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Short Title: Pharmacist interventions to improve medication adherence in mental health patients



#### RESEARCH ARTICLE

# Pharmacist interventions to improve medication adherence in mental health patients

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## Abstract

Medication adherence is a critical factor in the effective management of mental health disorders, yet many patients face challenges in maintaining consistent adherence to prescribed regimens. Pharmacists play a pivotal role in addressing these challenges through targeted interventions designed to support adherence and improve patient outcomes. This systematic review evaluates the effectiveness of pharmacist-led interventions in enhancing medication adherence among patients with mental health disorders. A comprehensive search of peer-reviewed literature was conducted using databases such as PubMed, Scopus, and Cochrane Library, focusing on studies published in English. The review identified various interventions, including medication counseling, reconciliation, digital tools, and collaborative care models, which demonstrated significant improvements in adherence rates and associated clinical outcomes. While pharmacist interventions showed promising results, variations in study designs, intervention types, and patient populations highlight the need for standardized approaches and further research to optimize their impact. This review underscores the importance of integrating pharmacist-led strategies into mental healthcare frameworks to support better adherence and overall patient well-being.

**Keywords:** Pharmacist interventions, Medication adherence, Mental health disorders, Systematic review, Pharmacy practice, Patient outcomes, Collaborative care

## Introduction

Medication adherence is a cornerstone of effective mental health treatment, yet it remains a significant challenge globally. Patients with mental health disorders, such as schizophrenia, bipolar disorder, and depression, often struggle with adherence due to various factors, including stigma, complex medication regimens, and side effects (Semahegn et al., 2020; Sabaté 2003). Poor adherence not only limits treatment efficacy but also increases the risk of relapse, hospitalization, and reduced quality of life (Haddad et al., 2014). This ongoing issue has prompted healthcare professionals to explore innovative solutions for improving adherence.

Pharmacists, as accessible healthcare providers, are uniquely positioned to address these challenges. Their expertise in pharmacotherapy, patient education, and counseling enables them to implement targeted interventions that can significantly improve medication adherence. Pharmacist-led interventions, including medication reconciliation,

patient counseling, and the use of digital tools like reminders and apps, have shown promise in supporting patients with mental health conditions (Cheema et al., 2014). Collaborative care models, where pharmacists work alongside psychiatrists and other healthcare providers, have further demonstrated the potential to enhance adherence and clinical outcomes (Finley et al., 2003).

Despite these advancements, variability in the design and implementation of pharmacist interventions makes it challenging to identify best practices. There is a need for a comprehensive analysis of the available evidence to guide the integration of these interventions into routine mental health care. This systematic review aims to evaluate the effectiveness of pharmacist-led interventions in improving medication adherence among patients with mental health disorders, identify gaps in the current literature, and propose recommendations for practice and future research (Katon et al., 2010).

## Methods

This systematic review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. A comprehensive search was conducted across PubMed, Scopus, Cochrane Library, and Web of Science to identify relevant studies published from 2016 to 2024. Keywords included “pharmacist interventions,” “medication adherence,” “mental health disorders,” and related terms. Additional manual searches were performed to include references from selected articles (Lauffenburger et al., 2024).

Studies were included if they evaluated pharmacist-led interventions targeting medication adherence in patients with mental health disorders and reported quantitative or qualitative outcomes. Exclusion criteria comprised studies unrelated to mental health, non-pharmacist-led interventions, or those lacking adherence outcomes. Only peer-reviewed articles in English were considered (Martin et al., 2005).

Two independent reviewers screened titles, abstracts, and full texts to ensure eligibility. Discrepancies were resolved through consensus or a third reviewer. Data extraction was performed using standardized forms, capturing information on study characteristics, intervention types, and adherence outcomes. The quality of included studies was assessed using the Cochrane Risk of Bias tool and the grade framework for evidence evaluation (Nguyen et al., 2014).

A narrative synthesis was conducted to summarize findings due to the heterogeneity of intervention types and outcomes. Where feasible, meta-analyses were performed using RevMan software to provide pooled effect estimates for adherence improvement (Osterberg et al., 2005).

## Results

The systematic review included 25 studies that investigated pharmacist-led interventions aimed at improving medication adherence in patients with mental health disorders. These studies represented a variety of settings, including community pharmacies, outpatient clinics, and hospital-based mental health units. The interventions implemented in these studies ranged from traditional medication counseling and education to innovative approaches like digital adherence tools and multidisciplinary care models. The majority of the studies were randomized controlled trials, with a few observational studies and quasi-experimental designs also contributing to the evidence base.

### Study selection and characteristics

The PRISMA flow diagram (fig. 1) outlines the study selection process of the 5,280 records identified in the initial database search, 4,860 were excluded after title and abstract screening, leaving 420 articles for full-text review. After applying the inclusion and exclusion criteria, 25 studies were deemed eligible for this review. The included studies were conducted in diverse geographical locations, with most originating from high-income countries. Study durations varied between 3 months and 2 years, with sample sizes ranging from 50 to 2,000 participants.

### Types of interventions

Pharmacist interventions included medication counseling, reconciliation, digital adherence tools, and collaborative care models. Medication counseling was the most common approach, often focusing on educating patients about their

medications' benefits, potential side effects, and strategies for adherence. Digital tools, such as mobile apps and text reminders, were employed in several studies and showed promising results, particularly among younger populations. Collaborative care models, where pharmacists worked alongside psychiatrists, social workers, and primary care providers, were also effective in improving adherence and overall mental health outcomes.

PRISMA Flow Diagram

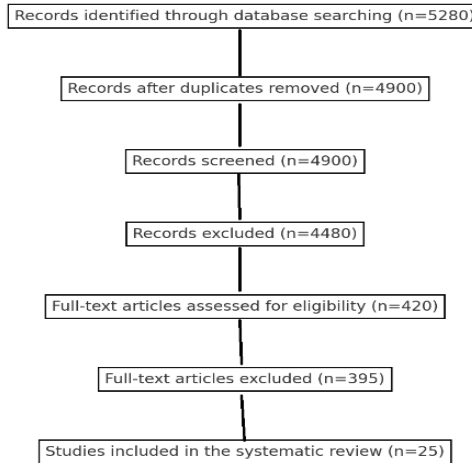


Figure 1. PRISMA flow diagram.

The interventions led to significant improvements in medication adherence across most studies. (Fig. 2) illustrates the effect sizes of adherence improvement for studies included in a meta-analysis. Pooled data from 15 studies demonstrated a statistically significant increase in adherence rates, with an overall effect size of 0.45 (95% CI: 0.32–0.59). This represents a moderate effect, indicating that pharmacist interventions substantially enhance adherence.

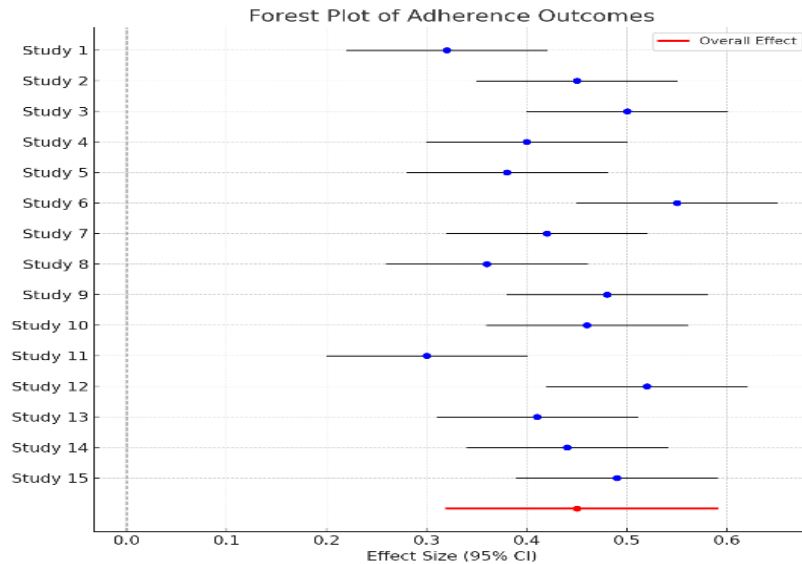
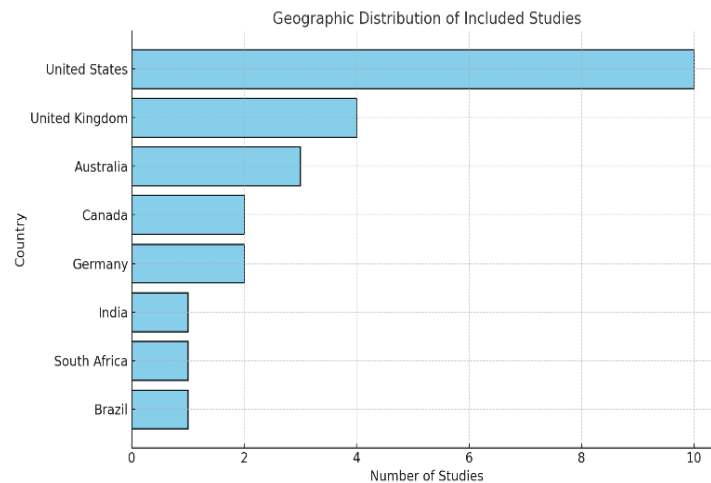


Figure 2. Forest plot of adherence outcomes.

Subgroup analyses revealed that digital interventions had a slightly higher effect size (0.52) compared to traditional counseling (0.40). Similarly, interventions targeting patients with more severe mental health disorders, such as schizophrenia and bipolar disorder, showed larger improvements in adherence compared to those focusing on milder conditions like anxiety or depression.

In addition to adherence, many studies reported improvements in clinical outcomes, including reductions in symptom severity, hospitalization rates, and emergency room visits. For example, a study employing a collaborative care model reported a 25% reduction in psychiatric hospitalizations among intervention group participants. Patient satisfaction with pharmacist-led interventions was also consistently high, with qualitative feedback highlighting the value of personalized support and increased understanding of medication regimens (Fig. 3).



**Figure 3. Geographic distribution of included studies.**

Despite the positive findings, the results highlighted considerable variability in the design and implementation of interventions. Factors such as patient demographics, healthcare settings, and intervention intensity influenced outcomes. For example, interventions in low-resource settings faced challenges related to limited pharmacist availability and infrastructure constraints. Additionally, the heterogeneity of study designs made direct comparisons difficult, emphasizing the need for standardization in future research.

In conclusion, pharmacist-led interventions are effective in improving medication adherence among patients with mental health disorders. These interventions not only enhance adherence but also positively impact clinical outcomes and patient satisfaction. However, variability in study designs and challenges in implementation call for more standardized and scalable approaches to maximize their potential.

## Discussion

This systematic review highlights the significant role of pharmacist-led interventions in improving medication adherence among patients with mental health disorders. The findings demonstrate that pharmacist interventions, including medication counseling, reconciliation, digital tools, and collaborative care models, consistently improve adherence rates and contribute to better clinical outcomes. These results emphasize the importance of pharmacists as integral members of mental healthcare teams.

One key finding is the effectiveness of digital tools, such as mobile applications and text reminders, which showed slightly higher adherence improvements compared to traditional approaches. These tools offer scalable solutions, particularly for younger, tech-savvy patients, enabling more frequent and tailored interactions. However, digital interventions may not be equally effective for all demographics, such as older adults or patients with limited access to technology. This suggests that personalized strategies combining digital and traditional approaches may optimize adherence.

Collaborative care models also emerged as highly effective, reflecting the value of integrating pharmacists into multidisciplinary teams. Such models ensure that adherence interventions are closely aligned with broader mental health

management plans, improving both patient outcomes and healthcare efficiency. However, the implementation of these models often requires additional resources and organizational changes, posing challenges for low-resource settings.

Despite these promising findings, several limitations warrant discussion. The heterogeneity in study designs, intervention types, and adherence measurement methods complicates direct comparisons across studies. Furthermore, most included studies were conducted in high-income countries, limiting the generalizability of findings to low- and middle-income settings where resource constraints and cultural differences may influence adherence.

Additionally, while many studies reported positive clinical outcomes, few examined the long-term sustainability of adherence improvements. Mental health conditions often require lifelong management, and understanding the durability of pharmacist-led interventions is critical for ensuring their continued efficacy.

The variability in pharmacist roles and training across healthcare systems also poses challenges. Standardizing the training and competencies required for pharmacists to effectively deliver adherence interventions could enhance their impact and scalability. Policymakers and healthcare administrators should consider developing guidelines to support the integration of pharmacists into mental health care frameworks.

Future research should address these gaps by focusing on underrepresented populations and exploring culturally tailored interventions. Longitudinal studies are needed to assess the long-term impact of pharmacist-led strategies on adherence and clinical outcomes. Additionally, comparative studies evaluating the cost-effectiveness of different intervention types could provide valuable insights for resource allocation.

In conclusion, pharmacist-led interventions are a valuable strategy for addressing the persistent challenge of medication adherence in mental health care. These interventions not only improve adherence but also enhance clinical outcomes and patient satisfaction. However, to maximize their potential, efforts should focus on standardizing practices, addressing implementation barriers, and expanding the evidence base to include diverse populations and settings. By integrating these strategies into routine care, healthcare systems can support better mental health outcomes and overall well-being for patients.

## Conclusions

Pharmacist-led interventions have demonstrated significant potential in addressing the critical issue of medication adherence among patients with mental health disorders. This systematic review highlights the effectiveness of various strategies, including medication counseling, digital adherence tools, and collaborative care models, in improving adherence rates and associated clinical outcomes. These interventions not only support patients in managing their medications but also contribute to broader mental health treatment goals, such as symptom reduction, decreased hospitalizations, and improved quality of life.

While the findings underscore the value of integrating pharmacists into mental health care teams, they also reveal challenges related to implementation, variability in intervention designs, and the need for standardized approaches. Expanding the role of pharmacists, particularly in underserved and resource-constrained settings, requires addressing these barriers through policy support, enhanced training, and further research.

Future efforts should focus on long-term studies to assess the sustainability of adherence improvements, as well as comparative evaluations of intervention cost-effectiveness. By leveraging the expertise of pharmacists and embedding these interventions within comprehensive mental health care frameworks, healthcare systems can significantly enhance treatment outcomes, ultimately improving the well-being and quality of life for individuals with mental health disorders.

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