Street Art & Urban Creativity | Vol. 12, No. 6s, 2026 | ISSN 2183-9956
Street Art & Urban Creativity. Scientific Journal

Effectiveness of Dialectical Behaviour Therapy on Emotional Adjustment, Psychological Well-Being and Salivary pH among Adolescents

A Systematic Review and Meta-analysis

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Abstract

Background: Adolescence is characterized by substantial biological, psychological and social changes, and difficulties in emotion regulation may contribute to psychological distress, self-harm and impaired interpersonal functioning. Dialectical Behaviour Therapy (DBT) combines mindfulness, distress tolerance, emotion regulation and interpersonal effectiveness and has been adapted for adolescents.

Objective: To systematically identify and synthesize evidence on the effectiveness of DBT or DBT-informed interventions on emotional adjustment, emotion regulation, psychological well-being and related psychological outcomes among adolescents, with particular attention to vulnerable and residential populations.

Methods: This systematic review and meta-analysis should be reported in accordance with PRISMA 2020. The review question, eligibility criteria, search strategy, study-selection process, data extraction, risk-of-bias assessment and synthesis plan were specified before interpretation of the evidence. PubMed/MEDLINE, Scopus, Web of Science, PsycINFO, CINAHL, Cochrane Library and Google Scholar were identified as information sources. Two reviewers should independently screen records and full texts, extract data and assess risk of bias, with disagreements resolved by discussion or a third reviewer. Where sufficient homogeneous quantitative data are available, random-effects meta-analysis using standardized mean differences (SMDs) with 95% confidence intervals should be performed.

Results: The included evidence indicates that adolescent DBT has been studied across clinical, outpatient, school and residential settings. Randomized trials have reported reductions in self-harm, suicidal ideation and related symptoms among selected high-risk adolescents, while universal school-based DBT-informed intervention findings have been mixed. A recent adolescent-specific systematic review identified 72 studies published from 2000 to 2023, and a broader meta-analysis of psychosocial interventions involving children and youth found a small-to-moderate overall effect on emotion regulation (d=0.37, 95% CI 0.22–0.51). Direct evidence concerning adolescents living in destitute homes remains limited.

Conclusion: DBT is a promising intervention for several adolescent psychological outcomes, particularly emotion dysregulation and self-harm-related outcomes. However, the evidence should not be generalized automatically from clinical or psychiatric residential populations to adolescents living in destitute homes. Future research should use adequately powered controlled designs, culturally appropriate programmes, predefined emotional-adjustment and psychological-well-being outcomes, and longer follow-up.

Keywords: Dialectical Behaviour Therapy; adolescents; emotional adjustment; emotion regulation; psychological well-being; self-harm; systematic review; meta-analysis.

1. Introduction

Adolescence is a developmental period involving rapid biological, psychological and social changes. During this period, young people develop greater independence, establish interpersonal relationships and acquire strategies for coping with stress. Difficulties in emotion regulation may interfere with interpersonal functioning and psychological well-being and may increase vulnerability to mental-health difficulties.

Emotion regulation refers to the processes through which individuals monitor, evaluate and modify emotional responses according to personal and environmental demands. A meta-analysis of psychosocial interventions in children and youth found a significant small-to-medium improvement in emotion regulation across interventions, with DBT among the intervention categories associated with higher effects [1].

DBT was developed by Linehan as a comprehensive cognitive-behavioural treatment integrating acceptance and behavioural change. Its principal skill domains are mindfulness, distress tolerance, emotion regulation and interpersonal effectiveness. These components are particularly relevant to adolescents experiencing intense emotions, distress, interpersonal conflict or self-harming behaviour [2].

Evidence from randomized clinical trials supports DBT-A for selected high-risk adolescents. Mehlum et al. studied 77 adolescents with recent and repetitive self-harm and reported that DBT-A was superior to enhanced usual care in reducing self-harm, suicidal ideation and depressive symptoms [3]. McCauley et al. evaluated adolescents at high risk for suicide in a multisite randomized clinical trial and reported reductions in suicide attempts, nonsuicidal self-injury and overall self-harm with DBT [4].

The evidence base has subsequently expanded. Boustani et al. conducted an adolescent-specific systematic review and meta-analysis covering studies conducted from 2000 through 2023 and identified 72 studies across inpatient, residential, partial-hospitalization, intensive outpatient, outpatient, school and juvenile-correctional settings [5]. However, the presence of evidence in clinical settings does not establish equivalent effectiveness for adolescents living in destitute homes.

The present review therefore focuses on the available evidence while explicitly identifying the population, intervention, setting, outcomes and methodological characteristics of each included or key supporting study.

2. STATEMENT OF THE PROBLEM

Effectiveness of Dialectical Behaviour Therapy on Emotional Adjustment and Psychological Well-Being among Adolescents: A Systematic Review and Meta-analysis.

3. OBJECTIVES

To identify studies evaluating DBT, DBT-A or structured DBT-informed interventions among adolescents.

To evaluate the effects of DBT on emotional adjustment and emotion regulation.

To determine the effects of DBT on psychological well-being and related mental-health outcomes.

To examine effects on self-harm and suicidal behaviour where these outcomes are reported.

To explore variations in effects according to participant characteristics, intervention format, study design and treatment setting.

To identify evidence gaps concerning adolescents living in institutional or destitute-home settings.

4. METHODS

Review Design and Reporting Guideline

A systematic review and meta-analysis of quantitative intervention studies was planned and is to be reported according to the PRISMA 2020 statement. PRISMA 2020 recommends transparent reporting of the search and selection process, including the numbers of records identified, screened, retrieved, excluded and included, with reasons for full-text exclusions [6].

Review Question

Among adolescents, what is the effect of DBT or DBT-informed interventions on emotional adjustment, emotion regulation, psychological well-being and related psychological outcomes

compared with usual care, active control, wait-list or other eligible comparison conditions?

Eligibility Criteria

Domain	Eligibility criteria
Population	Adolescents approximately 10–19 years of age; studies including wider age ranges were eligible only when adolescent data were separately available or interpretable.
Intervention	DBT, DBT-A or structured DBT-informed interventions containing identifiable DBT components.
Comparator	Treatment as usual, enhanced usual care, active psychological comparison, wait-list or other eligible control condition.
Outcomes	Emotional adjustment, emotion regulation, psychological well-being, depression, anxiety, self-harm, suicidal ideation/behaviour, externalizing outcomes and related psychological outcomes.
Study designs	Randomized controlled trials, controlled clinical trials, quasi-experimental and prospective intervention studies with quantitative outcome data.
Exclusion	Adult-only studies, case reports, editorials, conference abstracts without sufficient data, dissertations without accessible quantitative results and reports not meeting the predefined population/intervention/outcome criteria.

Information Sources

The search should cover PubMed/MEDLINE, Scopus, Web of Science, PsycINFO, CINAHL, Cochrane Library and Google Scholar from database inception to the final search date. The exact date of the last search must be reported as: [DD Month YYYY]. Reference lists of included studies and relevant systematic reviews should also be screened to identify additional eligible reports.

Search Strategy

A database-specific search strategy should combine controlled vocabulary and free-text terms related to the population, intervention and outcomes. The complete search strings, database platform, date searched and number of records retrieved from each source should be provided in a supplementary appendix. A reproducible example is: (adolescent* OR youth OR teenager*) AND ("dialectical behavior therapy" OR "dialectical behavioural therapy" OR DBT OR DBT-A) AND ("emotion regulation" OR emotional adjustment OR psychological well-being OR self-harm OR suicidal OR depression OR anxiety).

Study Selection and Screening Procedure

Two reviewers should independently screen titles and abstracts against the predefined eligibility criteria. Potentially eligible records should undergo independent full-text assessment. Disagreements should be resolved through discussion; if disagreement persists, a third reviewer should adjudicate. Duplicate records should be removed before screening. The reasons for exclusion at full-text stage must be documented and reported in the PRISMA 2020 flow diagram [6].

PRISMA Flow Numbers – MUST BE COMPLETED FROM THE SEARCH LOG

PRISMA stage	Number
Records identified from PubMed/MEDLINE	[12]
Records identified from Scopus	[19]
Records identified from Web of Science	[22]
Records identified from PsycINFO	[24]
Records identified from CINAHL	[8]
Records identified from Cochrane Library	[26]
Records identified from Google Scholar/other sources	[19]
Total records identified	[12]
Duplicate records removed	[7]
Records screened by title/abstract	[6]
Records excluded at title/abstract stage	[I12]
Reports sought for retrieval	[21]
Reports not retrieved	[28]
Full-text reports assessed	[32]
Full-text reports excluded with reasons	[36]
Studies included in systematic review	[18]
Studies included in quantitative synthesis/meta-analysis	[21]

Data Extraction

Two reviewers should independently extract data using a standardized, pilot-tested extraction form. Extracted variables should include author/year, country, setting, study design, sample size, participant age, intervention characteristics, session number and duration, comparator, outcome measures, follow-up period, effect estimates, adverse events where reported, and risk-of-bias judgement. Discrepancies should be reconciled by consensus or third-reviewer adjudication.

Risk of Bias and Quality Appraisal

Two reviewers should independently assess risk of bias. RoB 2 should be used for randomized controlled trials, while ROBINS-I may be used for non-randomized intervention studies. Where appropriate, certainty of evidence for major outcomes should be assessed using GRADE. The manuscript must report the tool used, domains assessed, judgement categories and how disagreements were resolved.

How the Included Articles Were Reviewed

Each eligible article should be reviewed using the same structured framework: (1) population and setting; (2) study design; (3) sample size; (4) DBT format and duration; (5) comparator; (6) outcome measures; (7) principal findings; (8) risk of bias; and (9) relevance to the review question. This article-level approach prevents conclusions from being based only on narrative statements and allows readers to identify differences between clinical, school and residential populations.

Data Synthesis and Statistical Analysis

Continuous outcomes measured with different instruments should be synthesized using standardized mean differences with 95% confidence intervals. Mean differences may be used when the same instrument is used across studies. Given expected clinical and methodological heterogeneity, a random-effects model is appropriate when quantitative pooling is justified. Statistical heterogeneity should be assessed using I^2 and the χ^2 test, and sensitivity or subgroup analyses should be prespecified where sufficient studies are available. Publication bias should be assessed when the number of studies permits meaningful assessment. If data are too heterogeneous for valid pooling, findings should be synthesized narratively rather than forcing a meta-analysis.

5. RESULTS

Search and Selection Results

The final search and screening results must be inserted from the completed search record. Do not use the 72 studies reported by Boustani et al. as the number of studies in this review; that figure belongs to their published systematic review [5].

Article-by-Article Evidence Review

The following table provides a structured review of the key studies already identified in the manuscript and verified against the cited literature. It should be expanded to include every article that meets the final eligibility criteria.

Study	Design / sample	Population / setting	Intervention / comparison	Outcomes	Main finding	Ref.
Mehlum et al., 2014	Randomized trial; n=77	Adolescents with recent and repetitive self-harm; community child/adolescent psychiatric outpatient clinics	DBT-A vs enhanced usual care	Self-harm, suicidal ideation, depression, hopelessness, BPD symptoms	DBT-A was superior to enhanced usual care for reducing self-harm, suicidal ideation and depressive symptoms; assessments were conducted at baseline and 9, 15 and 19 weeks.	[3]
McCauley et al., 2018	Multisite randomized clinical trial	Adolescents at high risk for suicide	DBT vs individual/group supportive therapy	Suicide attempts, nonsuicidal self-injury, overall self-harm, suicidal ideation	DBT was associated with reductions in suicide attempts, nonsuicidal self-injury and overall self-harm in the trial population.	[4]
Harvey et al., 2023	Universal school-based controlled intervention	Adolescents in school setting	8-session DBT-informed WISE Teens vs class-as-usual	Social/emotional well-being outcomes	No discernible average benefit over time on the primary outcomes; deterioration was observed immediately after delivery relative to control. Greater home practice was associated with more positive outcomes.	[7]
Espenes et al., 2024/2025	Three-level meta-analysis; 35 publications, 40 interventions, 3,891 participants	Children and youth aged 0–23 years	Psychosocial interventions including DBT among intervention categories	Emotion regulation and mental-health outcomes	Overall emotion-regulation effect was d=0.37 (95% CI 0.22–0.51, p<0.001); DBT was among intervention types associated with higher effects. This is broader than DBT-only adolescent evidence.	[1]
Boustani et al., 2026	Systematic review and meta-analysis; 72 adolescent DBT studies identified from 2000–2023	Adolescents across inpatient, residential, partial hospitalization, intensive outpatient, outpatient, school and juvenile-correctional settings	DBT programming	Depression, emotion dysregulation, suicidal/self-harm behaviour, externalizing problems and eating disorders	The review synthesized adolescent DBT evidence across multiple settings and emphasized the need for additional randomized trials and diverse populations.	[5]
Williams et al., 2026	Pilot hybrid effectiveness-implementation study; n=227	Adolescents in psychiatric residential treatment centre; DBT n=113, treatment-as-usual n=114	DBT vs treatment as usual	Functioning from admission to discharge	The DBT group improved in overall functioning from admission to discharge, but the between-group difference was nonsignificant; findings were preliminary.	[8]
Moltrecht et al., 2021	Meta-analysis of psychological interventions; 21 RCTs reported in the manuscript	Children and young people	Psychological interventions targeting emotion regulation	Emotion regulation / dysregulation	Moderate effects were reported for reducing emotion dysregulation and small effects for improving emotion regulation.	[9]

Synthesis of Evidence

The article-level evidence shows that DBT effects vary by population, setting, intervention intensity and outcome. The strongest directly relevant evidence in the identified literature concerns adolescents with clinically significant self-harm or suicidal behaviour. Mehlum et al. reported beneficial effects of DBT-A in 77 adolescents with repetitive self-harm, while McCauley et al. reported reductions in several self-harm-related outcomes among high-risk adolescents. These findings support DBT-A for selected clinical populations rather than establishing universal effectiveness across all adolescents [3,4].

Evidence from universal school-based programmes is less consistent. Harvey et al. reported no discernible average benefit over time for the primary social and emotional outcomes in an eight-session DBT-informed school intervention and observed immediate deterioration relative to control. The authors also reported an association between greater home practice and more positive outcomes, indicating that implementation and participant engagement may influence outcomes [7].

Broader meta-analytic evidence supports psychosocial interventions for emotion regulation. Espenes et al. included 40 interventions from 35 publications involving 3,891 participants and reported a small-to-medium overall effect on emotion regulation (d=0.37, 95% CI 0.22–0.51, p<0.001). However, because the review included multiple intervention types and participants aged 0–23 years, this estimate should not be interpreted as a DBT-specific effect among adolescents [1].

The recent adolescent-specific systematic review by Boustani et al. identified 72 studies from 2000 to 2023 and covered multiple treatment settings and clinical outcomes [5]. This provides important evidence that adolescent DBT research is broad, but it also demonstrates heterogeneity in population, intervention format and treatment setting.

Residential evidence requires careful interpretation. Williams et al. studied 227 adolescents in a psychiatric residential treatment centre and found improvement in overall functioning within the DBT group, but the difference between DBT and treatment as usual was not statistically significant. Psychiatric residential treatment populations should not automatically be treated as equivalent to adolescents living in destitute homes [8].

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6. DISCUSSION

The revised evidence synthesis indicates that DBT has a substantial adolescent evidence base, but the effects are outcome- and population-specific. The most consistent evidence concerns self-harm, suicidal behaviour and emotion dysregulation among adolescents with elevated clinical risk [3–5]. Evidence for broad psychological well-being and emotional adjustment is less consistently reported and should therefore be interpreted cautiously.

The findings also highlight the importance of matching intervention intensity to participant needs. Clinical DBT-A programmes for adolescents with repeated self-harm are not equivalent to brief universal school programmes. Differences in participant risk, therapist training, intervention duration, treatment fidelity, comparator and outcome measurement can contribute to heterogeneity.

The evidence concerning residential populations is particularly relevant to the proposed topic. Although psychiatric residential treatment centres have been studied, the social, developmental and psychosocial circumstances of adolescents living in destitute homes may differ substantially. Therefore, the present review identifies a gap in direct evidence rather than assuming that effects in psychiatric residential settings apply to destitute-home populations.

The review also demonstrates why article-level methodological appraisal is necessary. A systematic review should distinguish randomized trials from non-randomized studies, clinical populations from universal samples, and direct evidence from indirect evidence. This improves transparency and reduces overgeneralization.

7. IMPLICATIONS FOR NURSING

Nursing Practice

Nurses working with vulnerable adolescents can incorporate DBT-informed principles such as mindfulness, emotion identification, distress tolerance and interpersonal communication within their professional scope, appropriate training and supervision. Screening and referral pathways should be available for adolescents with self-harm or suicidal behaviour.

Nursing Education

Psychiatric and child-health nursing curricula may include DBT concepts, emotion-regulation skills, therapeutic communication and evidence-based psychosocial interventions. Simulation and role-play can be used to teach nurses how to respond safely to emotional crises.

Nursing Administration

Administrators of residential adolescent services can support structured mental-health screening, referral pathways, staff training, multidisciplinary psychosocial programmes and monitoring of intervention fidelity.

Nursing Research

Future studies should evaluate culturally adapted DBT programmes among adolescents living in institutional and socially vulnerable settings, using controlled designs and validated measures of emotional adjustment and psychological well-being.

8. LIMITATIONS

- Clinical and methodological heterogeneity may limit direct comparison across studies.
- DBT programmes vary in duration, intensity, therapist training and treatment components.
- Different instruments are used to measure emotion regulation, emotional adjustment and psychological well-being.
- Some studies have small samples or non-randomized designs.
- Self-report outcomes may introduce response bias.
- Evidence specifically involving adolescents living in destitute homes remains limited.
- Because the final search counts and final included-study set were not present in the supplied manuscript, the PRISMA flow numbers and pooled estimates for the present review must be completed from the actual search and extraction database.

9. CONCLUSION

The available evidence indicates that DBT is a promising intervention for several psychological outcomes among adolescents, particularly emotion dysregulation, self-harm and suicidal behaviour. However, effects differ according to population, setting, intervention format and outcome. Evidence from clinical and psychiatric residential populations cannot automatically be generalized to adolescents living in destitute homes. A transparent PRISMA 2020 process, prospective registration where applicable, reproducible search strategy, complete screening numbers, independent review and quality appraisal, and article-level evidence table are essential for strengthening the manuscript. Further controlled studies should evaluate culturally appropriate DBT programmes for socially vulnerable adolescents using emotional adjustment and psychological well-being as predefined outcomes.

10. DECLARATIONS

Conflict of interest: The author should declare any financial or non-financial conflicts of interest according to the target journal's requirements.

Ethical approval: Not required for a systematic review of published literature, unless the target journal or institutional policy specifies otherwise.

Data availability: The search strategy, screening log, extraction form and analysis dataset should be made available as supplementary material where journal policy permits.

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