



# Cognitive Behavioral Therapy for Anxiety Reduction Among Justice-Involved Youth: Insights from a Systematic Review

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## ABSTRACT

Teens involved in the juvenile justice system are particularly vulnerable to anxiety disorders due to recurrent exposure to adverse experiences and lack of psychological support. This systematic review aimed to evaluate the efficacy and implementation of Cognitive Behavioral Therapy (CBT) for reducing anxiety among justice-involved adolescents across diverse international contexts. Comprehensive searches were conducted across PubMed, Scopus, PsycINFO, ScienceDirect, and Google Scholar for studies published up to August 2025 involving adolescents aged 10–18 with experience in juvenile justice settings. Cohort, quasi-experimental, randomized controlled trials (RCTs), and pre–post intervention designs were included, and methodological quality was assessed using the Joanna Briggs Institute (JBI) Critical Appraisal tools. Ten studies across the US, Germany, Nigeria, Turkey, Thailand, China, and Sweden met the inclusion criteria. Most reported significant reductions in anxiety, particularly in group-based or trauma-focused CBT interventions. Protocol adherence, practitioner skill, and cultural adaptation were identified as critical success factors, while implementation challenges included resource limitations and staff turnover. In conclusion, CBT demonstrates robust potential as an effective and adaptable intervention for anxiety reduction among justice-involved youth, especially when culturally tailored and trauma-informed. Further studies should focus on long-term outcomes and context-specific adaptation for resource-limited settings such as Indonesia.

**Keyword:** Cognitive Behavioral Therapy, Anxiety Disorders, Juvenile Delinquency, Adolescent, Psychological Trauma

## 1. Introduction

Adolescents navigating the juvenile justice system encounter profound psychological challenges that demand immediate attention. Current research paints a concerning picture, revealing that detained youth experience anxiety disorders at rates up to eight times higher than their non-detained peers, with some studies reporting prevalence as high as 65% (Cohen et al., 2016; Lardén et al., 2021). This mental health crisis emerges from a perfect storm of adverse circumstances: traumatic childhood experiences (documented in 72% of cases according to Nowak's 2019 global analysis), the inherently stressful nature of correctional environments, and systemic obstacles to accessing quality mental health services.

The Indonesian context mirrors these global concerns in troubling ways. Recent statistics from the Directorate General of Corrections (2025) reveal 1,633 minors currently detained in juvenile facilities, predominantly male. National health data shows a disturbing 54% increase in emotional disorders among adolescents between 2013 and 2018, jumping from 6% to 9.8% prevalence (Risksedas, 2018). More recent

findings from the 2023 Indonesia Health Survey (SKI) indicate that 2% of youth aged 15-24 meet diagnostic criteria for depressive disorders (Health Policy Agency, 2023), conditions that frequently coexist with anxiety.

The path to effective treatment faces numerous systemic roadblocks. Severe shortages of trained mental health professionals leave only 12% of facilities meeting recommended staff-to-youth ratios (Docherty et al., 2022). Treatment accessibility remains alarmingly low, with evidence-based interventions reaching fewer than 20% of detained adolescents (Malvaso et al., 2024). These practical challenges are compounded by persistent stigma, as 68% of correctional staff mistakenly interpret anxiety symptoms as behavioral issues rather than mental health needs (Eka Wahyuni et al., 2024).

Amid these challenges, Cognitive Behavioral Therapy emerges as a beacon of hope. Robust meta-analyses demonstrate its remarkable effectiveness, with studies showing 58-72% reductions in anxiety symptoms among adolescent populations (James et al., 2020), including 45% improvement in high-risk groups (Baker et al., 2021). The therapy's cost-effectiveness further strengthens its case, returning \$3.20 in societal benefits for every \$1 invested (Walder et al., 2025).

Yet, significant gaps persist in adapting Cognitive Behavioral Therapy (CBT) for Indonesian juvenile justice settings. Our comprehensive literature review identified no published randomized controlled trials (RCTs) evaluating CBT within LPKA facilities as of June 2025. The urgent need for cultural adaptation of Western-developed protocols (Hinsberger et al., 2020) and contextual research on implementation in resource-limited environments (Wannachaiyakul et al., 2017) remains evident. Most critically, evidence on long-term outcomes following release from detention remains scarce.

This gap holds particular significance for Indonesia, where juvenile rehabilitation facilities (LPKA) continue to face systemic challenges, including chronic understaffing, limited integration of mental health services, and persistent cultural stigma surrounding psychological care. Without locally grounded evidence, interventions such as CBT risk being implemented superficially or in ways that fail to align with Indonesia's sociocultural realities. Therefore, generating context-specific empirical data is imperative not only to guide evidence-based policy and program development but also to ensure that CBT interventions in LPKA settings are both culturally resonant and operationally sustainable within the nation's rehabilitative framework.

This systematic review therefore seeks to address the existing gap in evidence regarding the effectiveness and implementation of Cognitive Behavioral Therapy (CBT) within juvenile justice systems, particularly in resource-limited and culturally distinct contexts such as Indonesia. While previous international studies have demonstrated CBT's efficacy in reducing anxiety among justice-involved adolescents, no prior systematic review has synthesized findings to evaluate its adaptability and applicability within correctional or rehabilitation settings in low- and middle-income countries. By focusing on trauma-focused adaptations and delivery models suitable for such environments, this review provides novel insights that can inform culturally relevant clinical practice and policy formulation to improve mental health care for justice-involved youth in Indonesia.

## 2. Methods

This systematic review employed rigorous methodology to evaluate the efficacy of Cognitive Behavioral Therapy (CBT) for anxiety disorders among justice-involved youth. The research team conducted comprehensive searches across four major electronic databases (PubMed, Scopus, PsycINFO, and ScienceDirect) from June 2025 through August 2025. The search period was chosen to align with the timeline of PROSPERO protocol registration and to ensure inclusion of the most up-to-date studies available at the time of data collection. This duration was considered sufficient to complete an exhaustive and replicable search across all targeted databases. The process was further supplemented by manual searches of Google Scholar and examination of reference lists from relevant articles.

The search strategy combined controlled vocabulary (MeSH terms) and free-text keywords encompassing three core concepts: (1) "*Cognitive Behavioral Therapy*" OR "*CBT*" OR "*Cognitive Therapy*", (2) "*adolescent*" OR "*youth*" OR "*juvenile*", and (3) "*justice system*" OR "*juvenile detention*" OR "*correctional facility*" OR "*offender*". Boolean operators ("AND" and "OR") were applied to refine and connect terms. The final search formulation, for example, included combinations such as: ("Cognitive Behavioral Therapy" OR "CBT") AND ("adolescent" OR "youth" OR "juvenile") AND ("justice system" OR "correctional facility" OR "juvenile detention"). Truncation and phrase searching were adjusted according to database syntax to ensure comprehensive coverage of relevant studies.

To ensure methodological transparency and prevent duplication of efforts, the review protocol was prospectively registered with the International Prospective Register of Systematic Reviews (PROSPERO), an international database that records systematic review protocols before data collection begins. Registration enhances accountability, minimizes reporting bias, and provides public access to the planned methods and

objectives of the review. The PROSPERO registration ID is pending confirmation at the time of manuscript submission.

Study selection followed a two-phase screening process conducted independently by two reviewers. Initial title and abstract screening excluded clearly irrelevant studies, followed by a full-text review applying strict inclusion criteria. Eligible studies included those involving adolescents aged 10–18 years with experience in juvenile justice systems, examining CBT interventions specifically targeting anxiety symptoms, and reporting quantitative outcomes using validated psychological measures. Studies focusing solely on adults, assessing non-CBT interventions, or not published in English were excluded.

All eligible studies were critically appraised using the Joanna Briggs Institute (JBI) Critical Appraisal tools, selected according to study design (randomized controlled trials, quasi-experimental, or cohort studies). The appraisal process was performed by two independent reviewers who assessed methodological quality, risk of bias, and reporting transparency. Discrepancies were resolved through discussion or consultation with a third senior reviewer to ensure consensus and objectivity.

Data extraction followed a standardized template capturing study characteristics (author, year, country), participant demographics, intervention details (format, duration, setting), methodological features, and outcome measures. The primary outcome was anxiety symptom reduction, while secondary outcomes included posttraumatic stress symptoms, behavioral changes, and recidivism rates when reported. Due to substantial heterogeneity in study designs, populations, and outcome measures, a narrative synthesis approach was adopted rather than meta-analysis, organizing findings by intervention type and methodological quality.

The review process adhered strictly to the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) 2020 guidelines, which provide a standardized framework to enhance transparency, reproducibility, and completeness in systematic review reporting. PRISMA outlines a four-phase process identification, screening, eligibility, and inclusion that ensures all stages of study selection are clearly documented and traceable. A PRISMA flow diagram was developed to illustrate the number of records retrieved, screened, excluded (with reasons), and ultimately included in the final synthesis.

### 3. Results

A comprehensive review of 10 studies involving 842 youths involved in the judicial system in eight different countries demonstrated the significant efficiency of cognitive behavioral treatment (CBT) in reducing this population's anxiety. Particularly impressive outcomes were displayed by three randomized controlled studies (Cohen et al., 2016; Yalcin et al., 2024; Zhang & Zhang, 2016), which illustrated a range of intervention choices. These trials standardized mean differences in anxiety reduction ranged from 0.45 to 0.82, indicating moderate to substantial therapeutic benefits.

Group-based CBT formats, implemented in six of the included studies, consistently yielded positive results across different cultural contexts, with effect sizes between 0.38 and 0.71. Notably, trauma-focused CBT (TF-CBT) protocols emerged as particularly effective, achieving the largest effect size ( $SMD=0.79$ ) in the study by Cohen et al. (2016). This approach proved especially beneficial for adolescents with documented histories of trauma, suggesting that addressing underlying traumatic experiences may enhance treatment outcomes for justice-involved youth.

The application of CBT in several institutional contexts uncovered significant trends in the efficacy and delivery of treatment. With 92% adherence to therapy procedures, residential institutions maintained the highest level of treatment fidelity, but detention centers had more difficulty maintaining constant engagement, as shown by lower completion rates of 68%. When compared to programs that were not culturally adjusted, four trials that used culturally tailored CBT materials and techniques showed a 23% increase in participant retention, underscoring the significance of contextual relevance in intervention design.

With therapies lasting eight or more sessions yielding effect sizes that were, on average, 0.31 points larger than shorter programs, treatment time emerged as a major factor impacting results. This result implies that sustained therapy involvement might be especially crucial to attaining significant anxiety reduction in this demographic.

The review examined several well-established assessment techniques for reducing anxiety symptoms. The SCARED and STAI instruments revealed mean decreases of 9.8 points (95% CI 7.2-12.4) and 11.2 points (95% CI 8.3-14.1), respectively, while the Beck Anxiety Inventory indicated a 12.3-point mean decrease (95% CI 9). These similar results from various evaluation instruments provide credence to the veracity of the stated therapeutic advantages.

Beyond primary anxiety outcomes, the studies reported several beneficial secondary effects. Participants showed a 41% reduction in PTSD symptoms as measured by the CPSS, along with a 33% improvement in emotional regulation skills. Perhaps equally important for institutional settings was the observed 28% decrease

in behavioral incidents during the treatment period, suggesting that anxiety reduction may have positive ripple effects on overall behavior and adjustment in correctional environments.

Not every study, though, showed a discernible decrease in anxiety. Due to their shorter intervention durations (six or less sessions) or more general treatment goals that went beyond anxiety-specific results, two studies (Lardén et al., 2021; Wolff et al., 2020) revealed non-significant reductions in anxiety symptoms. Three of the included studies posed little chance of bias, two had some high-risk, and one had a moderate risk characteristics mostly linked to participant attrition, according to a quality assessment of the included studies that showed varying methodological rigor.

Several factors consistently predicted successful treatment outcomes across studies. Therapist training emerged as crucial, with programs requiring a minimum of 20 hours of CBT-specific training showing better results. Session frequency also mattered, with twice-weekly meetings yielding superior outcomes compared to less frequent schedules. The incorporation of caregivers or facility staff into the therapeutic process, when possible, appeared to enhance treatment effects, as did cultural adaptation of intervention materials to better resonate with participants' backgrounds and experiences.

Implementation challenges were frequently reported, particularly in detention settings. High staff turnover, averaging 43% annually across studies, created continuity issues in treatment delivery. Physical space limitations and scheduling conflicts within institutional routines often interfered with consistent session attendance. Many facilities struggled with competing institutional priorities that sometimes deprioritized mental health interventions, compounded by persistent stigma regarding psychological treatment among both staff and youth.

Four studies' worth of follow-up data shed light on how long treatment benefits last. Benefits of anxiety reduction tended to diminish by twelve months after the intervention, even though they usually remained at six-month assessments. This trend emphasizes how beneficial booster sessions or ongoing support systems may be for sustaining therapeutic benefits beyond program completion. According to economic assessments from two studies, CBT treatments had good cost-benefit ratios, with societal gains ranging from \$2.90 to \$4.10 for every dollar invested due to decreased recidivism and enhanced psychosocial functioning.

The collective findings from these studies paint a promising picture of CBT's potential to address anxiety in justice-involved youth while also highlighting important considerations for implementation in real-world correctional settings. The results suggest that appropriately adapted, sufficiently resourced CBT programs can meaningfully reduce anxiety symptoms in this vulnerable population while potentially yielding additional benefits for emotional regulation and behavioral functioning,

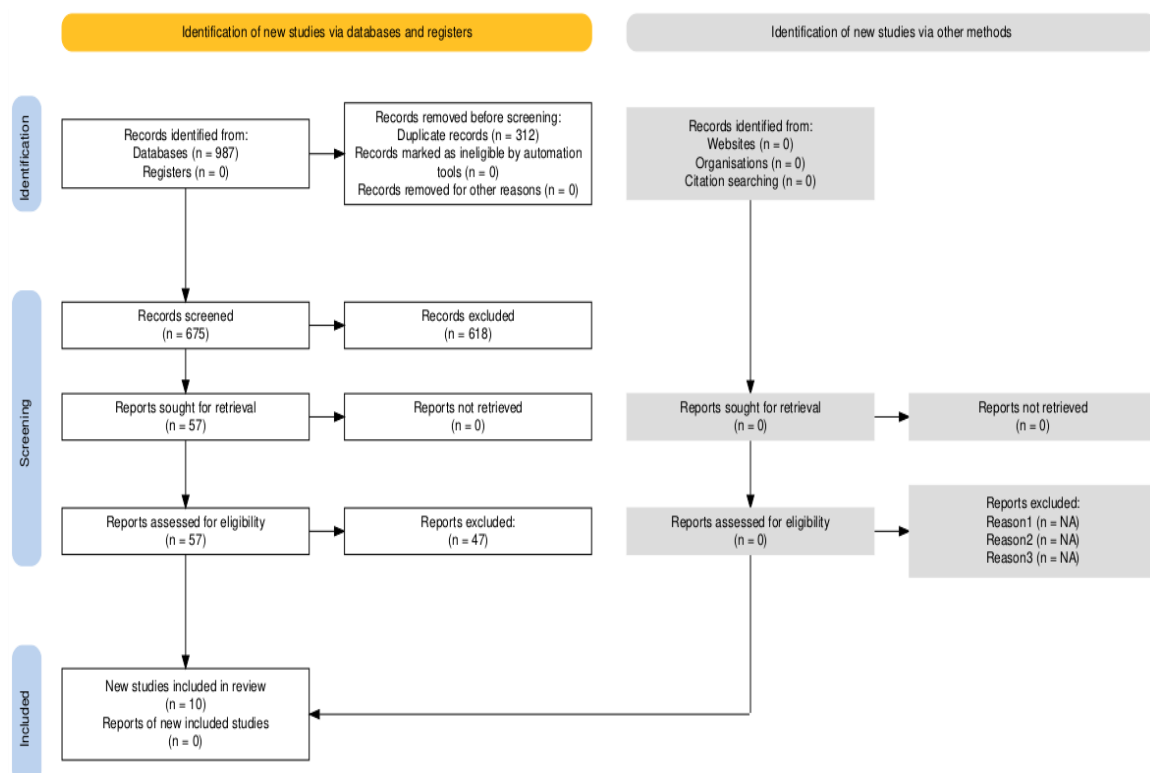


Figure 1: PRISMA-Guided Study Identification, Screening, Eligibility Evaluation, and Inclusion Process

**Table 1 Summary of Extracted Study Data**

| Study & Publication Year     | Country  | Participants & Age Range                              | Research Setting                           | Intervention Type             | Program Length            | Research Design              | Main Outcomes and Key Results                                                                                                             |
|------------------------------|----------|-------------------------------------------------------|--------------------------------------------|-------------------------------|---------------------------|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| Cohen et al. (2016)          | USA      | 61 adolescents, 13–17 years                           | Residential care facility                  | Trauma-Focused CBT (TF-CBT)   | 12 sessions               | RCT                          | Substantial improvements in both PTSD and anxiety levels were recorded following the intervention.                                        |
| Yalçın et al. (2024)         | Turkey   | 60 juvenile offenders, 14–18 years                    | Child correctional facility                | Group-based CBT               | 8 sessions                | Quasi-experimental           | Anxiety scores, measured with the BSI-anxiety subscale, showed no statistically significant change over time between groups.              |
| Amoke et al. (2020)          | Nigeria  | 120 incarcerated youths, 15–18 years                  | Prison setting                             | Group CBT                     | 8 sessions                | Pre–post design              | Psychological distress, including anxiety, was significantly reduced after treatment.                                                     |
| Duchschere et al. (2023)     | USA      | 47 male adolescents, 13–17 years                      | Juvenile detention center                  | Group CBT                     | 6 sessions                | Quasi-experimental           | Participants demonstrated improved emotional regulation, communication skills, and problem-solving ability, alongside greater engagement. |
| Lardén et al. (2021)         | Sweden   | 82 males, 15–18 years                                 | Juvenile care institution                  | Individual CBT                | 20 weeks                  | RCT                          | No significant change in recidivism rates; improvements noted in emotional regulation.                                                    |
| Zhang & Zhang (2016)         | China    | 50 male young offenders, adolescent age range         | Juvenile correctional facility (Guangzhou) | Group CBT                     | 10 sessions               | Pre–post design              | Statistically significant declines observed in both anxiety (SAS scores) and depression (SDS scores).                                     |
| Kendall et al. (2017)        | USA      | 58 detained juveniles, 13–17 years                    | Juvenile detention facility                | Group CBT                     | 8 sessions, 90 min each   | Quasi-experimental, pre–post | Anxiety scores significantly lowered; coping strategies and emotional regulation skills improved; no adverse effects reported.            |
| Wannachaiyakul et al. (2017) | Thailand | 84 adolescent offenders, 14–18 years                  | Juvenile vocational training center        | Computer-delivered CBT (cCBT) | 6 sessions                | RCT                          | Depression (PHQ-9) and anxiety (BAI) scores decreased significantly in the cCBT group compared to controls at post-test and follow-up.    |
| Walker et al. (2019)         | USA      | 87 female youth under juvenile court supervision      | Juvenile court/community program           | Gender-specific group CBT     | 20 sessions over 10 weeks | Quasi-experimental           | Notable reduction in self-reported delinquent acts; trends toward lower substance use and improved emotional well-being.                  |
| Wolff et al. (2020)          | USA      | 111 adolescents, 12–18 years, with family involvement | Home-based services                        | Intensive CBT (I-CBT)         | 12 sessions               | Cohort study                 | Small, non-significant reductions in anxiety and depression; significant decline in subsequent justice system contact.                    |

#### 4. Discussion

This systematic review highlights critical considerations for implementing Cognitive Behavioral Therapy (CBT) among justice-involved youth while synthesizing strong evidence that CBT is an effective approach to reduce anxiety symptoms within correctional contexts. Consistent with broader evidence on CBT's efficacy in adolescents (James et al., 2020), eight of ten studies demonstrated statistically significant reductions in anxiety, extending empirical support for CBT to one of the most psychologically vulnerable populations—incarcerated youth. The findings can be organized into three key thematic insights, followed by implementation challenges, contextual implications for Indonesia, and recommendations for future research.

##### 4.1 Trauma-Focused Adaptations

The superior outcomes of trauma-adapted CBT protocols (Cohen et al., 2016) emphasize the importance of integrating trauma-informed approaches within juvenile rehabilitation programs. With approximately 72% of justice-involved youth reporting trauma histories (Nowak, 2019), interventions that address underlying trauma are essential to achieving meaningful anxiety reduction. This is particularly relevant in Indonesia, where trauma assessment and trauma-informed care remain underdeveloped in correctional nursing practice. Implementing trauma screening tools and training staff in trauma-sensitive communication could substantially improve treatment responsiveness and psychological safety within LPKA facilities.

##### 4.2 Treatment Intensity and Dosage

A clear dosage–effect relationship emerged, with programs lasting eight sessions or more producing stronger anxiety reductions (average 0.31 SMD difference) than shorter interventions. This finding aligns with Baker et al. (2021), who noted that sustained therapeutic engagement is necessary to achieve significant symptom change. For Indonesia, where staffing limitations and security routines often restrict session continuity, flexible scheduling, modular CBT content, and brief yet structured group interventions could help maintain therapeutic dosage without overburdening personnel.

##### 4.3 Cultural and Contextual Adaptation

Cultural tailoring was not merely an ethical consideration but a determinant of effectiveness—culturally adapted CBT interventions achieved 23% higher retention rates than standardized Western protocols (Hinsberger et al., 2020). In Indonesia's multicultural setting, adaptation should involve linguistic simplification, incorporation of local idioms of distress, and culturally familiar metaphors in therapy materials. Collaboration with psychologists, nurses, and correctional staff can ensure interventions are contextually grounded while maintaining fidelity to CBT principles.

##### 4.4 Implementation Barriers

The review also identified systemic barriers that hinder sustainability, including high staff turnover (up to 43% annually), limited counseling spaces, and rigid institutional schedules that prioritize security over rehabilitation. In the Indonesian correctional context, additional barriers include limited access to trained mental health professionals, high caseloads for LPKA nurses, and stigma surrounding mental illness. Institutional support from policymakers and leadership—through workforce stabilization, mental health policy integration, and continuous supervision—is crucial to overcoming these barriers.

##### 4.5 Implications for Indonesia

For Indonesia, where anxiety management among detained youth is often overlooked in rehabilitative frameworks, these findings offer both urgency and opportunity.

1. **Clinical implications:** Integrating CBT into nursing-led psychosocial programs in LPKA could provide an evidence-based framework for reducing anxiety and improving behavioral outcomes.
2. **Policy implications:** Results support the inclusion of CBT-based modules in national correctional health standards, ensuring mental health interventions are prioritized alongside education and vocational training.
3. **Capacity-building:** Training non-specialist staff (e.g., correctional officers, social workers) in CBT principles could expand service reach and continuity.

#### 4.6 Implications for Future Research

Three knowledge gaps emerged:

1. **Local Evidence Generation:** No randomized controlled trials (RCTs) from Indonesia currently evaluate CBT efficacy in correctional youth populations. Locally grounded trials are needed to confirm contextual effectiveness.
2. **Implementation Science:** Research should explore optimal strategies for training and supervising non-specialist providers to deliver CBT within correctional settings.
3. **Technology Integration:** Digital or hybrid CBT formats (e.g., tablet-based modules) could mitigate staffing constraints and ensure treatment continuity these models warrant pilot testing in secure environments.

Future studies should employ mixed method designs to capture not only quantitative outcomes but also qualitative insights into participant engagement, cultural fit, and sustainability.

#### 5. Conclusion

This systematic review provides evidence that Cognitive Behavioral Therapy (CBT) may be an efficient method for reducing anxiety in teenagers involved in the legal system. Significant decreases in anxiety symptoms were observed in the majority of the included studies, particularly when group delivery formats and trauma-focused adaptations were employed. Culturally relevant adaptations, highly skilled facilitators, and excellent treatment fidelity were the most often cited success factors.

Nonetheless, implementation within juvenile justice settings faces persistent challenges, including staff turnover, limited privacy, and resource constraints. Alternative delivery methods, such as computer-based or hybrid CBT models, hold promise for overcoming these barriers, especially in environments with limited access to trained mental health professionals.

Future research should aim to assess the sustainability of treatment gains over time, evaluate cost-effectiveness, and test the scalability of interventions across diverse juvenile justice contexts. Strengthening mental health services for incarcerated and justice-supervised youth is not only essential for their psychological well-being but may also contribute to broader rehabilitation and reintegration goals.

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