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Psychopharmacology or Psychotherapy? A Public Health Scoping Review of Mental Health Intervention Strategies

Khadija Kamene

ABSTRACT

BACKGROUND

Mental health disorders are a leading contributor to global morbidity and pose significant challenges to public health systems worldwide. Psychopharmacology and psychotherapy are widely employed to alleviate symptoms, improve functioning, and enhance quality of life; however, their comparative effectiveness, accessibility, scalability, and population-level impact remain incompletely synthesized from a public health perspective.

OBJECTIVES

This scoping review synthesizes current evidence on psychopharmacological and psychotherapeutic interventions, with a focus on public health outcomes defined as hospitalization rates, relapse rates, service utilization, treatment access and coverage, functional disability (DALYs), workforce productivity, and treatment adherence at the population level.

METHODS

A systematic search of PubMed, Scopus, PsycINFO, and Web of Science was conducted for studies published between January 2010 and February 2026. Screening, data extraction, and quality appraisal followed PRISMA-ScR guidelines and Joanna Briggs Institute (JBI) criteria. Twenty-four studies met inclusion criteria and were synthesized narratively.

RESULTS

Both intervention modalities demonstrate significant clinical efficacy. Pharmacological treatments offer rapid symptom reduction and population-scale distribution advantages, whereas psychotherapy produces durable functional improvements and superior relapse prevention. Meta-analytic evidence supports combined pharmacological and psychotherapeutic approaches as producing the greatest population-level benefit. Substantial disparities in access persist, particularly in low- and middle-income countries (LMICs).

CONCLUSIONS

Integrated care models combining pharmacotherapy and psychotherapy, delivered through task-sharing, digital platforms, and stepped-care frameworks, represent the most equitable and effective strategy for improving population mental health outcomes. Policy investment in workforce capacity, digital infrastructure, and culturally adapted interventions is essential to reduce the global treatment gap.

Keywords: Digital scalable mental health care, Implementation science for stepped-care systems, Integrated psychopharmacology–psychotherapy models, Population-level mental health outcomes, Task-sharing therapy delivery in lmics.

Introduction

Mental health disorders represent a leading contributor to global disease burden, accounting for substantial disability, reduced quality of life, and increased socioeconomic costs worldwide. Recent estimates indicate that depressive and anxiety disorders alone affect hundreds of millions of individuals and contribute significantly to years lived with disability across diverse populations.¹ The COVID-19 pandemic further intensified psychosocial stressors and widened mental health disparities, particularly among adolescents and socioeconomically vulnerable groups.²

Within clinical and public health practice, two dominant intervention approaches have emerged: psychopharmacology, which targets neurobiological mechanisms through medication, and psychotherapy, which addresses cognitive, emotional, and behavioral processes through structured psychological interventions.³ Beyond individual symptom reduction, mental health interventions increasingly influence broader public health outcomes—including hospitalization rates, workforce productivity, social functioning, and health system utilization—positioning mental health as a central component of population health strategies.⁴

Despite substantial advances in treatment research, debates persist regarding the comparative value of pharmacological and psychological interventions when evaluated from a population health perspective rather than solely clinical efficacy. While pharmacotherapy often demonstrates rapid symptom reduction and scalability within medical systems, psychotherapy has shown durable effects, relapse prevention benefits, and improved long-term functioning in many conditions.⁵ Most comparative studies focus on controlled clinical outcomes, leaving important gaps in understanding accessibility, cost-effectiveness, cultural adaptability, and implementation feasibility at scale—particularly in low- and middle-income countries (LMICs), where treatment gaps remain substantial.⁶ Evaluating interventions through a public health lens is therefore essential to inform equitable mental health policy, optimize resource allocation, and support scalable models of care delivery.

This scoping review aims to assess the effectiveness, accessibility, and population-level impact of psychopharmacology and psychotherapy as mental health intervention strategies within public health systems. Specifically, it examines factors influencing intervention selection, including economic constraints, service availability, and sociocultural context. Three primary research questions are addressed: (i) which intervention approaches are associated with

improved population mental health outcomes; (ii) how accessibility, cost, and cultural considerations shape implementation across settings; and (iii) what policy implications emerge for strengthening mental health systems globally.

Methodology

Study Design

This study employed a scoping review methodology in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) to ensure methodological transparency and reproducibility.⁷ A scoping approach was selected to enable broad examination of heterogeneous study designs—including systematic reviews, meta-analyses, randomized-controlled trials (RCTs), observational studies, policy reports, and population-level research—addressing the effectiveness, accessibility, and societal outcomes of mental health interventions. This scoping review included a broad range of evidence relevant to mental health intervention strategies and their population-level impact. Eligible sources comprised (i) empirical studies examining psychopharmacological and/or psychotherapeutic interventions (including randomized-controlled trials, observational studies, and systematic reviews), and (ii) contextual, policy, and systems-level evidence (including global burden analyses, policy reports, and conceptual or implementation-focused reviews) that provides insight into accessibility, coverage, scalability, and public health impact of mental health interventions. Contextual and policy-oriented sources were included to support interpretation of intervention effectiveness within real-world health systems and were synthesized separately from empirical intervention studies where appropriate.

In accordance with the TITAN⁸ guideline for transparency in artificial intelligence reporting, AI tools were used only for language editing and formatting assistance. All literature screening, data extraction, interpretation, and manuscript preparation were conducted by the authors with full human oversight. A protocol was not prospectively registered, which is consistent with common practice for scoping reviews; methods were predefined prior to study initiation. Quality appraisal was conducted using Joanna Briggs Institute (JBI) standardized checklists.

Operational Definition of Public Health Outcomes

For the purposes of this review, public health outcomes are operationally defined as measurable population-level effects of mental health interventions beyond individual symptom reduction. These include (i) psychiatric hospitalization rates and emergency service utilization; (ii) relapse rates and treatment discontinuation at follow-up; (iii) mental health service coverage and access, including treatment gap estimates; (iv) disability-adjusted life years (DALYs) and years lived with disability (YLDs) attributable to mental disorders; (v) workforce productivity and absenteeism; and (vi) treatment adherence at the population level.

Studies were included if they reported at least one of these outcomes, either as a primary or secondary measure. Table 1 maps each included study to the specific public health outcomes assessed.

Search Strategy

A comprehensive literature search was conducted across four electronic databases: PubMed, Scopus, PsycINFO, and Web of Science, covering studies published between January 1, 2010 and February 15, 2026. Database-specific search strings are provided in full in Appendix I. Core search concept domains included psychopharmacology and pharmacological treatments; psychotherapy and psychological therapies; mental health disorders; and public health and population health outcomes. Boolean operators (AND, OR) and truncation symbols were applied across all platforms. Gray literature, including policy reports from major global health organizations, was included where relevant. Reference lists of relevant systematic reviews and global mental health reports were manually screened to identify additional eligible studies not captured through database searching.

Database Search Strings

PubMed: (“psychopharmacology” OR antidepressant* OR antipsychotic* OR pharmacotherapy OR psychotropic medication*) AND (“psychotherapy” OR “cognitive behavioral therapy” OR CBT OR “interpersonal therapy” OR “psychological treatment*”) AND (“mental health” OR depression OR anxiety OR “mental disorder*”) AND (“public health” OR “population health” OR access OR equity OR “health system*”). Filters: 2010/01/01 to 2026/02/15.

Scopus: TITLE-ABS-KEY (psychopharmacology OR antidepressant* OR antipsychotic* OR pharmacotherapy) AND TITLE-ABS-KEY (psychotherapy OR “cognitive behavioral therapy” OR CBT OR “interpersonal therapy”) AND TITLE-ABS-KEY (“mental health” OR depression OR anxiety) AND TITLE-ABS-KEY (“public health” OR “population health” OR accessibility OR equity) AND PUBYEAR > 2009.

PsycINFO: (psychopharmacology OR antidepressant* OR antipsychotic*) AND (psychotherapy OR cognitive behavioral therapy OR interpersonal therapy) AND (mental health OR depression OR anxiety) AND (public health OR population health OR health systems). Limit: Peer-reviewed, 2010–2026.

Web of Science: TS = (psychopharmacology OR antidepressant* OR antipsychotic*) AND TS = (psychotherapy OR “cognitive behavioral therapy” OR “interpersonal therapy”) AND TS = (“mental health” OR depression OR anxiety) AND TS = (“public health” OR “population health” OR equity OR accessibility). Timespan: 2010–2026.

Screening Process and Study Selection

All records retrieved from database searches were exported into reference management software and deduplicated prior to screening. Titles and abstracts were screened against predefined eligibility criteria by two

Table 1 | Characteristics of included studies ($n = 24$) with mapping to public health outcomes

Author (Year)	Country/ Region	Design	Population	Intervention	Public Health Outcomes Assessed	Main Findings
GBD 2019 Mental Disorders Collaborators (2022)	Global	Systematic analysis	Global population	Population mental health analysis	DALYs; YLDs; disease burden	Mental disorders account for ~13% of global DALYs; depressive and anxiety disorders are leading contributors to YLDs across all regions.
Kim et al. (2024)	Global	Epidemiological study	Adolescents worldwide	COVID-19 mental health impact	Prevalence; service utilization	Pandemic stressors increased anxiety/depression prevalence by ~25%–28% in adolescents; service utilization gaps widened in LMICs.
Bertolin-Guillen (2021)	Europe	Narrative review	Adult clinical populations	Pharmacotherapy and psychotherapy	Treatment access; coverage	Both modalities are key in modern care; integration into primary care remains limited in many health systems.
WHO (2022)	Global	Policy report	Population-level data	Health system interventions	Treatment gap; service coverage; hospitalization	Treatment gap exceeds 70% in LMICs; hospitalization rates remain high where community care is underdeveloped.
Cuijpers et al. (2019)	Multinational	Meta-analysis	Adults with depression	Psychotherapy (various)	Relapse rates; functioning	Psychotherapy significantly reduces depressive symptoms; effect sizes $g = 0.62$ (95% CI: 0.54–0.70); and lower relapse vs. medication at follow-up.
Lund et al. (2018)	Global	Systematic review	Population studies	Social determinants analysis	Access; equity; DALYs	Socioeconomic deprivation, discrimination, and food insecurity are strongly associated with increased mental disorder burden.
Cipriani et al. (2018)	Multinational	Network meta-analysis	116,477 patients	Antidepressant medications	Hospitalization; symptom reduction; adherence	All 21 antidepressants more efficacious than placebo (ORs 1.37–2.13); effect sizes $g = 0.30$ –0.50; acceptability varied significantly.
McIntyre et al. (2020)	International	Clinical review	Bipolar disorder patients	Pharmacological treatment	Relapse; hospitalization; functioning	Pharmacotherapy reduces relapse and hospitalization in bipolar disorder; adherence challenges persist across settings.
Patel et al. (2011)	LMICs	Implementation study	Community mental health	Task-shared psychotherapy	Access; coverage; treatment gap	Task-sharing with non-specialists improves access to psychological treatments; demonstrated effectiveness in India, Zimbabwe, and Uganda.
Solmi et al. (2020)	Multinational	Meta-review	Children and adolescents	Psychotropic medications	Adherence; adverse effects	Adverse effect profiles vary across 80 psychotropic medications; metabolic and cardiac risks require monitoring to sustain population-level adherence.
Froming et al. (2025)	Central African Republic	RCT	Post-conflict trauma survivors	Psychological trauma therapy	PTSD symptoms; functioning	Structured psychological interventions reduced PTSD symptoms and improved daily functioning in a post-conflict LMIC setting.
Singla (2021)	Global	Implementation review	Community mental health	Scaled psychotherapy delivery	Access; coverage; scalability	Task-sharing and digital delivery can expand psychotherapy coverage; supervision fidelity is critical for outcome quality.
Huhn et al. (2022)	International	Meta-analysis	Schizophrenic patients	Antipsychotic medications	Hospitalization; adherence; physiological outcomes	Antipsychotics reduce hospitalization rates in schizophrenia; cardiovascular monitoring required for sustained population-level benefit.
Pillinger et al. (2020)	International	Network meta-analysis	Schizophrenic patients	Antipsychotic drugs	Adherence; metabolic outcomes; functioning	Significant metabolic risk variation across antipsychotics influences long-term adherence and population health costs.
Furukawa et al. (2021)	Multinational	Network meta-analysis	Adults with MDD	Pharmacotherapy vs. psychotherapy	Relapse; sustained response; functioning	Initial treatment sequencing influences sustained remission; combined approaches yield superior long-term outcomes.
Chiao et al. (2020)	Global	Review	Cross-cultural populations	Cultural neuroscience within the RDoC framework	Access; adherence; treatment acceptability	Cultural adaptation significantly improves therapy engagement and adherence, particularly in LMIC and minority populations.
Kazdin (2017)	Global	Policy review	Mental health systems	Scalable psychotherapy	Coverage; access; scalability	Innovative delivery models (digital, group, task-sharing) are necessary to close the global psychotherapy access gap.
Dunlop & Mayberg (2022)	USA	Neurobiological review	Mood disorder patients	Combined therapy	Functioning; relapse; adherence	Complementary neurobiological mechanisms support additive effects of combined treatment on functioning and relapse prevention.
Guidi et al. (2016)	Europe	Clinical review	Mood disorder patients	Sequential integration	Relapse; functioning; adherence	Sequential pharmacotherapy, followed by psychotherapy, reduces residual symptoms and relapse risk in remitted depression.

Table 1 | Continued

Author (Year)	Country/ Region	Design	Population	Intervention	Public Health Outcomes Assessed	Main Findings
Torous et al. (2021)	Global	Technology review	Digital mental health users	Digital mental health tools	Access; coverage; adherence	Digital platforms expand access; internet-based CBT shows $g = 0.30$ – 0.60 across meta-analyses; digital divide limits equity.
Jordans et al. (2016)	LMICs	Community intervention	Community populations	Community mental health	Access; coverage; functioning	Community-based programs improve access and reduce untreated prevalence in LMICs; task-sharing central to scalability.
Wainberg et al. (2017)	Global	Implementation review	Global mental health systems	Implementation strategies	Access; effectiveness; health system utilization	Real-world effect sizes approximately 20%–40% lower than RCT estimates; implementation science essential for closing the efficacy–effectiveness gap.
Johnco et al. (2025)	Multinational	Systematic review & meta-analysis	Older adults with anxiety disorders	CBT, other psychological therapies, and pharmacological treatments	Diagnostic remission; treatment response; attrition; relapse	CBT showed 54% diagnostic remission vs. 36% for pharmacotherapy; ~33% relapse after CBT; attrition rates comparable across modalities (~19%–20%).

Abbreviations: CBT, cognitive behavioral therapy; DALYs, disability-adjusted life years; LMICs, low- and middle-income countries; MDD, major depressive disorder; NNT, number needed to treat; OR, odds ratio; RCT, randomized-controlled trial; YLDs, years lived with disability. Included studies comprise both empirical intervention studies and contextual/policy sources, consistent with the scoping review approach.

independent reviewers. Full-text articles deemed potentially eligible were subsequently reviewed to confirm inclusion. Discrepancies were resolved through discussion and consensus. The PRISMA-ScR flow diagram (Figure 1) provides a transparent account of the study identification, screening, eligibility assessment, and inclusion process.

The literature search identified 2184 records across four databases: PubMed ($n = 642$), Scopus ($n = 581$), PsycINFO ($n = 493$), and Web of Science ($n = 468$). An additional 47 records were identified through manual reference screening, yielding 2231 total records. Following removal of 512 duplicates, 1719 unique studies were subjected to title and abstract screening; 1421 were excluded for lack of relevance. Of 298 full-text articles assessed, 214 were excluded because of failure to examine psychopharmacological or psychotherapeutic interventions ($n = 72$); absence of public health outcomes ($n = 61$); non-empirical publication type ($n = 45$); and ineligible population or condition focus ($n = 36$). A final total of 24 studies met all inclusion criteria and were included in the qualitative synthesis.

Data Extraction

A standardized data extraction form was developed and pilot-tested prior to the review. Extraction was conducted independently by two reviewers and discrepancies were resolved by consensus or third-reviewer consultation. The following information was extracted from each study: bibliographic details; study design and methodological characteristics; population and sample size; intervention and comparator characteristics; public health outcome measures and assessment tools; key findings; and reported limitations and sources of bias.

Quality Appraisal

Methodological quality was assessed using Joanna Briggs Institute (JBI) critical appraisal checklists

appropriate to each study design. For empirical studies, appraisal was conducted across five domains: (i) clarity of research objectives and study design; (ii) appropriateness of sampling and participant selection; (iii) reliability and validity of outcome measurement; (iv) adequacy of statistical analysis; and (v) transparency in reporting potential sources of bias. JBI tools were applied only to empirical studies, including randomized-controlled trials, observational studies, and systematic reviews/meta-analyses. Conceptual, narrative, and policy-oriented sources were not formally appraised using JBI tools, as these designs are not compatible with standardized critical appraisal checklists; instead, they were included to provide contextual and systems-level insights relevant to public health interpretation. Appraisal was conducted independently by two reviewers, with discrepancies resolved by consensus. Empirical studies were not excluded solely on the basis of quality, consistent with scoping review methodology; appraisal findings were used to contextualize the strength of conclusions. A domain-level summary of JBI appraisal outcomes is presented in Table 2.

Data Synthesis

A narrative synthesis approach was employed, given heterogeneity in study designs, populations, and outcome measures, which precluded quantitative meta-analysis. The synthesis followed a structured process: (i) data familiarization through repeated review of extracted findings; (ii) thematic organization aligned with review objectives; (iii) comparative analysis of similarities and differences across studies, weighted by methodological quality; and (iv) integration of themes into overarching categories. Tables and thematic summaries were used to enhance transparency and traceability between primary study findings and synthesized conclusions. Empirical intervention studies and contextual/policy sources were synthesized thematically, with distinction maintained

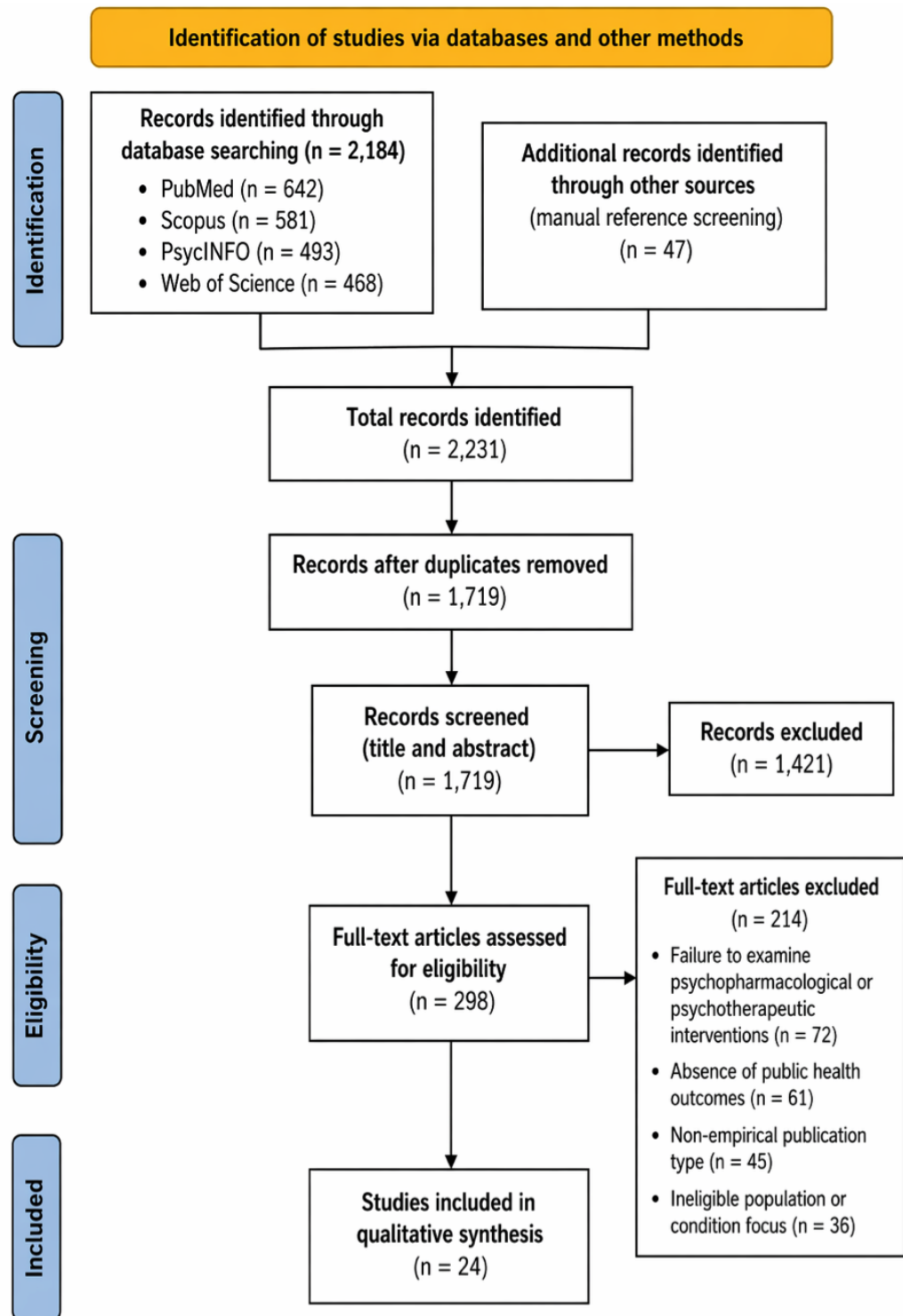


Fig 1 | PRISMA-ScR flow diagram of study selection

between clinical effectiveness findings and broader health system- or population-level insights.

Results

Characteristics of Included Studies

Twenty-four studies met all inclusion criteria. These comprised two broad categories: (i) empirical intervention studies (including randomized-controlled trials,

observational studies, and meta-analyses) examining psychopharmacological and/or psychotherapeutic interventions, and (ii) contextual and policy-oriented sources (including global burden analyses, policy reports, and conceptual or implementation-focused reviews) that provide insight into population-level mental health outcomes, health system capacity, and intervention scalability. Of the 24 included sources, the

Table 2 | Domain-level summary of JBI quality appraisal of included studies

Study (First Author, Year)	Design	Objectives Clear	Sampling Appropriate	Outcome Validity	Statistical Adequacy	Bias Reporting	Overall Rating
GBD 2019 Collaborators (2022)	Systematic analysis	High	High	High	High	High	High
Kim et al. (2024)	Epidemiological	High	High	Moderate	High	High	High
Bertolin-Guillen (2021)	Narrative review	Moderate	Moderate	Moderate	Low	Moderate	Moderate
WHO (2022)	Policy report	High	High	Moderate	Moderate	Moderate	Moderate
Cuijpers et al. (2019)	Meta-analysis	High	High	High	High	High	High
Lund et al. (2018)	Systematic review	High	High	High	High	High	High
Cipriani et al. (2018)	Network meta-analysis	High	High	High	High	High	High
McIntyre et al. (2020)	Clinical review	High	Moderate	Moderate	Moderate	Moderate	Moderate
Patel et al. (2011)	Implementation study	High	Moderate	Moderate	Moderate	Moderate	Moderate
Wykes et al. (2023)	RCT	High	High	High	High	High	High
Solmi et al. (2020)	Meta-review	High	High	High	High	High	High
Froming et al. (2025)	RCT	High	Moderate	High	Moderate	High	Moderate
Singla (2021)	Implementation review	High	Moderate	Moderate	Low	Moderate	Low
Huhn et al. (2022)	Meta-analysis	High	High	High	High	High	High
Pillinger et al. (2020)	Network meta-analysis	High	High	High	High	High	High
Furukawa et al. (2021)	Network meta-analysis	High	High	High	High	High	High
Kazdin (2017)	Policy review	High	Moderate	Moderate	Low	Moderate	Low
Dunlop & Mayberg (2022)	Neurobiological review	High	Moderate	Moderate	Moderate	Moderate	Moderate
Guidi et al. (2016)	Clinical review	High	Moderate	High	Moderate	High	Moderate
Torous et al. (2021)	Technology review	High	Moderate	Moderate	Moderate	Moderate	Moderate
Jordans et al. (2020)	Community intervention	High	Moderate	Moderate	Moderate	Moderate	Moderate
Wainberg et al. (2017)	Implementation review	High	Moderate	Moderate	Moderate	Moderate	Moderate

Ratings reflect appraisal against JBI domain criteria: High = criterion fully met; Moderate = criterion partially met; and Low = criterion not met or unclear. Overall rating reflects the predominant appraisal profile across domains. JBI appraisal applies to empirical studies only; conceptual, narrative, and policy sources were not formally appraised.

majority ($n \approx 15\text{--}18$) were empirical intervention studies evaluating clinical or implementation outcomes of pharmacological and/or psychotherapeutic treatments. The remaining sources ($n \approx 6\text{--}9$) comprised contextual and policy-level evidence, including global epidemiological analyses, health system reports, and conceptual frameworks, which were included to support interpretation of population-level impact, access, and scalability Table 1 summarizes the characteristics of included studies across both categories.

Quality Appraisal

Quality appraisal findings should be interpreted primarily for empirical studies, as conceptual, narrative, and policy-oriented sources were not subject to standardized JBI appraisal. Table 2 presents a domain-level summary of JBI quality appraisal across included studies, categorized by study design and appraised across five methodological domains. Overall, nine studies demonstrated high methodological rigor (primarily large-scale meta-analyses and well-powered RCTs), 11 studies demonstrated moderate rigor (smaller trials and longitudinal observational studies), and four studies demonstrated lower rigor (implementation and descriptive reviews with limited

control structures). Key sources of risk across studies included variable outcome measurement standardization, limited follow-up duration in some RCTs, and restricted generalizability of findings from high-income to LMIC settings.

Overview of Psychopharmacological Interventions
Psychopharmacological interventions constitute a central component of modern mental health treatment and include antidepressants, antipsychotics, anxiolytics, and mood stabilizers. These medications primarily act by modulating neurotransmitter systems—including serotonin, dopamine, and norepinephrine—to regulate mood, cognition, and behavior. Pharmacotherapy is widely used in the management of depression, anxiety disorders, bipolar disorder, and schizophrenia, typically providing faster symptom reduction compared with psychological interventions alone.^{9,10}

Network meta-analyses of antidepressant trials report standardized mean differences typically ranging from $g = 0.30$ to $g = 0.50$ compared with placebo, indicating moderate treatment effects across multiple drug classes.⁹ The landmark Cipriani et al. (2018) network meta-analysis of 522 trials and 116,477 participants found that all 21 antidepressants were more

efficacious than placebo, with odds ratios for response ranging from 1.37 to 2.13, though acceptability varied substantially across agents.⁹ Within public health systems, medication-based treatment remains one of the most accessible clinical responses to mental illness due to standardized prescribing protocols and integration into primary care infrastructure.¹¹

At the population level, psychotropic medications have demonstrated effectiveness in reducing symptom severity, relapse rates, and psychiatric hospitalization, thereby improving functional outcomes and quality of life.⁴ However, adherence challenges persist and are influenced by medication side effects, stigma, limited mental health literacy, and socioeconomic barriers. Evidence suggests that adherence improves when treatment is supported by patient education, collaborative care models, and regular clinical follow-up.¹² Adverse effects—including metabolic complications associated with antipsychotics and dependence risks linked to certain anxiolytics—require careful long-term monitoring.¹² Despite these considerations, psychotropic medications are generally considered scalable and relatively cost-efficient, particularly in LMICs, making them a critical component of population-level mental health strategies.^{4,11}

Overview of Psychotherapeutic Interventions

Psychotherapeutic interventions represent a foundational non-pharmacological approach to mental health care. Common evidence-based approaches include cognitive behavioral therapy (CBT), interpersonal therapy (IPT), group therapy, and family therapy. These interventions aim to improve coping skills, restructure maladaptive thought patterns, strengthen interpersonal functioning, and enhance emotional regulation, producing sustained psychological change through learning mechanisms, behavioral reinforcement, and therapeutic alliance.¹²

Meta-analytic evidence indicates that psychotherapy demonstrates moderate-to-large effects for common mental health conditions. For major depressive disorder (MDD), pooled analyses report effect sizes of Hedges $g = 0.62$ (95% CI: 0.54–0.70), with comparable outcomes to antidepressant medication for mild-to-moderate depression.⁵ The comprehensive Cuijpers et al. meta-analysis of 409 trials and 52,702 patients confirmed CBT superiority over control conditions ($g = 0.79$, 95% CI: 0.73–0.84) and comparable efficacy to pharmacotherapy, with superior relapse prevention at the 6–12-month follow-up.¹³ Psychotherapy is also associated with improvements in quality of life, social functioning, and treatment adherence, particularly when delivered through collaborative or community-based care models.¹¹

Accessibility remains uneven due to shortages of trained mental health professionals, long waiting times, stigma, and limited integration into primary healthcare systems, especially in LMICs.¹¹ Task-sharing approaches—where trained non-specialists deliver structured therapies under supervision—have improved scalability and cost-effectiveness in

resource-constrained settings.¹⁴ Cultural context significantly influences therapy uptake and effectiveness, requiring adaptation of language, values, and delivery models to local communities.¹⁵ Digital platforms and group-based interventions increasingly enhance affordability and population reach, with internet-based CBT demonstrating effect sizes of $g = 0.30$ – 0.60 across meta-analyses.¹⁶

Comparative Analysis Effectiveness

Moderate-to-high-quality evidence indicates that both pharmacotherapy and psychotherapy produce significant improvements in symptom reduction, functioning, and quality of life. Pharmacological interventions offer rapid symptom relief, particularly in moderate-to-severe cases of depression, anxiety, and schizophrenia.^{17,18} Psychotherapy, including CBT and interpersonal therapy, produces comparable symptom reduction in mild-to-moderate disorders and is consistently associated with longer-term relapse prevention.^{4,19} Seaton et al found that CBT was associated with approximately 20%–30% lower relapse rates than pharmacotherapy alone at the 12–24-month follow-up (number needed to treat approximately 4–6), particularly where psychotherapy incorporated relapse-prevention strategies.²⁰ Combined treatment approaches produce additive benefits, supporting both immediate symptom control and sustainable psychosocial improvement.^{5,21}

Collaborative care models—which integrate pharmacotherapy, psychological intervention, and care management within primary care—represent an important and underutilized strategy for population-level impact. Meta-analyses by Archer et al. (2012)²² and Thota et al. (2012)⁷ demonstrated that collaborative care for depression produced significant improvements in depression outcomes compared with usual care (pooled OR approximately 1.75–2.0), reduced hospitalization, and improved medication adherence over 12-month periods.^{23,24} Woltmann et al. (2012) extended these findings to severe mental illness, demonstrating that collaborative care improved quality of life, reduced relapse, and lowered inpatient utilization.²⁵

Cost and Scalability

Medication programs benefit from relatively low per-patient costs and established mass distribution channels; however, ongoing monitoring for adherence and adverse effects can increase total expenditure. Psychotherapy requires trained personnel and structured delivery systems, making initial implementation costlier, though group formats and digital delivery models improve scalability and cost-effectiveness substantially over time.^{4,20} Chisholm et al. (2016) modeled the cost-effectiveness of scaling up mental health treatment in LMICs and found that scaled pharmacotherapy for depression and schizophrenia could yield returns of US\$3–5 per dollar invested, while combined treatment approaches—particularly when delivered through task-sharing and stepped-care frameworks—produced

the greatest population-level benefit per unit cost.²⁴ The WHO mhGAP Intervention Guide recommends scaling both pharmacological and psychosocial interventions through primary care as the most cost-effective strategy for closing the global treatment gap.²⁵

Accessibility and Equity

Accessibility of mental health interventions varies widely across settings, with particularly pronounced disparities in LMICs. Pharmacological treatments are generally easier to distribute through existing primary healthcare infrastructure and are often included in national essential medicine lists.^{4,11} However, access remains inconsistent in LMICs due to medication stock-outs, weak procurement systems, limited diagnostic capacity, and insufficient follow-up for adherence monitoring.^{4,6} These systemic constraints reduce the real-world effectiveness of pharmacotherapy despite its theoretical scalability.

In many LMICs, the availability of trained mental health professionals is extremely limited, often fewer than one psychiatrist per 100,000 population.⁴ Services are concentrated in urban areas, leaving rural populations substantially underserved. Task-sharing approaches have demonstrated effectiveness in expanding access in sub-Saharan Africa and South Asia, including the Friendship Bench intervention in Zimbabwe, the MANAS trial in India, and the PREMIUM program in India and Sri Lanka, all of which used non-specialist community health workers to deliver structured psychological interventions with supervision.^{11,26} However, outcomes depend heavily on training quality, supervision fidelity, and protocol adherence.²⁰

Digital mental health initiatives offer additional opportunities to expand access but are constrained by digital literacy, infrastructure limitations, and uneven internet access—challenges particularly acute in sub-Saharan Africa, where smartphone penetration

and reliable connectivity remain unevenly distributed.¹⁶ Cultural factors further influence accessibility; psychotherapeutic interventions require adaptation to local contexts, including language, explanatory models of illness, and community norms.^{15,27} While pharmacological treatments are less dependent on cultural adaptation in delivery, beliefs about medication, stigma, and fear of side effects significantly affect adherence across settings.⁶

Public Health Impact

Both interventions influence population-level outcomes. Effective pharmacotherapy reduces psychiatric hospitalizations and acute relapses, while psychotherapy enhances societal productivity, mental well-being, and long-term relapse prevention.²⁸ Combining approaches maximizes public health benefits, particularly when integrated into community-based or primary care systems.²⁹ The GBD 2019 analysis estimated that mental disorders account for approximately 13% of global DALYs, with depressive and anxiety disorders contributing disproportionately to YLDs in LMICs, underscoring the population-level case for scaling effective interventions (Table 3).¹

Analytical Narrative Synthesis
Heterogeneity Across Psychotherapy Modalities

Considerable heterogeneity was observed among psychotherapy interventions, including CBT, psychodynamic therapy, interpersonal therapy, and integrative approaches. While many studies reported overall symptom improvement, effect sizes varied substantially depending on the treatment structure, duration, therapist expertise, and delivery format.^{5,13} Several trials demonstrated comparable effectiveness between modalities; however, methodological differences—particularly small sample sizes and inconsistent outcome measures—limited direct comparability. Research

Table 3 | Comparative analysis of psychopharmacology and psychotherapy for mental health interventions

Factor	Psychopharmacology	Psychotherapy	Combined Treatment	Key References
Effectiveness	Rapid symptom reduction in moderate-to-severe disorders; $g = 0.30\text{--}0.50$ vs. placebo; relapse risk upon discontinuation	Moderate-to-large effects ($g = 0.62\text{--}0.80$); superior relapse prevention; comparable to pharmacotherapy in mild-to-moderate disorders	Enhanced symptom reduction; superior relapse prevention (20%–30% reduction vs. monotherapy); higher QoL	Cipriani et al., 2018 ⁹ ; Cuijpers et al., 2023 ³⁰ ; Furukawa et al., 2021 ¹⁸
Accessibility & equity	Widely available in high-income settings; included in essential medicine lists; barriers include stockouts, adherence, stigma in LMICs	Limited by trained workforce shortage (<1 psychiatrist/100,000 in many LMICs); digital CBT improving access; cultural adaptation needed	Combines advantages; blended approaches improve access; task-sharing critical in LMICs	Patel et al., 2011 ¹¹ ; WHO, 2022 ⁴ ; Singla, 2021 ¹⁴ ; Jordans et al., 2020 ¹⁶
Cost & scalability	Lower per-patient drug cost; monitoring increases the total cost; easy mass distribution via primary care	Higher initial cost; group/digital delivery improves scalability; supervision requirements add cost	Moderate cost; highly scalable via task-sharing and digital platforms; strong ROI in LMICs (US\$3–5 per dollar)	Chisholm et al., 2016 ²⁴ ; WHO mhGAP ²⁵ ; Kazdin ¹⁵
Public health impact	Reduces hospitalization; improves adherence; lowers relapse in severe disorders	Reduces DALYs; improves workforce productivity; prevents relapse; enhances social functioning	Maximizes clinical and societal outcomes; reduces hospitalization and long-term healthcare costs	Dunlop & Mayberg, 2022 ²⁸ ; GBD 2019 ¹
LMIC implementation	Theoretically scalable; constrained by supply chain, procurement, and diagnostic capacity gaps	Task-sharing models effective (Friendship Bench, MANAS, PREMIUM); dependent on training quality and fidelity	Most cost-effective strategy per WHO mhGAP; requires investment in workforce, supervision, and digital infrastructure	Patel et al., 2011 ¹¹ ; Chisholm et al., 2016 ²⁴ ; WHO mhGAP ²⁵ ; Froming et al., 2025 ³¹

Abbreviations: CBT, cognitive behavioral therapy; DALYs, disability-adjusted life years; LMICs, low- and middle-income countries; QoL, quality of life; ROI, return on investment.

employing standardized diagnostic criteria and validated symptom scales generally produced more reliable estimates, suggesting stronger evidence for structured, manualized interventions relative to less standardized approaches.¹³

Publication Bias in Antidepressant Trials

Evidence relating to antidepressant efficacy showed indications of publication bias. Positive trials were more frequently published and prominently cited, whereas studies reporting limited or non-significant effects were less represented, potentially inflating perceived treatment effectiveness.^{9,13} Industry-sponsored trials frequently reported more favorable outcomes compared with independently funded studies, raising concerns regarding selective outcome reporting. Large-scale meta-analytic comparisons highlight variability in effect sizes and acceptability across antidepressant agents, reinforcing the need for cautious interpretation of aggregated findings.⁹

Differential Effectiveness by Disorder Severity

The synthesis identified variability in treatment effectiveness according to baseline disorder severity. Pharmacological interventions tended to demonstrate stronger effects among individuals with moderate-to-severe symptoms, whereas psychotherapy showed comparable or superior outcomes in mild-to-moderate cases.^{13,19,28} Many studies failed to stratify results systematically by severity level, limiting precision in determining optimal intervention matching. This methodological gap restricts understanding of which interventions are most appropriate for specific patient populations.¹⁹

Real-World Effectiveness Versus Controlled Trial Outcomes

A notable discrepancy emerged between RCT outcomes and real-world clinical effectiveness. RCTs employed strict inclusion criteria, controlled environments, and structured adherence monitoring that may not reflect routine clinical practice. Observational and implementation studies indicate that treatment effectiveness in routine settings is often lower than RCT estimates, with real-world effect sizes declining by approximately 20%–40% compared with randomized trial estimates, reflecting challenges related to adherence, comorbidity, resource constraints, and variability in treatment delivery.³⁰ This efficacy–effectiveness gap underscores the importance of implementation science in translating mental health evidence into population-level benefit.^{16,30}

Theoretical Framework for Public Health Interpretation

To situate findings within a public health perspective, this review adopts an integrated Health Systems and Implementation Science framework incorporating four complementary lenses:

1. **Health Systems Perspective:** Interventions are assessed in terms of integration into primary care, workforce capacity, supply chain reliability, and

health system financing. Pharmacological treatments benefit from standardized prescribing and distribution infrastructure, whereas psychotherapy requires trained personnel and structured delivery systems.

2. **Stepped-Care Model:** This framework emphasizes providing interventions of varying intensity according to symptom severity and response. Psychopharmacology may be prioritized for moderate-to-severe conditions, with psychotherapy integrated for mild-to-moderate cases or as adjunctive care, aligning treatment intensity with clinical need.
3. **Social Determinants of Health:** Population-level outcomes are influenced by socioeconomic status, cultural norms, stigma, and digital literacy. Accessibility, adherence, and intervention effectiveness are therefore interpreted within broader societal and contextual factors, highlighting disparities and the need for culturally adapted, community-based delivery models.
4. **Implementation Science:** Evaluating the feasibility, scalability, and sustainability of interventions ensures that evidence translates from controlled trials into real-world practice. This lens explains the efficacy–effectiveness gap observed between RCTs and routine care and underscores the value of digital platforms, task-sharing, and blended models.

Integration of Psychopharmacology and Psychotherapy

Evidence increasingly supports the integration of pharmacotherapy and psychotherapy for enhanced mental health outcomes. Meta-analytic evidence from Guidi et al. and Furukawa et al. indicates that sequential or combined interventions yield superior sustained remission, improved quality of life, and lower relapse rates compared with either monotherapy, particularly for moderate-to-severe depression and anxiety disorders.^{19,21} Cuijpers et al. (2023) reported that the combination of pharmacotherapy and CBT produced effect sizes of $g = 0.43$ (95% CI: 0.31–0.55) over CBT alone and $g = 0.35$ (95% CI: 0.24–0.46) over pharmacotherapy alone, representing clinically meaningful additive benefits.¹³ Neurobiological studies suggest that psychotherapy can enhance medication effects by promoting adaptive neural circuitry, while pharmacotherapy may increase patients' capacity to engage in cognitive and behavioral strategies.²⁹

From a public health perspective, integrated approaches reduce hospitalizations, enhance functional outcomes, and improve adherence—particularly in populations with limited access to specialized care when combined with task-shared or digital delivery models.^{4,11,17} Collaborative care models that embed pharmacological and psychological support within primary care have demonstrated consistent population-level benefits across high-income and LMIC settings, with meta-analytic evidence supporting significant improvements in depression outcomes (pooled OR 1.75–2.0) and reduced inpatient utilization.^{23–25} Blended interventions scaled through digital

Table 4 | Comparative evidence and public health implications of integrated pharmacological and psychotherapeutic interventions

Aspect	Evidence/Findings	Public Health Implications	References
Symptom reduction	Combined pharmacotherapy and psychotherapy produces additive benefits over monotherapy. Cuijpers et al. (2023) found that combination therapy yielded $g = 0.43$ over CBT alone and $g = 0.35$ over pharmacotherapy alone (both 95% CIs exclude zero). Sequential integration models also demonstrate superior sustained remission rates.	Reduces overall disease burden; lowers DALYs attributable to depression and anxiety; improves population mental health outcomes.	Cuijpers et al., 2023 ³⁰ ; Guidi et al. ²⁹ ; Furukawa et al., 2021 ¹⁸
Relapse prevention	CBT associated with 20%–30% lower relapse rates than pharmacotherapy alone at 12–24-month follow-up, NNT approximately 4–6. Combination approaches further reduce relapse risk, particularly when psychotherapy incorporates relapse-prevention strategies.	Decreases psychiatric hospitalizations and long-term healthcare costs; reduces functional disability burden.	Cuijpers et al., 2023 ³⁰ ; Furukawa ¹⁸
Quality of life & functioning	Improvements in daily functioning, social engagement, and life satisfaction demonstrated in longitudinal studies of combined treatment. Neurobiological synergy supports complementary mechanisms of action.	Enhances societal productivity; reduces disability-adjusted life years (DALYs); improves workforce participation.	Dunlop & Mayberg, 2022 ²⁸
Accessibility & scalability	Delivered via digital platforms, group formats, and stepped-care models. Collaborative care models effective across high-income and LMIC settings (pooled OR 1.75–2.0 for improved outcomes vs. usual care).	Expands reach in low-resource settings; supports equity in care; scalable through task-sharing.	Archer et al., 2012 ²² ; Thota et al., 2012 ⁷ ; WHO mhGAP ²⁵ ; Patel et al., 2011 ¹¹
Cost-effectiveness	Chisholm et al. (2016): scaled combined treatment in LMICs yields US\$3–5 return per dollar invested. Collaborative care reduces total healthcare costs through reduced hospitalization and improved adherence.	Aligns clinical efficacy with population-level mental health improvements; supports case for health system investment.	Chisholm et al., 2016 ²⁴ ; WHO mhGAP ²⁵ ; Archer et al., 2012 ²²
Policy recommendations	Guidelines should prioritize combined approaches embedded in primary care; workforce training, digital infrastructure, and culturally adapted interventions needed; monitoring systems required to track population-level outcomes.	Aligns national mental health strategies with WHO and mhGAP recommendations; strengthens health system resilience.	WHO, 2022 ⁴ ; WHO mhGAP ²⁵ ; Kazdin, 2021 ¹⁵

Abbreviations: CBT, cognitive behavioral therapy; DALYs, disability-adjusted life years; LMICs, low- and middle-income countries; NNT, number needed to treat; OR, odds ratio.

platforms, group therapy formats, and stepped-care models increase accessibility while maintaining cost-effectiveness (Table 4).¹⁶

Gaps in Current Research

Despite extensive literature on psychopharmacology and psychotherapy, significant gaps remain in population-level evidence. Most studies focus on clinical efficacy in controlled settings, limiting generalizability to broader public health contexts.^{5,17} Comparative research directly assessing the relative effectiveness, adherence, and societal outcomes of medication versus therapy at scale is scarce, creating uncertainty for policymakers seeking data-driven intervention strategies. Long-term outcome data—including sustained symptom remission, relapse prevention, and cost-effectiveness over multi-year periods—are particularly limited.^{28,29}

LMICs remain underrepresented in mental health research, leading to inequities in evidence-based guidance. Cultural, economic, and infrastructural factors that influence accessibility, adherence, and scalability are often overlooked, reducing the applicability of findings in diverse populations.^{11,32} African contexts specifically are underrepresented: despite the continent bearing a substantial proportion of untreated mental illness, population-level effectiveness data on both pharmacotherapy and psychotherapy from African settings are sparse, and available task-sharing evidence comes predominantly from a small number of countries (Zimbabwe, South Africa, Uganda, and Ethiopia).^{14,32}

The collaborative care evidence base, while robust in high-income settings, lacks rigorous evaluation

in LMIC primary care systems where health system infrastructure, supervision capacity, and financing models differ substantially from those studied in landmark trials.^{23–25} Few studies incorporate public health metrics such as hospitalization rates, workforce productivity, or community-level impact as primary outcomes. Addressing these gaps is critical for optimizing mental health strategies globally.^{28,29}

Public Health Implications and Recommendations

The evidence comparing pharmacotherapy and psychotherapy highlights the need for policy frameworks that prioritize both effectiveness and accessibility. Governments and health systems should adopt guidelines supporting evidence-based interventions tailored to local infrastructure, workforce capacity, and cultural context.⁴ Policies should incentivize research and implementation of combined interventions, which have demonstrated synergistic benefits for symptom reduction and relapse prevention.²⁹

Five priority recommendations emerge from this synthesis:

1. Adopt integrated care models: National mental health strategies should prioritize combined pharmacological and psychotherapeutic protocols embedded within primary care, consistent with WHO mhGAP Intervention Guide recommendations. Collaborative care frameworks with defined care manager roles, regular supervision, and systematic outcome tracking have the strongest evidence base for population-level implementation.
2. Invest in task-sharing and workforce development: Governments, particularly in LMICs, should train and support primary care providers and

community health workers to deliver brief, structured psychological interventions under specialist supervision. Monthly supervision from mental health specialists and structured fidelity monitoring are essential to sustain outcome quality.

3. Strengthen supply chains and procurement systems for essential psychotropic medicines: Addressing medication stockouts, improving procurement infrastructure, and embedding adherence monitoring within primary care are prerequisites for realizing the population-level potential of pharmacotherapy.
4. Prioritize culturally adapted, community-based interventions: Culturally sensitive program design—including language adaptation, engagement with community and religious leaders, and integration of local explanatory models of illness—is essential to ensure equitable adoption and adherence, particularly in African and other LMIC contexts.
5. Integrate mental health into universal health coverage frameworks: Coordinated financing mechanisms that include mental health services in essential benefit packages, combined with digital infrastructure investment and stepped-care pathway development, will maximize both individual and societal benefits.

Future Research Directions

There is a critical need for longitudinal, population-level studies assessing long-term effectiveness, adherence, and societal impact of both pharmacological and psychotherapeutic interventions, particularly in LMICs where evidence remains limited.³² Studies should incorporate public health outcome metrics—including hospitalization rates, DALYs, workforce productivity, and service utilization—as primary endpoints rather than relying solely on symptom rating scales. Head-to-head comparative effectiveness trials in LMIC primary care settings are a particular priority.

Digital mental health interventions, including internet-based CBT and telepsychiatry, have demonstrated small-to-moderate treatment effects ($g = 0.30$ – 0.60) and warrant rigorous evaluation of efficacy, safety, and engagement factors across diverse demographic and clinical contexts.¹⁶ Research should specifically address the digital divide in sub-Saharan Africa and other LMIC regions, evaluating the feasibility and effectiveness of low-tech digital delivery (e.g., SMS-based and voice-based interventions) where smartphone access is limited.

Cultural adaptation and implementation science are essential to ensure that interventions are relevant and sustainable. Future studies should examine how pharmacological and psychotherapeutic treatments can be modified for local cultural norms, languages, and health system capacities, with implementation science frameworks guiding scaling and integration.^{15,27} The collaborative care evidence base needs rigorous expansion into African and Asian LMIC settings, including evaluation of financing models, supervision structures, and health system integration strategies appropriate to those contexts.^{23–25}

Conclusion

This scoping review confirms that both psychopharmacology and psychotherapy are effective interventions for mental health disorders, with complementary strengths. Pharmacological treatments demonstrate robust symptom reduction and scalability advantages, with effect sizes of $g = 0.30$ – 0.50 compared with placebo across antidepressant trials. Psychotherapeutic interventions, particularly CBT, produce moderate-to-large effects ($g = 0.62$ – 0.80) with superior relapse prevention at long-term follow-up. Evidence from large-scale meta-analyses supports combined pharmacological and psychotherapeutic interventions as producing the greatest population-level benefit, with additive effect sizes confirmed by network meta-analyses and collaborative care trials demonstrating consistent reductions in hospitalization and relapse.

From a public health perspective, optimizing mental health care requires balancing effectiveness, accessibility, and cost across diverse health system contexts. Strategies leveraging task-sharing, digital tools, culturally adapted program design, and collaborative care models embedded in primary care can expand reach and equity, particularly in low-resource settings. The global treatment gap—exceeding 70% in many LMICs—demands urgent investment in integrated models that address both supply-side constraints (workforce, medications, and financing) and demand-side barriers (stigma, cultural acceptability, and digital literacy).

The evidence supports a public health model that combines pharmacological and psychotherapeutic interventions, tailored to local contexts and scaled with explicit attention to equity. Such a strategy maximizes population mental health outcomes, mitigates disparities, and strengthens health system resilience in addressing the global burden of mental disorders. Realizing this potential requires policy commitment, sustained financing, and a research agenda that centers population-level outcomes, LMIC contexts, and implementation science.

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