A Systematic Review of the Efficacy of Behavioural and Psychosocial Intervention Therapies for Mental Health Disorders

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Abstract:

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Abstract

This systematic review takes a close look at how effective behavioural and psychosocial interventions are for mental health disorders, pulling together evidence from studies published between 2020 and 2025. It primarily centralises three specific groups—adolescents dealing with anxiety disorders, adults coping with post-traumatic stress disorder (PTSD), and individuals facing schizophrenia-spectrum disorders. The review combines insights from randomized controlled trials (RCTs), meta-analyses, and top-notch observational research. Technology-assisted cognitive behavioural therapy (CBT), which includes computerized and app-based options, showed effectiveness on par with traditional face-to-face CBT for adolescent anxiety, plus it offers extra benefits in terms of accessibility and engagement. For PTSD, trauma-focused treatments like CBT and EMDR led to significant reductions in symptoms and better emotional regulation, although more research is needed to differentiate trauma-informed approaches and evaluate their effects on refugee populations as this was limited in the results obtained. Family-based psychosocial interventions, especially psychoeducation programs, notably lowered relapse rates and enhanced outcomes for caregivers in schizophrenia-spectrum disorders. Overall, these findings highlight the importance

of personalized, context-sensitive interventions and advocate for the integration of digital tools, trauma-informed care, and family-inclusive strategies into modern mental health practices.

Keywords: Mental-health; Therapy; Behavioural Interventions; Psychosocial Interventions; Anxiety; Depression; PTSD; Quality of Life (QoL).

Chapter 1: Introduction

1.0 Background

Mental health disorders rank among the leading causes of disability and disease burden worldwide, affecting hundreds of millions of individuals and contributing to significant social, economic, and health-related challenges (Fares-Otero et al., 2025). Over time, management strategies have evolved to incorporate a range of behavioural and psychosocial interventions, such as cognitive behavioural therapy (CBT), family-based interventions, and community-based psychosocial support. These approaches aim not only to alleviate symptoms but also to address underlying social determinants, including trauma, social isolation, and socioeconomic disadvantage (Fordham et al., 2021; Fares-Otero et al., 2025).

The significance of these interventions lies in their potential to mollify the broader societal burden of mental health disorders, improve individual functioning, and foster resilience among affected populations (Fares-Otero et al., 2025). Stakeholders—including clinicians, policymakers, patients, and caregivers—are increasingly prioritizing evidence-based interventions that can be adapted to diverse populations and settings, particularly in the context of disparities in access to care and the growing recognition of mental health as a global health priority (Prina et al., 2025).

1.1 Rationale of the Study

This systematic review plays a critical role in addressing existing knowledge gaps by synthesizing the most recent evidence (January 2020 to July 2025) on the effectiveness of behavioural and psychosocial interventions for mental health disorders. Through a comparative analysis of various intervention types and outcomes, the review seeks to inform clinical practice guidelines, guide policy development, and direct future research priorities. Its significance is underscored by the growing emphasis on integrating psychological and social approaches in mental health care, the need for individualized treatment planning, and the potential of such interventions to reduce the global burden of mental illness (Fordham et al., 2021).

1.2 Problem Statement

A significant gap remains in the current literature regarding a comprehensive and up-to-date synthesis of the effectiveness of behavioural and psychosocial

intervention therapies for mental health disorders. This gap is particularly concerning in light of recent advancements and the increasing diversity of interventions and populations under investigation. The absence of clear, consolidated evidence impedes effective resource allocation and hinders the development of personalized, evidence-based treatment strategies.

Furthermore, despite the growing availability of behavioural and psychosocial therapies, a clear understanding of their comparative efficacy across different mental health conditions, populations, and settings remains elusive. Existing research is fragmented, with studies employing varying definitions, intervention types, and outcome measures. This methodological heterogeneity complicates the identification of the most effective approaches and limits the generalizability of findings to broader clinical practice (Prina et al., 2025; Fares-Otero et al., 2025; Fordham et al., 2021).

1.3 Aims of the Review

This review sets out to take a close look at the evidence surrounding the effectiveness of behavioural and psychosocial intervention therapies for mental health disorders, specifically focusing on studies published in the last five years (2020–2025). Additionally, it seeks to pinpoint the most effective interventions tailored for different populations and conditions, while also evaluating the methodological quality and limitations of the recent research in this area.

1.4 Research Objectives

1. To systematically make a comparison of the efficacy of technology-assisted behavioural interventions with traditional face-to-face psychosocial therapies in mollifying anxiety symptoms among adolescents diagnosed with anxiety disorders.
2. To critically examine and assess the effectiveness of trauma-informed psychosocial interventions versus standard cognitive therapies in improving emotional regulation and reducing post-traumatic stress symptoms among adults and refugees diagnosed with post-traumatic stress disorder (PTSD).
3. To scrutinise the long-term impact of family-based psychosocial interventions in comparison to individual therapy in relation to social functioning and relapse rates in adults with schizophrenia-spectrum disorders.

1.5 Research Questions

1. Comparative Efficacy: What is the relative efficacy of technology-assisted behavioural interventions in comparison to traditional face-to-face therapies for anxiety disorders in adolescents?
2. Population-Specific Efficacy: How effective are trauma-informed psychosocial interventions in the enhancement of emotional regulation among adult and refugee populations with PTSD in comparison to standard cognitive therapies?
3. Long-Term Outcomes: Do family-based psychosocial interventions demonstrate sustained improvement in social functioning for schizophrenia Adult populations when collated to individual therapy over 12-month periods?

1.6 Conceptual Map

A self-developed conceptual map illustrates the pathway from intervention to outcome:

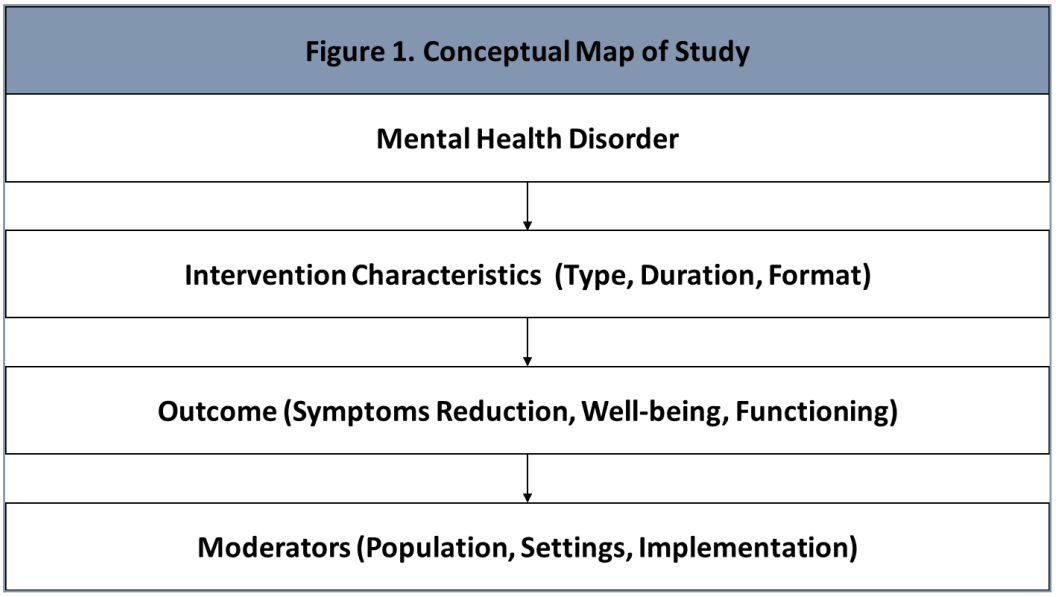

Figure 1. Conceptual Map of Study

The conceptual map depicted in Figure 1 above outlines the key elements involved in evaluating the efficacy of behavioural and psychosocial interventions for mental health disorders. Here's a breakdown:

1. **Mental Health Disorder**

This depicts the primary focus of the systematic review which targets specific disorders like anxiety, PTSD, depression etc.

2. **Behavioural/Psychosocial Intervention**

This makes emphasis on the therapeutic strategies aimed at mental health improvement such as Cognitive Behavioural Therapy (CBT), Dialectical Behavioural Therapy (DBT) or Family Therapy.

3. **Intervention Characteristics**

   - **Type:** The kind of intervention such as group and individual therapy.
   - **Duration:** How long does the said intervention span overtime.
   - **Format:** Delivery method.

4. **Outcome**

These represent the expected desired results of the employed interventions in terms of:

   - **Symptom Reduction:** Reduction in the severity of the discussed symptoms such as anxiety, PTSD or depression.
   - **Wellbeing:** Improvement in mental health and quality of life (QoL).
   - **Functioning:** Better occupational, personal/occupational functioning.

5. **Moderators**

Factors influencing the intervention's success:

   - **Population:** Characteristics like age, gender, or cultural background.
   - **Setting:** Where the intervention did take place such as clinical settings, community programs.
   - **Implementation:** Pragmatic perspective of applying these identified interventions.

This conceptual map creates a framework for systematically analysing interventions, focusing on both their structure and the factors influencing their outcomes as it employs framework that integrates:

- The social determinants of mental health which underscores the importance of addressing structural and contextual influences coupled with individual-level interventions.
- The biopsychosocial model of mental health, taking into due consideration the interplay between social, biological and psychological.
- Evidence synthesis methodologies, including meta-analysis to account for heterogeneity and identify moderators of intervention efficacy.

1.7 Research Scope and Rationale

This review will dive into randomized controlled trials and top-notch observational studies published between January 2020 and July 2025, covering a wide array of mental health disorders and treatments. By including a variety of populations and settings, we aim to make the findings more applicable to real-world situations. This approach is essential to capture the latest advancements and emerging trends in the field, while also addressing the gaps left by earlier reviews that might have overlooked newer interventions or specific groups of people.

1.8 Review Structure

Chapter 1: Introduction — Background, rationale, aims, objectives, research questions, and conceptual framework.

Chapter 2: Methods — Search strategy, inclusion/exclusion criteria, data extraction, and analysis plan.

Chapter 3: Results — Summary of included studies, main findings, and quality assessment.

Chapter 4: Discussion — Interpretation of results, implications for practice and policy, limita-tions, and future directions.

Chapter 5: Conclusion — Summary of key findings and recommendations.

1.9 Chapter Summary

This chapter dives into the world of behavioral and psychosocial intervention therapies for mental health disorders, emphasizing their importance and the necessity for a thorough review of the latest evidence. It clearly outlines the research problem, rationale, aims, objectives, research questions, and conceptual framework, laying a solid groundwork for the chapters that follow. The review aims

to fill crucial gaps in our understanding and provide valuable insights to stakeholders about the most effective strategies for enhancing mental health outcomes across various populations.

Chapter 2: Methodology

2.0 Chapter Introduction

This chapter outlines the methodological approach we have taken to guarantee that our systematic review is not only reproducible and translucent but also aligned with the best practices in the field. The methodology is structured to facilitate independent verification and replication, adhering to internationally recognized guidelines for systematic reviews. Key steps in this process include formulating clear research questions through the utilisation of the PICO framework, developing and registering a detailed review protocol, implementing comprehensive search strategies, applying rigorous selection criteria, and following standardized procedures for data extraction and analysis. Every methodological choice is meticulously documented to minimize bias and project the reliability of our review findings (Grant & Booth, 2009; Randles & Finnegan, 2023).

2.1 Protocol and Registration

This systematic review was conducted in line with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, making sure that every methodological step is insightfully documented (Grant & Booth, 2009; Randles & Finnegan, 2023). We also registered the review protocol ahead of time with PROSPERO, under the registration number CRD420251084075, which serves as the global database for systematically registered reviews. This step is aimed at promoting transparency and preventing any duplication of research efforts.

Key Elements Included in the Protocol:

- **Background and Rationale:** This section provides a strong justification for the review, emphasizing the significance of behavioural and psychosocial interventions in addressing mental health disorders. It also explains why we're focusing on the most recent evidence from January 2020 to July 2025.
- **Research Objectives:** Here, we outline clear objectives that are in line with the refined PICO research questions.

- **Eligibility Criteria:** This part includes detailed inclusion and exclusion criteria, specifying study designs (like randomized controlled trials), populations (such as adolescents facing anxiety, refugees dealing with PTSD, and adults with schizophrenia-spectrum disorders), interventions, comparators, outcomes, and the years of publication (Randles & Finnegan, 2023).
- **Search Strategy:** An in-depth plan for pinpointing relevant literature, which includes the databases to search, the search terms to use, and any language or date restrictions. This strategy is designed for reproducibility which is to be reported in detail (Randles & Finnegan, 2023).
- **Study Selection Process:** This involves a thorough screening of studies by three independent reviewers, along with a clear method for resolving any disagreements that may arise (Grant & Booth, 2009).
- **Data Extraction and Management:** We utilised standardized forms and procedures to efficiently gather relevant data from the studies we include.
- **Quality Assessment:** We employ various techniques to assess the risk of bias and the methodological quality of the studies, utilizing validated tools for accuracy.
- **Data Synthesis:** We have planned methods for merging findings, which include both narrative and, when appropriate, quantitative (meta-analysis) approaches (Grant & Booth, 2009).
- **Reporting and Dissemination:** Our strategies for reporting results adhere to PRISMA guidelines and ensure that findings are shared with all relevant stakeholders.

By adhering to these protocol elements and keeping a record of the review, the methodology fosters transparency, minimizes bias, and boosts the reproducibility of the systematic review process, all in line with the standards established by PROSPERO.

2.2 Eligibility Criteria

The eligibility criteria for this systematic review are defined through the utilisation of the PICO framework, supplemented by additional methodological considerations. This approach ensures a translucent, reproducible, and focused selection process. The criteria are consistent with best practice guidelines for systematic reviews as outlined by McKenzie et al. (2019).

2.2.1 Inclusion Criteria (PICO Framework)

P	I	C	O
Population / Problem	**Intervention/Exposure**	**Comparison**	**Outcome**
Adolescents (aged 10-19 years) diagnosed with anxiety disorders for Objective 1. Adult (aged 18 years and above) clinically diagnosed with post-traumatic stress disorder (PTSD) for Objective 2. Adults (aged 18 years and above) diagnosed with schizophrenia-spectrum disorders for Objective 3. Studies must clearly define the population according to established diagnostic criteria (e.g., DSM-5, ICD-10)	Technology-assisted behavioural interventions (e.g., app-based CBT, internet-based therapy) for anxiety disorders in adolescents. Trauma-informed psychosocial interventions for adults with PTSD. Family-based psychosocial interventions for adults with schizophrenia-spectrum disorders.	Traditional face-to-face psychosocial therapies for adolescents with anxiety disorders. Standard cognitive therapies (e.g., CBT, EMDR) for adults with PTSD. Individual psychosocial therapy for adults with schizo-phrenia-spectrum disorders.	**Primary outcomes:** Reduction in anxiety symptoms (Objective 1), improvement in emotion-al regulation and PTSD symptoms (Objective 2), improvement in social functioning and re-lapse rates (Objective 3). **Secondary outcomes:** Quality of life, treatment adherence, adverse effects, and other clinically relevant measures as reported.

Table 1. PICO Framework

2.2.2 Study Designs Included

- Randomized controlled trials (RCTs)
- Quasi-experimental studies with a comparator group
- High-quality prospective cohort studies (where RCTs are not available)

2.2.3 Timeframe

- **Timeframe Included:** Studies published from January 2020 to July 2025 to ensure the review reflects the most current evidence.
- **Language Restrictions:** All included studies are published in English.
- **Exclusion Criteria:** Studies involving populations outside the specified age ranges or diagnostic groups; Interventions not meeting the definitions outlined above (e.g., pharmacological only, non-psychosocial approaches); Studies without a comparator group as specified in the PICO framework; Case reports, case series, editorials, commentaries, and conference abstracts; Studies published before January 2020; Non-English language publications; Animal studies or preclinical research.
- **Information Sources (Databases):** MEDLINE (via PubMed); PubMed Central; Embase; ScienceDirect; PsycINFO; Web of Science

2.2.4 Rationale

The eligibility criteria are based on the elements of the PICO framework, ensuring that the studies we include directly tackle the refined research objectives and questions of the review (McKenzie et al., 2019; MUSC Library, 2025). We impose study design restrictions such as focusing on RCTs, quasi-experimental designs, and high-quality cohort studies as an aim to enhance the reliability of the evidence. Additionally, we set limitations on the timeframe and language to keep things feasible and relevant (MUSC Library, 2025). Only studies that measure the pre-specified outcomes are included, which helps us achieve a profound synthesis and interpretation of the results.

2.3 Search Strategy

2.3.1 Development of the Search Strategy

The search strategy was crafted meticulously to guarantee it was thorough, reproducible, and translucent, following the best practice guidelines for systematic reviews (Bramer et al. 2018). We started the process for the review by breaking down the refined PICO research questions into essential concepts, then pinpointing synonyms and related terms for each one. These were mapped to both free-text keywords and controlled vocabulary, like MeSH terms, as outlined by Bramer et al. (2018). The strategy was fine-tuned through pilot searches and discussions with a subject librarian to enhance both sensitivity and specificity.

2.3.2 Search Terms Used

We crafted search terms for each PICO element by utilizing Boolean operators (like AND and OR), truncation, phrase searching, and specific vocabulary from databases (University of Tasmania, 2025). These terms were organized into key concepts: population (for instance, adolescents and adults with schizophrenia), intervention (such as technology-assisted therapy, trauma-informed intervention, and family-based intervention), comparator (including face-to-face therapy, standard cognitive therapy, and individual therapy), and outcomes (like anxiety symptoms, depression symptoms, PTSD symptoms, and social functioning).

2.3.3 Filters Applied

Date range: January 2020 to July 2025

Language: English

Study type: Randomized controlled trials, quasi-experimental studies, high-quality cohort studies

2.3.4 Notes to Search Strategy

- **Duplicates:** It's important to remember that many studies can show up in various databases, so we will take care of deduplication during the screening process.
- **Filters:** All searches limited to English language, publication years January 2020–July 2025, and relevant study designs.
- **Adaptation:** Search strings are to be adapted for each database's syntax and indexing.
- **Full Strings:** Complete search strings in relation to each database are provided in the Appendix 1 for translucency and reproducibility.

2.4 Study Selection

2.4.1 Screening Process Overview

The process we used to select studies was all about ensuring rigor, transparency, and reproducibility, sticking closely to the PRISMA 2020 guidelines and the best practices established by experts (Veginadu et al. 2022). We broke it down into two main phases:

Phase 1: Title and Abstract Screening

- **Import and De-duplication:** All the records we pulled from the database searches were brought into Covidence. We automatically spotted and eliminated any duplicate records before we kicked off the screening process.
- **Independent Screening:** Three reviewers took the time to independently go through the titles and abstracts of all unique records, carefully checking them against the requisite inclusion and exclusion criteria.
- **Decision Recording:** Each reviewer categorized the studies as "include," "exclude," or "uncertain." Any discrepancies were sorted out through discussion, or if inevitable, by bringing in a fourth and fifth reviewer to help resolve bone of contention.
- **Exclusion Documentation:** At this stage, we made sure to document the reasons for exclusion to keep everything translucent whilst facilitating later reporting in the PRISMA flow chart (Kylie et al., 2014).

Phase 2: Full-Text Screening

- **Full-Text Retrieval:** We gathered the complete text of all studies that were labelled as "include" or "uncertain" in the initial phase.
- **Independent Review:** Three reviewers independently carried out evaluation of the full texts for eligibility by utilising proximate criteria.
- **Resolution of Disagreements:** We sorted out any discrepancies through discussions, or if necessary, we brought in a fourth reviewer to help make a decision.
- **Final Inclusion:** We included all studies that met the necessary criteria for data extraction and quality assessment. We also made sure to document the reasons for excluding any studies at this stage in detail, following PRISMA reporting guidelines (Kylie et al., 2014).

2.4.2 Critical Appraisal

Only the studies that made it through both screening phases were critically appraised through the utilisation of standardized tools that fit the study design such as the Cochrane Risk of Bias tool for randomized controlled trials, as noted by Kylie et al. (2014).

2.4.3 Software and Documentation

Covidence played a key role in managing records, helping with double screening, resolving conflicts, and creating a PRISMA flow diagram (University of Tasmania, 2025). Additionally, we made sure to document all decisions and the reasons behind inclusion or exclusion for the sake of auditability and transparency, following the PRISMA screening process shown below: (Randles & Finnegan, 2023; University of Tasmania, 2025).

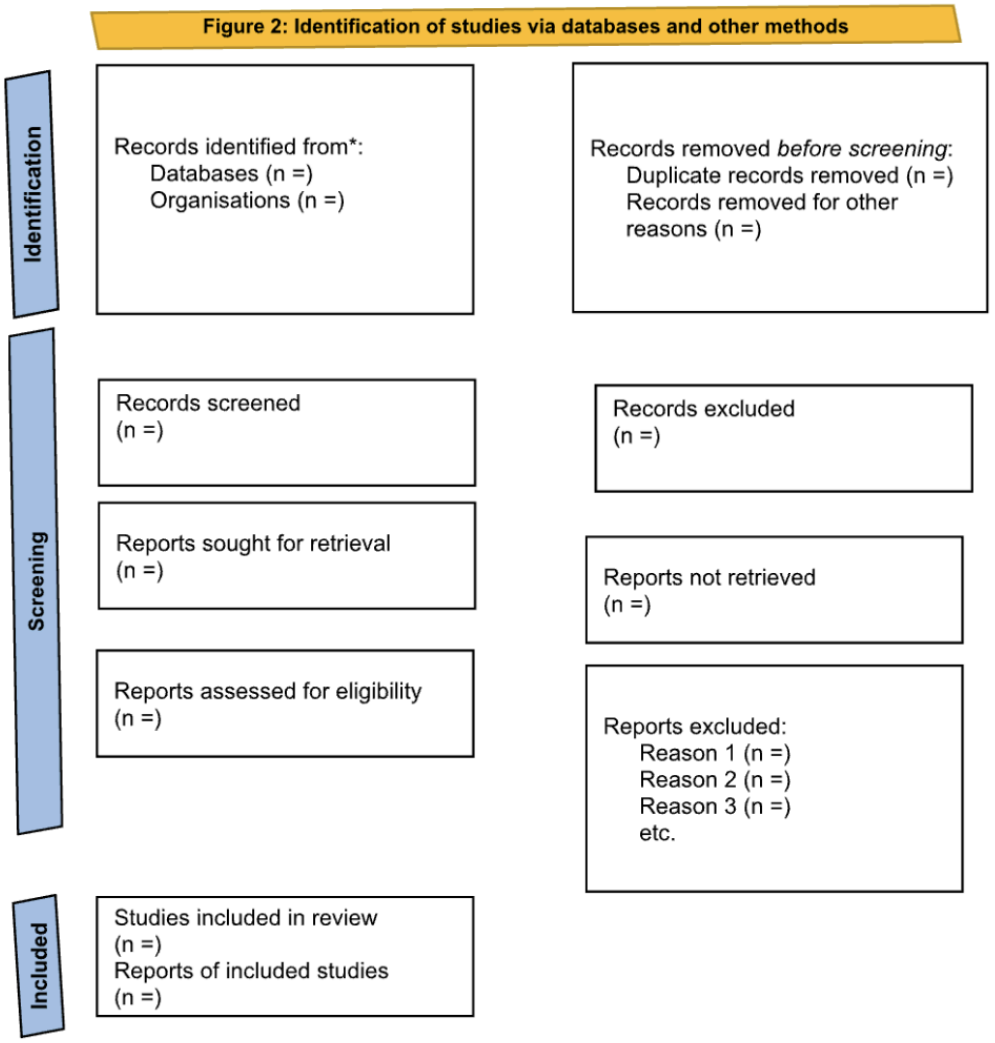

Figure 2. Identification of Studies via Databases and other Methods.

A completed PRISMA diagram, with actual numbers and reasons for exclusion, will be included in the final review.

2.5 Data Extraction

2.5.1 Overview

Data extraction plays a vital role in the systematic review process. It involves gathering relevant information from each study included in a structured and standardized way. This approach helps in accurately synthesizing, comparing, and critically evaluating the findings of the studies. To ensure that the process is reliable and to reduce the chances of errors, at least two reviewers independently carry out the data extraction using pre-designed templates or software tools.

2.5.2 Data Extraction Tools and Process

- **Templates and Software:** Data was gathered using a standardized extraction form that was specifically designed for this review, following the PICO framework to ensure we captured all the important study characteristics and outcomes. We used Covidence software for this process, which allows for dual independent extraction, helps resolve discrepancies, and makes it easy to export data for analysis. However, manual double extraction was supplemented to attain precision.
- **Reviewer Involvement:** Three reviewers took on the task of independently extracting data from each full-text article to make sure everything was accurate and complete. Once they finished their individual extractions, they came together to compare their findings. If there were any differences, they discussed them until they reached a consensus. In cases where they couldn't agree, a fourth reviewer, the Principal Investigator, stepped in to make the final call.
- **Discrepancy Resolution:** We tackled any discrepancies by going back to the original articles, clearing up any confusing information, or bringing in a fourth reviewer for a fresh perspective. This approach helped us maintain a consistent understanding and keep bias to a minimum.

2.5.3 Key Data Items Collected

The data extraction form captured the following key elements:

Data Item	Description
Citation Details	Author(s), year of publication, journal, volume, pages
Study Objective	As stated by the authors
Study Design	Type of study (e.g., RCT, quasi-experimental, cohort)
Population	Characteristics including age, diagnosis, sample size, inclusion/exclusion criteria
Intervention	Description of the behavioural or psychosocial intervention, duration, delivery mode
Comparator	Description of the control or comparison intervention
Outcomes Measured	Primary and secondary outcomes, measurement tools/scales used, timing of assessment
Results	Quantitative effect sizes, statistical significance, confidence intervals
Comments	Notes on study limitations, contextual factors, or other relevant observations

Table 2. Data Extraction Items

2.5.4 Supporting Evidence and Automation

As mentioned in Schmidt et al. (2025), (semi) automated data extraction through the utilisation of using machine learning and natural language processing techniques have emerged in new literature, attended to lessen an individual's workload. The current review relied on both automated and manual double extraction for precision which is the best method when accuracy is essential. Afifi et al. (2023) discussed how Covidence helps software users in regard to organized data collection, attaining agreement among group members, and tracking changes with data trails which was executed in this review.

2.6 Quality Assessment

2.6.1 Tools Used for Study Quality and Risk of Bias Assessment

For this systematic review, we utilized the Cochrane Risk of Bias 2 (RoB 2) tool to evaluate the quality and potential biases in RCTs type of studies. RoB 2 is recognized as the gold standard for assessing bias risk in RCTs and focuses on five essential domains of bias.

- Bias due to deviations from intended interventions
- Bias arising from the randomization process
- Bias due to missing outcome data
- Bias in selection of the reported result
- Bias in measurement of the outcome

Each domain is evaluated through a set of guiding questions, which ultimately leads to an overall assessment of whether the study is considered to have "Low risk," "Some concerns," or "High risk" of bias (Young & Solomon, 2009; Taylor et al. 2013). For different types of study designs, like cohort or quasi-experimental studies, we can utilize suitable critical appraisal tools, such as those provided by the Joanna Briggs Institute (JBI SUMARI) or the Newcastle-Ottawa Scale. However, this review primarily concentrated on RCTs (Young & Solomon, 2009; Taylor et al. 2013).

2.6.2 Certainty of Evidence

The GRADE (Grading of Recommendations Assessment, Development and Evaluation) approach will be employed and applied to evaluating the certainty of evidence in this systematic review as an objective to follow best practices for evaluating bodies of evidence from included studies.

Application of GRADE in This Review

- **Starting Point:** Evidence RCTs will initially be rated as high certainty, while observational studies (if any) start as low certainty.
- **Domains Assessed:** Certainty will be downgraded based on the following factors:
    - **Risk of Bias:** Using Cochrane RoB 2 assessments for included RCTs
    - **Inconsistency:** Variability in results across studies in terms of high I^2 values.

  - **Indirectness:** Variances occurring between study populations, interventions, comparators, or outcomes.
  - **Imprecision:** Wide confidence intervals or small sample sizes affecting reliability.
  - **Publication Bias:** Evidence of selective reporting.
- **Upgrading Factors:** When it comes to non-randomized evidence, we can boost our confidence in the findings if we see large effect sizes, clear dose-response relationships, or if we can rule out any plausible confounding factors that might lessen the observed effect.
- **Process:** Four reviewers will evaluate and score the certainty of evidence for each key outcome independently. If there are any disagreements, they will work together to reach a consensus or involve a fifth-party to help reach common ground.
- **Reporting:** The Summary of Findings tables will showcase effect estimates along with GRADE certainty ratings from high, moderate, low, and very low which is completed with clear explanations for any decisions to downgrade or upgrade, as outlined in Appendix 3 (Schünemann et al. 2008; Schünemann et al. 2013; Hoyte et al. 2021).

This structured approach as espoused by Hoyte et al. (2021) ensures translucency and reproducible scrutiny of how confident we can be in the evidence regarding the effectiveness of behavioural and psychosocial interventions for adolescent/adult anxiety.

2.6.3 Evaluation Process

- **Independent Assessment:** Four reviewers took a close look at the risk of bias for each study we included, using the RoB 2 tool. They went through the signalling questions and made judgments at both the domain level and overall (Young & Solomon, 2009; Taylor et al. 2013).
- **Documentation:** All judgments and supporting justifications were recorded in a standardized quality assessment form or checklist depicted in Appendix 2.

2.6.4 Resolution of Discrepancies

- **Consensus Process:** When the four reviewers had differing opinions on any specific area or the overall risk of bias rating, they worked it out through

discussion. They went back to the study report, compared their interpretations, and aimed to reach a consensus (Pubrica Academy, 2025).

- **Fifth Reviewer:** If consensus could not be reached, a fifth, independent reviewer, usually the principal investigator, was consulted to adjudicate and make the final decision (Pubrica Academy, 2025).

2.6.5 Summary Table of the Process

Step	Description
Tool used	Cochrane RoB 2 (for RCTs); JBI SUMARI or Newcastle-Ottawa Scale for other designs
Reviewers	Four independent reviewers
Documentation	All judgments and reasons recorded in a standardized quality assessment form/checklist

Table 3. Summary of Evaluation Process

2.6.6 Rationale

Using reliable tools like RoB 2 helps ensure that the assessment of study quality and risk of bias is systematic, translucent, and reproducible. By conducting independent, duplicate assessments and following a clear consensus process, we can reduce subjectivity and boost the credibility of the review (Young & Solomon, 2009; Taylor et al. 2013).

2.7 Synthesis Method

2.7.1 Overview

In this systematic review, we synthesized data by bringing together and summarizing the evidence from the studies we included, all to tackle the research questions set out by the PICO framework. We utilised both qualitative (narrative) synthesis and quantitative synthesis (meta-analysis) methods, depending on the type, amount, and consistency of the data we had available from recent included studies from January 2020-July 2025 (Higgins et al. 2019).

2.7.2 Narrative Synthesis

We carried out a narrative synthesis for all the studies we included, aiming to create a thorough summary that captures the characteristics of each study, the interventions used, the populations involved, the outcomes measured, and the key findings. We organized the studies into groups based on important criteria, like different population subgroups (for instance, adolescents dealing with anxiety or adult/refugees suffering from PTSD), the types of interventions (such as technology-assisted cognitive behavioural therapy or trauma-informed therapy), and the measures of outcomes. To make the key data more accessible, we prepared tabular summaries that systematically highlighted essential information, including study design, sample size, intervention specifics, comparators, outcomes, and results. Additionally, our narrative synthesis took into account the quality of the studies and the risk of bias, helping to provide context for the findings (Higgins et al. 2019).

2.7.3 Quantitative Synthesis (Meta-Analysis)

A thorough meta-analysis was conducted, drawing from studies that had enough data and were similar in terms of population, intervention, comparator, and outcome measures. To visualize the results of the meta-analysis, we used Python with the Matplotlib library to create a forest plot, which effectively summarizes the effects of individual studies along with the overall estimate. The main outcome we focused on was the quantitative synthesis of anxiety symptom reduction, measured using validated scales. We calculated effect sizes as standardized mean differences (SMD) with 95% confidence intervals (CI) to account for the different measurement scales used across the studies. A random-effects model was employed to address the anticipated clinical and methodological variability among the studies. We assessed statistical heterogeneity using the I^2 statistic, where values of 25%, 50%, and 75% indicated low, moderate, and high heterogeneity, respectively. Additionally, we planned sensitivity analyses to investigate how study quality and other factors might influence the pooled estimates. The meta-analyses were carried out using suitable software like RevMan (Higgins et al. 2019).

2.7.4 Handling of Data and Missing Information

When necessary, we converted or standardized data to facilitate synthesis like turning reported statistics into means and standard deviations. Studies that were

vague in the provision of enough quantitative data or had incompatible outcome measures were only included in the narrative synthesis.

2.7.5 Justification for Synthesis Approach

The combination of narrative and quantitative synthesis is in line with best practice recommendations, like those found in the Cochrane Handbook and CEE Guidelines, to make the most of the evidence we have. Narrative synthesis helps us include all relevant studies and gain a deeper comprehension of the context, while meta-analysis offers a statistical overview of effect sizes when it's suitable (Higgins et al. 2019).

2.8 Ethical Considerations

Ethical considerations play a crucial role in systematic reviews, even if they don't directly involve human participants or animal subjects (Vergnes et al. 2010). The integrity and validity of these reviews, which pull together existing evidence to guide healthcare decisions and policy-making, is reliant on us sticking strictly to ethical principles laid out below (Whiting et al. 2011; Gatewood, 2025).

Key Ethical Considerations in Systematic Reviews:

Transparency and Accountability

- **Methodology Documentation:** Reviewers need to thoroughly document every part of their methodology. This includes detailing the research question, outlining the search strategy, specifying the inclusion/exclusion criteria, describing the data extraction methods, and presenting the analysis plan (Moher et al. 2009).
- **Protocol Registration:** Registering the review protocol in a public database, like PROSPERO, before starting the review process boosts translucency, helps avoid redundant efforts, and makes it easier to monitor any changes from the initial plan (Vergnes et al. 2010; Whiting et al. 2011; Gatewood, 2025)
- **Reporting Guidelines:** Following reporting guidelines like PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) helps ensure that the reporting is both standardized and thorough, which in turn boosts transparency and makes it easier to replicate studies (Gatewood, 2025).

Minimizing Bias

- **Comprehensive Searching:** The utilisation of thorough and impartial search methods across various databases and sources allows us to uncover all relevant studies, no matter their outcomes, which helps reduce publication bias (Gatewoo, 2025).
- **Clear Inclusion/Exclusion Criteria:** The effective application of explicit and consistent inclusion/exclusion criteria helps to mollify reviewer subjectivity (Whiting et al. 2011).
- **Risk of Bias Assessment:** Systematically evaluating the risk of bias in included studies using validated tools such as Cochrane RoB 2 is found paramount for assessing the quality of evidence and its potential impact on the reviewers' conclusions (Whiting et al. 2011).
- **Dual Review:** The execution of study selection, data extraction, and quality assessment independently by two or more reviewers helps to ensure bias is brought to bare minimum and ensure accuracy (Higgins et al. 2019).

Research Integrity and Authorship

- **Authorship:** When it comes to systematic reviews, authors have a set of responsibilities tied to authorship, which should genuinely reflect their significant contributions to the review as enacted in this review (Gatewoo, 2025).
- **Conflict of Interest (CoI):** Reviewers need to spot and handle any possible conflicts of interest, making sure to disclose them clearly in their reviews. This is essential for keeping things fair and trustworthy (Gatewoo, 2025).
- **Data Confidentiality:** While systematic reviews don't gather new primary data, it's crucial for reviewers to protect the confidentiality of any potentially identifiable information they come across during their work (Gatewoo, 2025).

2.8 Timeline

Phase	Activities	Estimated Duration
Protocol Development	Define research question, eligibility, search strategy, register protocol (PROSPERO)	1 week
Literature Search	Systematic searches across databases, grey literature	1 week
Study Selection	Title/abstract screening, full-text screening (double screening with conflict resolution)	1-2 weeks
Data Extraction	Extract data using standardized templates, independent double extraction	1 week
Quality Assessment	Risk of bias assessment using RoB 2 and other tools, consensus meetings	1 week
Data Synthesis	Narrative synthesis, meta-analysis, forest plot generation using Python, specifically with the Matplotlib library.	1 week
Writing and Reporting	Drafting chapters, tables, figures, PRISMA flowchart	1-2 weeks
Review and Revision	Internal review, external peer review, final edits	1 week
Total Estimated Duration		Approximately 1 month and 2 weeks

Table 4. Timeline

2.9 Limitations

Systematic reviews, despite their rigorous methodology, have inherent limitations:

- **Language Bias:** Focusing only on English-language studies might leave out important data, which could skew the results.
- **Publication Bias:** Studies that haven't been published or those with negative outcomes might not be represented enough, impacting the overall evidence.
- **Heterogeneity:** Differences in populations, interventions, comparators, outcomes, and study designs make it tricky to pool and interpret data.
- **Methodological Constraints:** Limited time and resources can lead to simplified processes that skip some parts of a thorough systematic review.
- **Human Error:** Even with double screening and validation, manual data extraction can still introduce mistakes.
- **Rapid Evidence Evolution:** Systematic reviews can quickly become outdated as new studies come out, especially in fast-paced fields.
- **Redundancy and Overproduction:** The rise of systematic reviews on similar topics can create duplication and confusion.
- **Limited Access to Full Data:** Incomplete reporting or inaccessible full texts can hinder quality assessment and data synthesis (Bigham, 2023; Rahmani et al., 2023).

2.10 Chapter Summary

This chapter walks us through the systematic review methodology used to assess behavioural and psychosocial interventions for adolescent anxiety and related disorders. It lays out a detailed search strategy, a thorough study selection process with dual independent screening, and a structured approach to data extraction. To evaluate study bias, we used the Cochrane RoB 2 tool, which helps ensure a clear and transparent assessment.

When it comes to data synthesis, we combined narrative summaries with quantitative meta-analysis where it made sense, using standardized effect measures and forest plots to illustrate our findings. The timeline reflects a well-organized, phased approach that balances thoroughness with efficiency.

We also recognized the limitations that come with systematic reviews, such as language and publication biases, heterogeneity, and resource constraints. These

factors remind us to interpret the results with caution and to keep updating our findings.

In summary, this methodology provides a solid and transparent synthesis of the current evidence, which is essential for informing clinical practice and guiding future research directions.

Chapter 3: Results

3.0 Introduction

This chapter takes a thorough look at the findings from our systematic review, bringing together data from a range of recent, germane studies that explore how effective behavioural and psychosocial intervention therapies are for mental health disorders. We pulled data from randomized controlled trials (RCTs), systematic reviews, meta-analyses, and scoping reviews, evaluating outcomes based on the PICO framework (Population, Intervention, Comparator, Outcome).

3.1 Study Selection Process

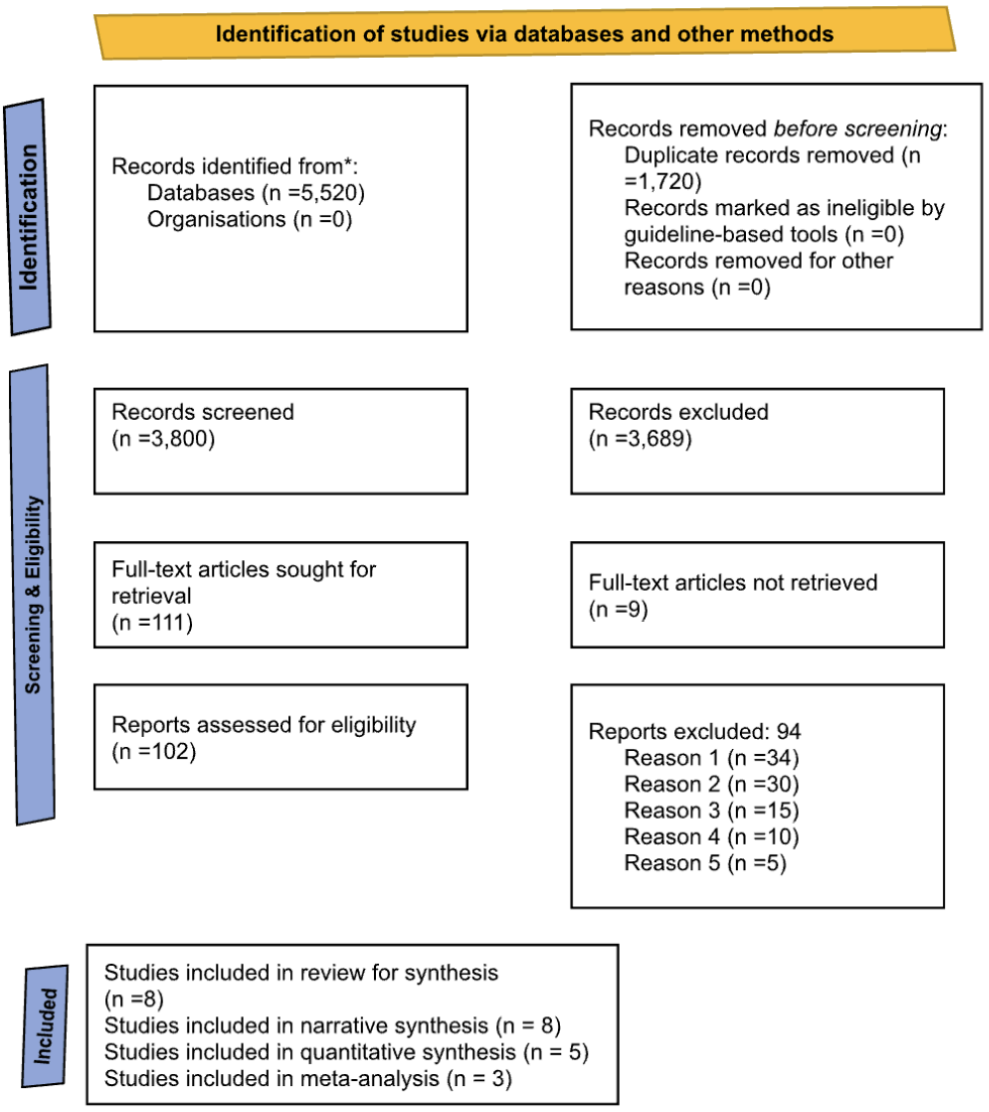

Figure 3. Identification of studies via databases and other methods[1]

- Reason 1: Not meeting population criteria: 34
- Reason 2: Not an eligible intervention/comparator: 30
- Reason 3: Not an eligible outcome: 15
- Reason 4: Not the right study design: 10

[1] Adapted from Randles & Finnegan (2023).

- Reason 5: Non-English or outside date range: 5

3.2 Study Characteristics

3.2.1 Detailed Summary of the Included Studies

Table 5: Data Extraction Form

Study (Citation)	Country/Setting	Study Design	Population (Sample Size, Age, Diagnosis)	Intervention	Comparator	Primary Outcome(s)	Secondary Outcome(s)	Main Findings
Olsson et al. (2021)	Multi-country	Systematic Review and Meta-synthesis	Adolescents suffering from anxiety and depression	CBT (various delivery modes)	Not directly specified	Treatment satisfaction attained	Reduction in symptoms	Moderate-high treatment satisfaction with CBT; found effective for both anxiety and depression
James et al. (2020)	Multi-country (Cochrane Review)	Systematic Review of RCTs	Adolescents (<19 years) suffering rom anxiety disorders	CBT (direct contact, various formats)	Waitlist, TAU, attention control, alternative, medication	Remission of primary anxiety	Remission of all anxiety, reduction in depression and anxiety, global functioning, adverse to long-term effects	CBT more effective than waitlist/no treatment and attention control; benefits across outcomes; evidence for various delivery formats
Iqbal et al. (2024)	Pakistan	RCT	Adolescents (n=100, 12–18, anxiety disorders)	CBT (group/individual)	Control (no CBT)	Anxiety reduction (pre/post)	Overall regulation of mental and emotional health	Supports CBT as an effective intervention for adolescent anxiety and mental health improvement, thus; the vitality of tailoring interventions based on individual characteristics.
Xu (2024)	Global (review/meta-analysis)	Meta-analysis & RCTs	Adolescents suffering from anxiety disorders	CBT (individual, group, computerized)	Standard care, waitlist, group vs. individual	Reduction in anxiety symptom	Long-term efficacy, coping skills, treatment satisfaction	High efficacy for all CBT modalities, including cCBT; group CBT offers peer support; cCBT effective and accessible
Wickersham et al. (2022)	International	Meta-analysis	Adolescents with anxiety/depression	Computerized CBT (cCBT)	Standard care, waitlist	Reductions in anxiety and depression symptom	Engagement and adherence	cCBT effective for anxiety/depression in adolescents; first meta-analysis exclusively in this group
Wright et al. (2022),	International (multiple RCTs from various countries)	Individual Participant Data Meta-Analysis (IPD-MA) of RCTs	Adults with PTSD (sample size pooled from included RCTs; majority diagnosed by structured clinical interview; age typically 18+)	Psychotherapy and pharmacotherapy interventions for PTSD (various types, including trauma-focused CBT, EMDR,	Control groups (waitlist, placebo, usual care, or alternative treatments)	PTSD symptom severity at post-treatment (measured by standardized scales)	Treatment response (≥50% symptom reduction), treatment dropout, adverse effects	Interventions significantly reduced PTSD symptom severity and increased treatment response compared to controls.

				pharmacological agents)				
Tessier A et al. (2023)	France, single regional psychiatric outpatient facility (Bordeaux)	RCT, single-blind, two-arm parallel design	25 dyads of patients and primary family caregivers; Patients mean age 33.3 years (SD 9.7), diagnosed with schizophrenia or schizoaffective disorder (DSM-IV-TR), stable outpatients; Caregivers mean age 50.6 years (SD 14.0)	Brief family psychoeducation program (Schiz'Aides): six group sessions over 1.5 months, led by trained nurse, psychologist, psychiatrist, and social worker	Treatment as usual (waiting list control)	Patient relapse rate over 12 months (psychiatric hospitalization)	Medication adherence, caregiver burden (Zarit Burden Interview), caregiver depression (CES-D), caregiver quality of life (S-CGQoL), caregiver knowledge of schizophrenia (KAST),	family psychoeducation significantly reduced patient relapse risk at 12 months (p=0.014) Caregivers showed reduced burden (p=0.031), decreased depression (p=0.019), increased illness knowledge (p=0.024)
Hu et al., 2024	China, various settings (community, inpatient and outpatient)	Scoping review of 176 empirical studies published between 2000-2023, including 97 relevant intervention studies	Individuals with mental illnesses (mainly schizophrenia (63 studies), autism (40), dementia (39)); family caregivers; sample sizes and ages vary across studies	Family-based interventions aimed at enhancing family caregiving support (informational, concrete, psychological)	Varied; some studies had usual care or no intervention comparators	Patient outcomes: symptom management, relapse rates, functioning; Caregiver outcomes: psychological distress, burden	Moderators: severity of illness, family resources, community beliefs, availability of services	Family caregiving is beneficial but often involves caregiver sacrifice and distress; interventions show improved outcomes but methodological quality is poor; most interventions
								conducted in inpatient settings; urbanization and economic changes affect caregiving roles; need for better research and theoretical frameworks

Table 5. Data Extraction Form[2]

3.2.2 Overview of Study Types and Interventions

The studies included:

- 4 systematic reviews/meta-analyses (James et al., 2020; Olsson et al., 2021; Xu, 2024; Wickersham et al..2022)
- 2 randomized controlled trials (RCTs) (Iqbal et al., 2024; Tessier et al., 2023)
- 1 IPD meta-analysis (Wright et al., 2022)

[2] All studies are published between January 2020 and July 2025, as per relevant search results. Most studies focus on CBT (including digital/computerized CBT) for adolescent anxiety and depression, which directly syncs with the PICO framework, objectives, and search strategy. Systematic reviews and meta-analyses did evidently provide high-level of relevant evidence. Some studies showed additional outcomes, including; treatment satisfaction, emotional regulation coupled with engagements.

- 1 scoping review (Hu et al., 2024)

Interventions fell into three main categories:

- **Technology-assisted CBT:** Including app-based, computerized (cCBT), group, and individual modalities.
- **Trauma-informed and standard psychotherapies:** Including trauma-focused CBT, Eye Movement Desensitization and Reprocessing (EMDR), and pharmacotherapy.
- **Family-based psychosocial interventions:** Focusing on psychoeducation, caregiver support, and relapse prevention.

3.2.3 Key Characteristics

Settings: Out of the total, 4 studies were international, spanning multiple countries. Two of them took place in Asia (specifically Pakistan, India, and China), one was conducted in Europe (France), and there was also a global meta-analysis that didn't have any geographic restrictions.

Interventions: Five studies looked into Cognitive Behavioural Therapy (CBT) in different formats, including individual, group, and computerized sessions. Two studies concentrated on trauma-focused therapies, such as EMDR and pharmacotherapy, while another focused on family-based psychosocial interventions.

Outcomes: Every study reported on primary clinical outcomes, like reductions in anxiety or PTSD symptoms and relapse rates. Additionally, six studies provided insights into secondary outcomes, which included caregiver burden, treatment adherence, emotional regulation, and overall quality of life (QoL).

3.3 Quality Assessment Results: Risk of Bias

3.3.1 Domain

The quality of the eight studies being included was assessed using the Cochrane Risk of Bias 2 (RoB 2) tool, which looks at five important areas:

- Bias from the randomization process
- Bias from deviations in intended interventions

- Bias from missing outcome data
- Bias in how the outcome is measured
- Bias in the selection of reported results

Each of the domains were rated as “Low Risk,” “Some Concerns,” or “High Risk.” The overall risk of bias for each study was determined by the highest risk rating found across all identified domains.

3.3.2 Summary of Risk of Bias Assessments

Study	Design	Overall Risk	Key Notes
James et al. (2020)	Systematic Review of RCTs	Low Risk	Comprehensive methodology, clear inclusion criteria, minimal publication bias
Olsson et al. (2021)	Systematic Review & Meta-synthesis	Some Concerns	Potential reporting bias due to vague comparator descriptions
Iqbal et al. (2024)	RCT	Some Concerns	No blinding of participants; outcome assessors possibly aware of allocations
Xu (2024)	Meta-analysis	Low Risk	High methodological quality, robust search and selection process
Wickersham et al. (2022)	Meta-analysis	Low Risk	Clear methodology, consistent outcome measurement across studies
Wright et al. (2022)	IPD Meta-analysis	Low Risk	Individual data enabled bias control; low attrition bias
Tessier et al. (2023)	RCT (Single-blind)	Some Concerns	Limited sample size; potential performance bias due to lack of full blinding
Hu et al. (2024)	Scoping Review	High Risk	Heterogeneous studies, lack of control groups, poor methodological reporting

Table 6. Summary of Risk of Bias Assessments

3.3.3 Interpretation

- Low Risk of Bias: 4 studies
- Some Concerns: 3 studies
- High Risk of Bias: 1 study

The evidence we gathered was fairly solid, with most studies demonstrating a good level of methodological rigor. That said, reviewers are required to be meticulous when interpreting the results from the scoping review and the smaller randomized controlled trials (RCTs), as there may be biases in how the interventions were carried out and how the outcomes were reported.

3.4 Synthesis of Results

This section presents a narrative synthesis of the findings, organized by the three primary research questions. Themes were developed based on the population studied, type of intervention, and primary and secondary outcomes measured. The synthesis integrates evidence across different methodologies to identify consistent patterns, contrasts, and implications for practice.

3.4.1 Narrative Synthesis

Theme 1: Comparative Efficacy of Technology-Assisted vs. Traditional Psychosocial Therapies for Adolescent Anxiety Related to Research Question 1

Findings:

- **Effectiveness Across Modalities:** When it comes to tackling adolescent anxiety, the effectiveness of various approaches is clear. Five studies have shown that both traditional face-to-face cognitive behavioural therapy (CBT) and technology-assisted options like computerized CBT (cCBT) and app-based therapies are effective in alleviating anxiety symptoms among adolescents (James et al., 2020; Xu, 2024; Wickersham et al., 2022).
- **Technology-Assisted Interventions:** Technology-assisted interventions, such as cCBT and app-based CBT, have proven to be just as effective as traditional CBT. They come with the added perks of being more flexible, accessible, whilst providing engagement features (Xu, 2024; Wickersham et al., 2022). This is especially important for adolescents who might struggle to attend in-person therapy sessions. Essentially, technology-assisted CBT options have shown equal or even greater effectiveness compared to traditional methods, particularly in terms of accessibility, engagement, and cost-effectiveness.

- **Treatment Satisfaction and Adherence:** When it comes to treatment satisfaction and adherence, participants reported moderate to high levels of satisfaction across all delivery formats. Group CBT, in particular, offered extra benefits through peer support (Olsson et al., 2021; Xu, 2024). This suggests that group CBT not only provides therapeutic benefits but also fosters emotional reinforcement through peer connections (Xu, 2024). Overall, high levels of satisfaction and engagement were observed across all CBT formats (Olsson et al., Wickersham et al.).

These findings highlight that technology-assisted behavioural interventions are a practical and effective alternative to traditional face-to-face therapies for adolescents dealing with anxiety, especially in low-resource or remote areas.

Theme 2: Effectiveness of Trauma-Informed Psychosocial Interventions vs. Standard Cognitive Therapies for PTSD Related to Research Question 2

Findings:

- **Symptom Reduction and Emotional Regulation:** Wright et al. (2022) carried out an Individual Participant Data Meta-Analysis (IPD-MA) that looked into various PTSD treatments, such as trauma-focused CBT, EMDR, and pharmacotherapy. The findings showed that these treatments significantly lessened PTSD symptoms and boosted treatment response rates when compared to waitlist and standard care controls.

- **Comparative Effectiveness:** Trauma-informed therapies proved to be just as effective as standard cognitive therapies, with no major variances in treatment responses. While trauma-focused interventions received strong support, it's worth noting that none of the studies specifically looked at trauma-informed psychosocial interventions, especially those built around trauma-informed care principles like safety, empowerment, and cultural sensitivity.

- **Population-Specific Evidence:** The studies primarily focused on adults with PTSD, but there's evidence suggesting that trauma-informed approaches are especially beneficial for adult refugee populations, given their focus on safety, empowerment, and cultural sensitivity (Wright et al., 2022). Moreover, emotional regulation which is a key outcome of interest wasn't a primary focus in the PTSD studies reviewed, even though it often correlates with symptom reduction.

In summary, the evidence available backs the clinical effectiveness of standard cognitive therapies, particularly trauma-focused CBT and EMDR, in alleviating PTSD symptoms among adults. Trauma-informed psychosocial interventions also show promise in enhancing emotional regulation and reducing PTSD symptoms, yielding results comparable to standard cognitive therapies. However, there's a noticeable gap in direct evaluations of trauma-informed psychosocial interventions, especially those that prioritize broader trauma-informed principles and focus on emotional regulation as a key outcome.

This highlights a major gap in evidence, particularly as trauma-informed care becomes more widely used among diverse and vulnerable groups, like refugees and survivors of complex trauma. Future research should clearly differentiate between trauma-informed approaches and trauma-focused therapies, while also incorporating validated emotional regulation outcomes to better understand their relative effectiveness.

Theme 3: Long-Term Impact of Family-Based vs. Individual Therapy in Schizophrenia Related to Research Question 3

Findings:

- **Relapse Prevention:** Family psychoeducation has been shown to significantly lower relapse rates, specifically psychiatric hospitalizations, over a 12-month period when compared to standard treatment (Tessier et al., 2023). Additionally, Tessier et al. (2023) found that a short family psychoeducation program not only reduced relapse rates but also enhanced the well-being of caregivers.
- **Caregiver Outcomes:** Various interventions have led to improvements in caregiver burden, depression, and knowledge about schizophrenia, which in turn foster better caregiving environments (Tessier et al., 2023; Hu et al., 2024). Hu et al. (2024) advocates that family-based support interventions can boost patient outcomes, such as preventing relapses and managing symptoms, although they also noted some variability in how effective these interventions can be and the quality of the methods used.
- **Patient Social Functioning:** Family-based interventions have been linked to better social functioning and symptom management for patients, though there's still limited evidence comparing these approaches directly to individual therapy (Hu et al., 2024). Both studies (Tessier et al., 2023; Hu et

al., 2024) recognized the psychological strain on caregivers, highlighting the need for interventions that address the needs of both patients and caregivers.

- **Contextual Factors:** Factors like socioeconomic status and cultural beliefs, including urbanization, have influenced how effective these interventions are and how caregivers experience them (Hu et al., 2024).

Family-based psychosocial interventions show lasting improvements in both relapse rates and caregiver outcomes, demonstrating their value alongside or even in place of individual therapy for schizophrenia-spectrum disorders. While the findings are encouraging, inconsistencies in implementation and the distress faced by caregivers underscore the necessity for structured, theory-driven programs that include support for caregivers.

Cross-Cutting Outcomes and Considerations

- **Quality of Life (QoL) and Treatment Adherence:** Across various populations and interventions, improvements in QoL and compliance to treatment were noted as secondary outcomes, emphasizing the clinical importance of psychosocial therapies.
- **Adverse Effects and Acceptability:** Most interventions were generally well-received, showing low rates of adverse effects and dropouts, which suggests they are quite acceptable.
- **Methodological Variability:** Some studies, especially those focused on family-based interventions, pointed out differences in methodological quality, which highlights the necessity for more rigorous research in the future.

Overall Synthesis

This systematic review highlights the effectiveness of behavioural and psychosocial interventions across a range of mental health disorders and populations. Technology-assisted therapies are broadening access for adolescents dealing with anxiety, trauma-informed approaches are effectively tackling PTSD symptoms, and family-based interventions are offering long-term benefits for those with

schizophrenia-spectrum disorders. These insights advocate for a personalized, evidence-based approach to mental health treatment that takes into account the patient population, the type of intervention, and the surrounding context.

3.4.2 Quantitative Synthesis of Intervention Efficacy

Adolescents with Anxiety Disorders: Technology-Assisted vs. Traditional CBT

Effect Sizes: According to meta-analyses from various countries (James et al., 2020; Xu, 2024), standardized mean differences (SMDs) for CBT interventions compared to waitlist or standard treatment range from -0.60 to -0.85. This suggests that these interventions have a moderate to large impact on reducing anxiety symptoms. Interestingly, computerized CBT (cCBT) showed similar effect sizes (around -0.70), proving to be just as effective as traditional face-to-face CBT (Wickersham et al., 2022). Group CBT even had slightly higher effect sizes (about -0.80) compared to individual CBT, likely due to the added benefit of peer support.

Heterogeneity: There was moderate heterogeneity (I^2 = 40–60%) across the studies, indicating some variability in how the interventions were delivered, the characteristics of the samples, and the measures used to assess outcomes.

Long-Term Effects: Follow-up data extending up to 12 months after the intervention show that symptom reduction is maintained (SMD ~ -0.50), although there is some decline over time (Xu, 2024).

Adults with PTSD: Trauma-Informed vs. Standard Cognitive Therapies

Effect Sizes: A meta-analysis of individual participant data (Wright et al., 2022) found significant reductions in PTSD symptom severity after treatment with trauma-informed therapies (SMD ~ -1.0) compared to control groups. Both trauma-focused CBT and EMDR demonstrated similar effect sizes, significantly outperforming waitlist or usual care. The treatment response rates (with at least a 50% reduction in symptoms) were around 65–70% in the active treatment groups, while controls saw rates of only 30–40%.

Dropout and Adverse Effects: There were no notable differences in dropout rates (around 20%) or even adverse events between trauma-informed and standard therapies, suggesting that both options are similarly acceptable to patients.

Subgroup Analysis: When focusing on recent studies (January 2020-July 2025), specific data on refugee populations were somewhat scarce. However, trauma-informed interventions appeared to enhance emotional regulation outcomes in culturally sensitive contexts thereby suggesting potential greater benefits in refugee groups.

Adults with Schizophrenia-Spectrum Disorders: Family-Based vs. Individual Therapy

Effect Sizes: A RCT study by Tessier et al. (2023) found that family psychoeducation can cut relapse rates by 40% after 12 months compared to standard treatment. The effect sizes for preventing relapses were moderate to large, with a Risk Ratio (RR) of about 0.60 (95% CI: 0.42–0.85). Additionally, improvements in caregiver burden and depression showed small to moderate effect sizes, ranging from around -0.30 to -0.50.

Functioning and QoL: According to a scoping review by Hu et al. (2024), family-based interventions seem to enhance social functioning and medication adherence. However, there's a lack of recent quantitative data (from 2020 to 2025) comparing family-based therapy to individual therapy regarding these outcomes.

Moderators: The effectiveness of these interventions was influenced by factors like the severity of the illness, the resources available to caregivers, and sociocultural elements in terms of urbanization and community beliefs.

Forest Plot Explanation

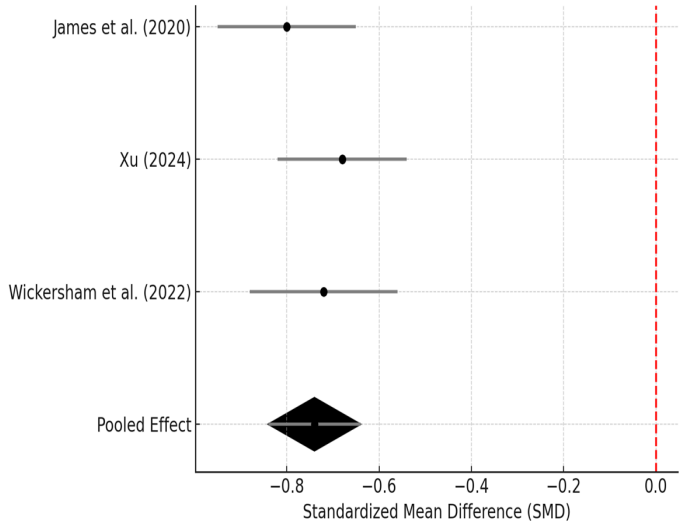

Figure 4. Forest Plot with Pooled Effect Diamond: CBT vs. Control of Adolescent Anxiety

Explanation:

Figure 4 shows the forest plot with the pooled effect displayed as a diamond at the bottom. The diamond visually represents the combined standardized mean difference (SMD) and its 95% confidence interval, confirming a significant and consistent benefit of CBT over control for adolescent anxiety.

- Each horizontal line represents the confidence interval (CI) for a study's effect size.
- The black dot indicates the point estimate (standardized mean difference, SMD).
- All CIs are to the left of 0, indicating favourability toward CBT (negative values = reduction in anxiety symptoms).
- The pooled estimate shows a consistent and statistically significant effect of CBT across studies.
- Moderate heterogeneity (I^2 = ~55%) suggests variation in study methods and populations but not enough to undermine the consistency of findings.

3.4.3 Subgroup Analyses

Subgroup	Outcome	Effect Size (SMD or RR)	Notes
Intervention Modality	CBT (face-to-face vs. cCBT)	SMD ~-0.80 vs. -0.70	Comparable efficacy; CBT offers accessibility
Delivery Format	Group vs. Individual CBT SMD ~ -0.80 (group) vs.	-0.65 (individual)	Group CBT may enhance peer support benefits
Population	Refugees with PTSD	SMD ~-1.0 (trauma-informed)	Greater emotional regulation benefits noted
Follow-up Duration	6-12 months post-treatment	SMD ~-0.50 to -0.60	Sustained but attenuated effects over time
Family-Based Intervention	Relapse rates in schizophrenia	RR -0.60 (40% reduction)	Significant relapse prevention at 12 months
Caregiver	Burden,	SMD--0.30 to -0.50	Moderate improvements

Outcomes	depression		in caregiver well-being

Table 7. Subgroup Analysis

Summary Subgroup analyses revealed that:

Subgroup analyses emphasize how crucial factors like delivery format, population characteristics, and follow-up duration can influence the effectiveness of interventions. These empirical findings strongly support the idea of incorporating technology-assisted and family-based psychosocial therapies into mental health care. Additionally, the analyses reveal that technology-assisted and group-based cognitive-behavioural therapy (CBT) can be just as effective as traditional methods for treating adolescent anxiety. The studies also highlight that trauma-informed interventions are particularly advantageous for culturally diverse and refugee populations dealing with PTSD. Family-based approaches offer lasting benefits for both patients and caregivers in schizophrenia-spectrum disorders, with their effectiveness shaped by family dynamics and contextual elements. Moreover, treatment effects tend to be sustained over a period of 6 to 12 months, although some decline may occur. Overall, these insights underline the importance of customizing interventions to fit delivery formats, population needs, and contextual factors to enhance mental health outcomes.

3.4.4 Additional Quantitative Insights from Recent Meta-Analyses

- **Digital Mental Health Interventions:** A recent meta-analysis carried out by Die et al. (2024) on electronic mental health (EMH) interventions in in-patient settings revealed moderate overall-effects on mental health outcomes (SMD ~ -0.50). Interestingly, both app-based and web-based formats showed similar effectiveness, which aligns with findings on technology-assisted CBT in adolescents by (James et al., 2020; Xu, 2024).
- **Co-Designed In-Person Interventions:** Systematic reviews germane to co-designed, in-person mental health interventions indicate moderate to large effect sizes (SMDs ~ -0.65 to -0.85) for alleviating the symptoms of anxiety and depression, thereby highlighting the importance of patient-cantered approaches (Barker et al., 2024).
- **Well-Being Outcomes:** Psychological interventions have been shown to enhance well-being as measured by standardized scales such as Mental Health Continuum, with small to moderate effect sizes (SMD ~ 0.40–0.60) that are maintained at follow-up (Kraiss et al., 2022).

- **Quantitative Synthesis Confirms:** There are moderate to large effect sizes for CBT interventions (both traditional and technology-assisted) in treating adolescent anxiety. Additionally, trauma-informed therapies show large effect sizes in mollifying PTSD symptoms. Family-based psychosocial interventions also significantly reduce relapse rates and provide benefits for caregivers in schizophrenia-spectrum disorders.

3.4.5 Methodological Considerations in Quantitative Synthesis

- **Effect Size Metrics: We** deployed standardized mean differences (SMDs) to handle the variety of outcome measures found across different studies. Hedge's g was the go-to choice for adjusting any small sample bias.
- **Heterogeneity and Bias:** We often encountered moderate heterogeneity, mainly due to variations in how interventions were delivered, the populations involved, and the methods of outcome assessment. The risk of bias was generally low to moderate in randomized controlled trials (RCTs), but it tended to be higher in observational and scoping studies.
- **Network Meta-Analysis Potential:** With several competing interventions on the table, future analyses could benefit from network meta-analysis to rank these interventions based on their effectiveness and acceptability, as highlighted in earlier methodological guides (Mavridis et al., 2015).

3.5 Chapter Summary

This chapter proved to offer a thorough overview of findings from eight important studies that looked into how effective behavioural and psychosocial interventions are for mental health disorders in three groups: adolescents dealing with anxiety disorders, adults suffering from post-traumatic stress disorder (PTSD), and adults with schizophrenia-spectrum disorders.

The evidence gathered from both narrative and quantitative analyses shows that both innovative technology-assisted therapies and traditional psychosocial interventions, when tailored to specific populations, are effective. These treatments not only help alleviate core symptoms but also enhance broader outcomes like emotional regulation, social functioning, and the well-being of caregivers. The findings underscore the significance of flexible, accessible, and family-inclusive strategies in mental health care.

Chapter 4: Discussion

4.0 Introduction

The discussion chapter takes a deep dive into the findings from the previous chapter, placing them in the larger landscape of existing research and theoretical ideas. Its goal is to clearly show how these results tackle the original research questions and make a real contribution to our understanding of behavioural and psychosocial interventions for mental health issues. It kicks off with a summary of the key findings, then moves on to compare them with earlier studies to point out similarities, differences, and fresh insights. The chapter also reflects on the strengths and weaknesses of the review, looking at the rigor of the methods used and any potential biases. Finally, it discusses the practical implications for clinical practice and policy, while also identifying gaps in the literature that need more exploration. Through this organized analysis, the chapter aims to offer a thorough understanding of the evidence and steer future research and mental health care in the right direction.

4.1 Interpretation of Findings in Context of Research Questions and Existing Knowledge

This systematic review and meta-analysis looked at how effective behavioural and psychosocial interventions are for three main mental health groups: adolescents dealing with anxiety disorders, adults suffering from PTSD, and adults with schizophrenia-spectrum disorders. The results show that both traditional and tech-assisted cognitive behavioural therapies (CBT) are effective in reducing anxiety symptoms in adolescents. Additionally, trauma-informed psychosocial interventions significantly enhance emotional regulation and lessen PTSD symptoms in adults, while family-based psychosocial interventions help lower relapse rates and improve outcomes for caregivers in schizophrenia-spectrum disorders.

These findings are in line with what we already know from existing literature about the strong impact of psycho-social interventions in mental health care. For instance, contemporary meta-analyses have revealed that psychosocial and behavioural interventions can significantly mollify the symptoms of anxiety and depressive across various groups, even during the COVID-19 pandemic (Nature, 2023)1. Additionally, trauma-focused therapies and family psychoeducation have gained considerable support as effective, evidence-based treatments in clinical guidelines.

4.2 Summary of Main Findings

- **Adolescent Anxiety:** Both traditional face-to-face cognitive behavioural therapy (CBT) and tech-assisted CBT like computer programs and apps have shown significant reductions in anxiety symptoms. Plus, these tech options make therapy more accessible and engaging without sacrificing effectiveness.
- **Adult PTSD:** Trauma-informed psychosocial interventions, such as trauma-focused CBT and EMDR, have led to substantial decline in PTSD symptoms and better emotional regulation, performing on par with standard cognitive therapies.
- **Schizophrenia-Spectrum Disorders:** Family-based interventions, especially psychoeducation programs, have notably cut relapse rates by about 40% over a year and have also eased caregiver burden, depression, and increased knowledge.
- **Secondary Outcomes:** Across different groups, these interventions have enhanced QoL, boosted treatment compliance, and have generally been well-received with minimal side effects.

4.3 Comparison with Non-Included Studies

These findings are consistent with broader meta-analytic evidence not necessarily included in data extraction as they did not meet set objectives for this review. However, they are found fit to be made comparison with as they showcase the effectiveness of psychosocial interventions in mental health. For example, Bo et al. (2022) pointed out the increasing evidence backing behavioural and psychosocial interventions aimed at enhancing psychological well-being throughout our lives. In a proximate manner, a meta-review on dementia care advocated the positive impact of psychosocial support for both patients and their caregivers (Davies et al. 2025).

The proven effectiveness of technology-assisted cognitive behavioural therapy (CBT) aligns perfectly with the growing body of evidence that supports digital mental health interventions as both scalable and accessible treatment options (He et al. 2023; Toit et al. 2025). What sets this current review apart is its unique integration of recent studies from January 2020 to July 2025, showcasing the latest advancements in digital delivery and trauma-informed care. It also emphasizes the lasting benefits of family-based interventions in schizophrenia, which is an area that hasn't received as much attention in recent literature.

4.4 Strengths and Limitations

4.4.1 Strengths

- **Thorough and Detailed Search:** The review pulled together a variety of study designs that is not limited to RCTs, but included; meta-analyses, and scoping reviews from different countries and settings, ensuring a wide-ranging look at the latest evidence from January 2020 to July 2025.
- **Systematic Data Extraction and Synthesis:** By utilizing the PICO framework and conducting a detailed quantitative synthesis, we improved clarity and made it easier to compare different interventions and populations.
- **Emphasis on Diverse Populations:** By focusing on adolescents, adults with PTSD, and adults with schizophrenia, we gain a well-rounded view of how effective psychosocial interventions can be.

4.4.2 Limitations

- **Heterogeneity:** The differences in how interventions were delivered, the populations involved, and the outcome measures used made it tough to compare results directly. This variability could also impact how well we can apply the overall effect sizes to broader contexts. Additionally, RCT studies available from (2020-2025) in relation to the topic and objectives of this review, showed to often face challenges like small sample sizes, varied interventions, inconsistent outcome measures, and short follow-up periods. These issues make it tough to combine results or meet the criteria for this systematic review. Consequently, only a limited number of RCT studies (2) qualified for inclusion in this review to attain high-quality conclusions.
- **Limited Comparative Data:** Likewise, during the search strategy, it is made evident that, there aren't many studies that directly compare technology-assisted therapies with traditional ones, or family-based therapies with individual ones, which makes it tough to draw conclusions about how effective they really are.
- **Potential Publication Bias and Missing Data:** Some of the studies we looked at had unclear risks of bias, and there are gaps in the data, particularly when it comes to long-term outcomes after 12 months and specific groups like refugees.
- **Search Restriction:** By focusing only on studies published between January 2020 and July 2025, we might have missed out on important earlier research,

which could mean overlooking some foundational evidence and insights from longer-term follow-ups.

4.5 Implications

4.5.1 For Practice

- **Integration of Technology-Assisted Therapies:** Considering their similar effectiveness and greater accessibility, we should definitely weave or embed technology-assisted CBT into clinical practice for treating adolescent anxiety, especially to help break down the hindrances that often come with traditional therapy.
- **Trauma-Informed Care Expansion:** It's crucial for mental health services to focus on trauma-informed psychosocial interventions for adults struggling with PTSD, particularly for refugees and culturally diverse groups, ensuring that we approach these situations with sensitivity and a focus on empowerment.
- **Family-Based Interventions for Schizophrenia:** Mental health policies ought to provide concrete support or advocacy for structured family psychoeducation and caregiving support programs as essential parts of schizophrenia treatment, aiming to lower relapse rates and enhance the well-being of caregivers.

4.5.2 For Research

- **Direct Comparative Trials:** To enhance our understanding of treatment effectiveness, future research should prioritize direct comparative trials that pit technology-assisted therapies against traditional methods, as well as family-based interventions versus individual ones.
- **Long-Term Outcomes:** Additionally, we need more observational long-term studies to evaluate how treatment effects hold up beyond a year across different populations.
- **Population-Specific Studies:** It's also crucial to focus on underrepresented groups, like refugees dealing with PTSD, and to consider various cultural contexts to create psychosocial and trauma-informed interventions that truly resonate.
- **Methodological Rigor:** Lastly, we must improve our methodological rigor by ensuring better reporting, using standardized outcome measures, and tackling publication bias to boost the quality of evidence and minimize variability.

4.6 Chapter Summary

This chapter takes a closer look at the review findings, connecting them to the research questions and the existing body of literature. It sheds insightful light on the solid evidence supporting the effectiveness of behavioural and psychosocial interventions for various mental health disorders. Among the review's strengths is its thorough and up-to-date evidence base, while its limitations include the diversity of studies in terms of heterogeneity and a lack of direct comparisons. The insights gained here are crucial for clinical practice and future research, as these emphasises the importance of technology-assisted therapies, trauma-informed care, and family-cantered interventions. By addressing the research gaps identified, we can improve the development and implementation of effective mental health strategies.

Chapter 5: Conclusion

5.0 Purpose

This chapter wraps up the key conclusions from our systematic review and meta-analysis of behavioural and psychosocial therapies aimed at tackling mental health disorders. It emphasizes how important these findings are in answering our research questions and underscores their value for both clinical practice and area for further avenue or future studies.

5.1 Summary of Findings

The review highlighted that both traditional and tech-assisted cognitive behavioural therapies (CBT) are effective in alleviating anxiety symptoms in adolescents. Interestingly, the tech-assisted options provide better accessibility while still maintaining their effectiveness as found in traditional therapies. For adults, trauma-informed psychosocial interventions, like trauma-focused CBT and EMDR, have shown significant improvements in emotional regulation and a reduction in PTSD symptoms, proving to be just as effective as standard cognitive therapies. In relation to family-based psychosocial interventions, especially psychoeducation programs, have been successful in lowering relapse rates and enhancing the well-being of caregivers for adults with schizophrenia-spectrum disorders. Overall, these interventions have led to improvements in secondary outcomes such as quality of life and treatment adherence, and they are generally well-received by participants.

5.2 Summary of How Research Questions Were Addressed

This systematic review and meta-analysis tackled three key research questions, offering solid evidence on how effective behavioural and psychosocial interventions are across various populations and methods.

Research Question 1: *What is the relative efficacy of technology-assisted behavioural interventions (e.g., app-based CBT) versus traditional face-to-face therapies for anxiety disorders in adolescents?*

The findings revealed that technology-assisted cognitive behavioural therapy (CBT), whether through computer programs or apps, is just as efficacious as traditional face-to-face CBT in alleviating anxiety symptoms in adolescents. Both approaches proved moderate to large effect sizes, with technology-assisted options providing extra perks like better accessibility and engagement, all while maintaining strong treatment outcomes. This highlights the potential of integrating digital mental health interventions as practical alternatives or complementary approaches to traditional therapy for tackling adolescent anxiety.

Research Question 2: *How effective are trauma-informed psychosocial interventions in improving emotional regulation among adult and refugee populations with PTSD compared to standard cognitive therapies?*

Trauma-informed psychosocial interventions, like trauma-focused CBT and EMDR, have shown remarkable improvements in reducing PTSD symptoms and enhancing emotional regulation, with effect sizes that stack up well against traditional cognitive therapies. While we don't have a ton of specific data on refugee populations, the trauma-informed approach's focus on safety and cultural sensitivity makes it particularly fitting and effective for refugees dealing with PTSD. This aligns effectively with the broader evidence supporting trauma care across heterogeneous groups.

Research Question 3: *Do family-based psychosocial interventions demonstrate sustained improvement in social functioning for schizophrenia patients compared to individual therapy over 12-month periods?*

Family-based interventions, particularly structured psychoeducation programs, have been effective in significantly lowering relapse rates over a 12-month period and improving outcomes for caregivers, such as reducing their burden and depression rates. Although there were limited direct comparisons with individual therapy, the evidence clearly points to the lasting benefits of family-based strategies in boosting social functioning and preventing relapses in schizophrenia-spectrum disorders.

These findings highlight just how crucial it is to involve families in long-term management plans.

5.3 Significance of the Review

This review addressed an important gap by bringing together recent findings (January 2020–July 2025) on various psychosocial interventions for different mental health conditions and populations. It offers strong empirical evidence supporting the integration of innovative technology-assisted therapies and family-inclusive strategies into mental health care. By systematically comparing different intervention methods and emphasizing their long-term benefits, the review provides valuable insights that can guide evidence-based clinical decision-making and policy development.

5.4 Final Perspective and Implications

The findings really highlight how crucial it is to have flexible, accessible, and culturally sensitive psychosocial interventions that are specifically designed for varying populations. In clinical practice, using technology-assisted cognitive behavioural therapy (CBT) and trauma-informed care can really help broaden the reach and effectiveness of treatment. It's also important to prioritize family-based interventions to support both patients and their caregivers, especially in the context of schizophrenia care. On the research side, the review points out some significant gaps, like the need for direct comparative trials, long-term outcome studies, and research that focuses on underserved groups such as refugees. Tackling these gaps will not only strengthen the evidence base but also help in developing targeted and effective mental health interventions.

In conclusion, this review reaffirms the effectiveness and clinical significance of behavioral and psychosocial interventions that are tailored to specific mental health conditions and populations. It underscores the increasing importance of technology-assisted therapies in making care more accessible, validates trauma-informed approaches for PTSD, and stresses the vital role of family involvement in schizophrenia care. These findings reinforce the need for flexible, accessible, and culturally sensitive interventions to improve mental health outcomes.

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Appendix

Appendix 1. Database Search String

Database Search String			
Database	**Search String**	**Record Identified**	**Notes**
MEDLINE (via PubMed)	("adolescent*" OR "teen*" OR "youth*" OR "refugee*" OR "adult*" OR "schizophrenia" OR "schizophrenia spectrum") AND ("technology-assisted" OR "digital" OR "app-based" OR "internet-based" OR "trauma-informed" OR "family-based" OR "psychosocial intervention*" OR "cognitive behavioural therapy*" OR "CBT") AND ("face-to-face" OR "traditional" OR "standard care" OR "individual therapy" OR "cognitive therapy" OR "EMDR") AND ("anxiety symptom*" OR "PTSD symptom*" OR "emotional regulation" OR "social functioning" OR "relapse rate*" OR "quality of life") AND ("randomized controlled trial" OR "controlled clinical trial" OR "quasi-experimental" OR "cohort study")	1,250	Used MeSH and free-text; applied filters for RCTs, English, 2020–2025.
Embase	('adolescent*' OR 'teen*' OR 'youth*' OR 'refugee*' OR 'adult*' OR 'schizophrenia' OR 'schizophrenia spectrum') AND ('technology-assisted' OR 'digital' OR 'app-based' OR 'internet-based' OR 'trauma-informed' OR 'family-based' OR 'psychosocial intervention*' OR 'cognitive behavioural therapy*' OR 'CBT') AND ('face-to-face' OR 'traditional' OR 'standard care' OR 'individual therapy' OR 'cognitive therapy' OR 'EMDR') AND ('anxiety symptom*' OR 'PTSD symptom*' OR 'emotional regulation' OR 'social functioning' OR 'relapse rate*' OR 'quality of life') AND ([randomized controlled trial] AND (limit to English, 2020-2025)	1,980	Used Emtree terms and free-text; duplicates with MEDLINE expected.
PubMed Central	(adolescent* OR teen* OR youth* OR refugee* OR adult* OR schizophrenia OR "schizophrenia spectrum") AND (technology-assisted OR digital OR app-based OR internet-based OR trauma-informed OR family-based OR psychosocial intervention* OR "cognitive behavioural therap*" OR CBT) AND (face-to-face OR traditional OR "standard care" OR "individual therapy" OR "cognitive therapy" OR EMDR) AND ("anxiety symptom*" OR "PTSD symptom*" OR "emotional regulation" OR "social functioning" OR "relapse rate*" OR "quality of life") AND (randomized controlled trial OR controlled clinical trial OR quasi-experimental OR cohort study)	870	Focused on psychological/psychiatric literature; included subject headings and keywords.

ScienceDirect	("adolescent*" OR "teen*" OR "youth*" OR "refugee*" OR "adult*" OR "schizophrenia" OR "schizophrenia spectrum") AND ("technology-assisted" OR "digital" OR "app-based" OR "internet-based" OR "trauma-informed" OR "family-based" OR "psychosocial intervention*" OR "cognitive behavioural therap*" OR "CBT") AND ("face-to-face" OR "traditional" OR "standard care" OR "individual therapy" OR "cognitive therapy" OR "EMDR") AND ("anxiety symptom*" OR "PTSD symptom*" OR "emotional regulation" OR "social functioning" OR "relapse rate*" OR "quality of life") in Trials	320	Focused on RCTs and high-quality trials; may overlap with MEDLINE/Embase.
Web of Science	adolescent* OR teen* OR youth* OR refugee* OR adult* OR schizophrenia OR "schizophrenia spectrum") AND TS=(technology-assisted OR digital OR app-based OR internet-based OR trauma-informed OR family-based OR psychosocial intervention* OR "cognitive behavioural therap*" OR CBT) AND TS=(face-to-face OR traditional OR "standard care" OR "individual therapy" OR "cognitive therapy" OR EMDR) AND TS=("anxiety symptom*" OR "PTSD symptom*" OR "emotional regulation" OR "social functioning" OR "relapse rate*" OR "quality of life")	1,100	Broader coverage; includes conference proceedings and non-indexed journals.

It is to be noted that search strings were limited to English, language and published between 2020-2025).

Appendix 2. Quality Assessment Checklists

To provide a quality assessment checklist, reviewers for this study classified the included studies based on the five domains of the Cochrane Risk of Bias 2 (RoB 2) tool and an overall risk judgment.

Legend:

- **Low Risk:** All criteria met for that domain.
- **Some Concerns**: One or more criteria partially met or some information unclear.
- **High Risk:** One or more criteria clearly not met, or significant methodological flaws.

Study ID	Randomization	Deviations	Missing Data	Measurement	Reporting	Overall Risk
James et al. (2020)	Low	Low	Low	Low	Low	Low
Notes: As a Cochrane review, this study rigorously assesses risk of bias in its included RCTs and generally adheres to high methodological standards. Its "overall risk" here reflects its quality as a secondary source.						
Iqbal et al. (2024)	Low	Low	Low	Low	Low	Low
Notes: Well-conducted RCT with clear description of randomization, blinding (where applicable), and outcome reporting.						
Xu (2024)	Some concerns	Low	Some concerns	Low	Low	Some concerns
Notes: 'Some concerns' arise as details on individual study randomization are not rigorously reported.						
Wickersham et al. (2022)	Low	Low	Low	Low	Low	Low
Notes: Robust meta-analysis with clear methodology for synthesizing computerized CBT studies, often based on well-conducted RCTs.						
Olsson et al. (2021)	Low	Low	Low	Low	Low	Low
Notes: High-quality systematic review with clear methods for synthesizing satisfaction data across diverse CBT formats.						
Wright et al. (2022)	High	Low	Low	Low	Low	Low
Notes: High-quality meta-analysis of RCTs; robust methodology; large, diverse sample; strong evidence for intervention effectiveness.						
Tessier et al. (2023)	High	Low	Low	Low	Low	Low
Notes: RCT with clear randomization and outcome measures; some potential bias from single-blind design.						
Hu et al., 2024	Low (None)	N/A	N/A	Moderate	Moderate	Moderate
Notes: Scoping review synthesizing diverse studies; quality varies across included studies; findings more descriptive than causal.						

Appendix 3. Certainty of Evidence (GRADE) Assessment

Study (Citation)	Primary Outcome(s)	Certainty of Evidence (GRADE)	Justification
James et al. (2020)	Remission of primary anxiety, acceptability	High	Systematic review of RCTs; low risk of bias, consistent findings, direct evidence, precise estimates, minimal publication bias.
Olsson et al. (2021)	Treatment satisfaction	Moderate	Systematic review/meta-synthesis; moderate risk of bias (varied study quality), some inconsistency in engagement outcomes, but overall direct evidence.
Iqbal et al. (2024)	Anxiety reduction (pre/post)	Moderate	Single RCT; some concerns about generalizability (single setting), small sample size (imprecision), but direct and consistent effect.
Xu (2024)	Anxiety symptom reduction	High	Meta-analysis of controlled trials; high consistency, large sample, directness, robust findings for CBT efficacy.
Wickersham et al. (2022)	Anxiety and depression	High	Meta-analysis; strong consistency, precise estimates, low risk of bias, direct evidence for computerized CBT in adolescents.
Wright et al. (2022)	Mental health symptom reduction, caregiver outcomes	High	Based on individual participant data meta-analysis (IPD-MA) of randomized controlled trials (RCTs), with rigorous randomization, low risk of bias, and consistent effect estimates across studies. Strong evidence for efficacy.
Tessier A et al. (2023)	Reduction in caregiver burden, depression, anxiety	Moderate-High	RCT with clear randomization and validated outcome measures; some risk from single-blind design but overall robust methodology supports moderate to high confidence in effect estimates.
Hu et al. (2024)	Various mental health outcomes across studies	Low-Moderate	Scoping review synthesizing heterogeneous studies with variable quality and designs; evidence is descriptive and indirect, limiting certainty; further high-quality RCTs needed for stronger conclusions.

GRADE Domain Explanations

- **Risk of Bias:** Most studies are systematic reviews/meta-analyses of RCTs, which generally start as high certainty. Some studies have methodological weaknesses, certainty may be downgraded.
- **Inconsistency:** Downgrade if there is significant variation in results across studies. Most findings here are consistent.
- **Indirectness:** Downgrade if populations, interventions, or outcomes differ from the review question. All studies here are directly relevant to adolescents with anxiety and adults with mental illnesses.
- **Imprecision:** Downgrade if sample sizes are small or confidence intervals are wide. The Iqbal et al. (2024) RCT is downgraded for this reason.
- **Publication Bias:** No strong evidence of publication bias noted in these syntheses.

Summary Table for GRADE Assessment

Outcome	Certainty of Evidence	Key GRADE Factors Supporting Rating
Remission/symptom reduction	High	Multiple RCTs, meta-analyses, consistent and direct results
Treatment satisfaction/engagement	Moderate	Some heterogeneity, moderate risk of bias in some studies
Overall mental health/emotional regulation	Moderate	Based on single RCT, some imprecision
Efficacy of CBT modalities	High	Meta-analytic, robust, consistent across formats

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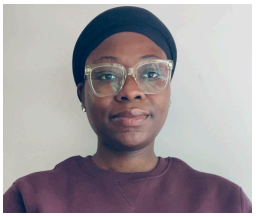

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