychotherapy; IPT-A, interpersonal psychotherapy for depressed adolescents.

3.5.2 Follow-up of improvement of depressive symptoms after intervention

We categorized our findings based on follow-up time to analyze the impact of treatment duration. Treatments were classified into short-term (3-6 months) and long-term (12 months) follow-up periods (Fig. 7). The short-term group consisted of 2 studies with 84 participants, the mid-term group included 4 studies with 600 participants, and the long-term group involved 2 studies with 230 participants. The mid-term group (SMD -0.29, 95% CI [-0.46, -0.13]) exhibited superior efficacy compared to the other groups. However, there were no significant long-term effects observed in the short-term or long-term groups. The scatter plot displayed a distribution of studies, suggesting potential publication bias in the research included (Fig. 8).

Fig. 7. Forest plots depicting differences in scores of short-term (6 months) and long-term follow-up (12 months).

Abbreviations: 6m, 6 months; 12m, 12 months.

3.5.3 CES-D compared with other scales

To investigate the effect of the assessment scales on treatment effects, we categorized our findings by scale type. Due to a wider application of CES-D, it was included as a separate group. Therefore, scales were divided into CES-D group and other scales group (Fig. 9). The CES-D group contained 6 studies with 860 participants. The other scales group comprised 4 studies with 169 participants. In the other scales group, this group (SMD -0.70, 95% CI [-1.34, -0.06] showed better efficacy compared
to CES-D group (SMD -0.26, 95% CI [-0.43, -0.09]). The funnel plot showed that the part of studies was scattered, which indicated that the study included may have a publication bias (Fig. 10).

### Table 1: Results of Subgroup Analysis

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>Experimental Mean</th>
<th>SD</th>
<th>Total</th>
<th>Control Mean</th>
<th>SD</th>
<th>Total</th>
<th>Std. Mean Difference IV</th>
<th>Random, 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>CES-D</td>
<td>-0.84</td>
<td>8.65</td>
<td>99</td>
<td>0.77</td>
<td>10.3</td>
<td>112</td>
<td>-0.16 (0.43, 0.11)</td>
<td></td>
</tr>
<tr>
<td>Horowitz 2007</td>
<td>-12.05</td>
<td>6.78</td>
<td>95</td>
<td>-11.29</td>
<td>7.28</td>
<td>91</td>
<td>-0.11 (0.40, 0.18)</td>
<td></td>
</tr>
<tr>
<td>Jones 2006</td>
<td>-17.7</td>
<td>6.13</td>
<td>27</td>
<td>-10</td>
<td>9.19</td>
<td>13</td>
<td>-1.64 (1.16, -0.24)</td>
<td></td>
</tr>
<tr>
<td>Young 2006</td>
<td>-33.82</td>
<td>6.94</td>
<td>56</td>
<td>-30.31</td>
<td>5.46</td>
<td>21</td>
<td>-0.67 (0.12, -0.20)</td>
<td></td>
</tr>
<tr>
<td>Young 2016</td>
<td>-4.39</td>
<td>6.65</td>
<td>92</td>
<td>-2.45</td>
<td>8.98</td>
<td>90</td>
<td>-0.22 (0.61, 0.07)</td>
<td></td>
</tr>
<tr>
<td>Young 2019</td>
<td>-4.45</td>
<td>6.65</td>
<td>60</td>
<td>-2.24</td>
<td>10.29</td>
<td>90</td>
<td>-0.23 (0.62, 0.06)</td>
<td></td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>417</td>
<td>71.0</td>
<td>443</td>
<td></td>
<td></td>
<td></td>
<td>-0.06 (0.45, 0.89)</td>
<td></td>
</tr>
</tbody>
</table>

Test for overall effect Z = 2.02 (P = 0.003)

Heterogeneity: Tau^2 = 0.02, CH^2 = 7.55, df = 5 (P = 0.18); I^2 = 34%

Fig. 9. Forest plots depicting differences in scores using the CES-D and other scales.

#### Abbreviations: CES-D, the self-report Center for Epidemiologic Studies–Depression Scale.

### 4. Discussion

Based on the results of this meta-analysis, it is confirmed that IPT is an effective treatment for teenage depression patients. This is evident in its capacity to significantly decrease symptoms of depression when compared to control groups.

After reviewing ten studies, it was found that IPT-AST, as a preventive intervention, yielded positive outcomes for teenagers experiencing depression. Providing IPT-AST within a school environment overcomes the limitations of traditional treatment settings, increasing accessibility and attractiveness. Adolescents generally prefer and respond better to interventions within a school setting as opposed to hospitals or clinical settings, thus enhancing the ease of implementing preventive strategies (Young et al. 2019). Additionally, IPT-AST's efficacy in averting depression among teenagers could be attributed to its focus on interpersonal connections (Spiro-Levitt et al. 2019). IPT-AST promotes the development of social skills among adolescents within the school environment. This enables them to better handle interpersonal difficulties in their daily lives and sustain the preventive benefits of the intervention (Tanofsky-Kraff et al. 2016). The findings presented will provide new perspectives to mental health professionals in schools and therapists specializing in adolescent depression prevention strategies.

Our analysis of subgroups indicated a decrease in depressive symptoms at the 6-month follow-up, results consistent with earlier studies (Young et al. 2016; Horowitz et al. 2007; Young et al. 2006). Nevertheless, after 12 months of tracking, the differences in effectiveness between IPT and other therapies did not show any statistical significance. One potential reason for the absence of lasting advantages from IPT-AST could be attributed to the fact that the researchers in charge did not maintain ongoing contact with the adolescents following the conclusion of the intervention. In contrast, leaders of other therapies might include school counselors, providing depressed adolescents with increased accessibility and flexibility in session duration and frequency (Young et al. 2019).

Additionally, within the subgroup analysis of treatment approaches within the experimental group, the effectiveness of the FB-IPT (Dietz et al. 2015b) group was notably superior to that of the remaining two groups, which may be on account of the small sample size of FB-IPT experiment. Another reason is that the statistic in this experiment is Standard Error (SE), which caused errors in the conversion process. Furthermore, the measurement scale used in the FB-IPT group was different from that used in the other two groups, which is potential cause for the significant preponderance of
the treatment efficacy results in this group. The data of subgroup analysis of the scales indicated that different scales had corresponding influence on the evaluation of treatment effect. One reason for this result may be the different age spans of the subjects in the different experiments. Overall, specific scales were not fully applicable to participants aged 7 to 18 years included in this meta-analysis.

In conclusion, IPT proves effective for adolescents with depression in addressing depressive symptoms. However, our study solely assessed depressive symptoms, prompting a need for future research to explore additional interpersonal outcomes when evaluating IPT in adolescents with depression. Furthermore, the existing literature does not offer adequate insight into the impact of IPT on overall functioning, necessitating more RCTs for further validation of our findings in years to come.

**Fig. 6.** Funnel plot of different types of IPT improving depressive symptoms.

Abbreviations: IPT-AST, Interpersonal Psychotherapy-Adolescent Skills Training; FB-IPT, Family-Based Interpersonal Psychotherapy; IPT-A, interpersonal psychotherapy for depressed adolescents.

**Fig. 8.** Funnel plot of the long-term effect of IPT improving depressive symptoms.

Abbreviations: 6m, 6 months; 12m, 12 months.
5. Conclusion

This meta-analysis presents evidence backing the efficacy of IPT in alleviating depressive symptoms in youth with depression when compared to control groups. Subgroup analysis indicated that FB-IPT exhibited the most favorable treatment effect. Notably, a significant decrease in symptoms of depression was still evident during the 6-month follow-up period. Different assessment scales also influenced the evaluation of depression improvement. In conclusion, further studies are necessary to investigate the impact of IPT on overall functioning in depressed adolescents and its efficacy across diverse cultural backgrounds.

References