

Multidisciplinary Team-Based Interventions to Improve Medication Adherence in Adults with Chronic Diseases: A Systematic Review.

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Abstract:

Background: Medication non-adherence remains a major challenge in the management of chronic diseases and is associated with inadequate disease control, preventable complications, increased healthcare utilization, and poorer clinical outcomes. Because adherence is influenced by clinical, behavioral, socioeconomic, treatment-related, and healthcare-system factors, multidisciplinary team (MDT)-based interventions may provide a more comprehensive approach than interventions delivered by a single healthcare professional.

Objective: This systematic review aimed to synthesize the available evidence on the effectiveness of multidisciplinary team-based interventions in improving medication adherence among adults with chronic diseases and to examine the professional composition, intervention components, and associated clinical outcomes of these approaches.

Methods: The review was designed and reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) framework. Relevant studies involving adults aged ≥18 years with chronic diseases were identified through searches of major electronic databases. Eligible interventions involved coordinated care delivered by at least two healthcare professional disciplines and included medication adherence as an outcome. Study characteristics, MDT composition, intervention components, adherence measures, follow-up periods, and clinical outcomes were extracted and synthesized.

Results: The reviewed evidence indicated that MDT-based interventions were generally associated with improvements in medication adherence, particularly when multiple strategies were combined. Pharmacists, physicians, and nurses were the most frequently represented professionals, with dietitians and other allied healthcare professionals contributing in more comprehensive models. Effective interventions commonly incorporated medication review and optimization, individualized education, adherence counseling, self-management support, monitoring, and structured follow-up. Improvements were also observed in selected clinical and patient-reported outcomes, including glycemic control, disease self-management, and quality of life. However, substantial heterogeneity was evident in chronic diseases, team composition, intervention design, adherence measurement, and follow-up duration....

Keywords: Medication adherence; multidisciplinary team; interprofessional care; chronic disease; medication management; collaborative care; systematic review...

INTRODUCTION

Chronic diseases represent a major and growing challenge for healthcare systems because they frequently require long-term pharmacological treatment, continuous monitoring, and sustained patient self-management. Conditions such as hypertension, diabetes mellitus, cardiovascular disease, chronic respiratory disease, and chronic kidney disease often require patients to take multiple medications over prolonged periods. Consequently, medication adherence is a fundamental component of effective chronic disease management. Poor adherence can compromise therapeutic effectiveness, contribute to inadequate disease control, and increase the risk of preventable complications, hospitalization, and mortality. Recent evidence has reinforced the clinical importance of adherence, including its relationship with mortality among adults with chronic conditions (Hamuy Blanco et al., 2026).

Medication adherence is a complex and dynamic behavior influenced by interacting factors rather than a single patient characteristic. Evidence-based conceptual frameworks commonly classify determinants into five broad domains: patient-related, therapy-related, condition-related, socioeconomic, and healthcare system/provider-related factors (Kardas et al., 2021). These determinants may include medication complexity, adverse effects, health literacy, treatment beliefs, psychological factors, affordability, access to healthcare, social support, and communication with healthcare professionals. Moreover, adherence can change over time as patients' health status, treatment burden, personal circumstances, and perceptions of therapy evolve (Zhang et al., 2023). Such complexity suggests that isolated or single-component interventions may not adequately address the multiple barriers experienced by patients with chronic diseases.

Multidisciplinary team (MDT)-based care provides a potentially valuable strategy for addressing these challenges by combining the complementary expertise of different healthcare professionals. MDTs may involve physicians, pharmacists, nurses, dietitians, psychologists, social workers, and other allied health professionals who collaboratively assess patients, optimize medication regimens, provide education and behavioral support, monitor treatment, and address clinical and socioeconomic barriers. Evidence indicates that multidisciplinary pharmaceutical-care programs can improve important outcomes, including quality of life and hospital utilization, among adults receiving chronic disease care (Rodrigues et al., 2021). Collaborative pharmacist–nurse interventions also demonstrate how different professional competencies can be integrated to assess adherence, provide medication information, support disease management, and reduce duplication of care (Celio et al., 2018).

Recent systematic reviews provide further evidence that individual professional groups can influence adherence. Nurse-led interventions, particularly face-to-face approaches incorporating education and motivational strategies, have demonstrated beneficial effects in several chronic disease populations (Berardinelli et al., 2024). Similarly, a systematic review of randomized controlled trials found that pharmacist-led counseling, tailored interventions, and multicomponent strategies frequently improved medication adherence, although effectiveness varied according to intervention characteristics and adherence measurement methods (Farhana et al., 2025). Emerging disease-specific evidence also suggests that integrated MDT care may be particularly effective when professional roles are clearly defined, collaboration is coordinated, behavioral and psychosocial barriers are addressed, and sufficient follow-up is provided.

Despite these findings, the literature remains fragmented across individual professions, diseases, intervention types, and adherence measures. A broader synthesis is therefore required to determine whether multidisciplinary approaches consistently improve adherence and to identify the team configurations and intervention components associated with better outcomes. Accordingly, this systematic review aims to synthesize the available evidence on the effectiveness of multidisciplinary team-based interventions in improving medication adherence among adults with chronic diseases and to examine the professional composition, intervention characteristics, and contextual factors associated with successful outcomes.

Methods

Study Design and Reporting Framework

This systematic review will be conducted and reported in accordance with the **Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020)** guidelines (Page et al., 2021). The review will examine the effectiveness of multidisciplinary team (MDT)-based interventions in improving medication adherence among adults with chronic diseases. The review question will be structured according to the Population, Intervention, Comparator, and Outcome (PICO) framework.

Eligibility Criteria

Studies will be eligible if they include adults aged ≥ 18 years diagnosed with one or more chronic diseases requiring long-term pharmacological treatment. Eligible interventions must involve coordinated care delivered by at least two healthcare professional disciplines, such as physicians, pharmacists, nurses,

Multidisciplinary Team-Based Interventions to Improve Medication Adherence in Adults with Chronic Diseases: A Systematic Review..

dietitians, psychologists, or other allied health professionals. Comparators may include usual care, standard care, single-professional interventions, or alternative interventions. The primary outcome will be medication adherence assessed using validated self-report instruments, pharmacy refill measures, pill counts, electronic monitoring, or other recognized methods. Randomized controlled trials and controlled non-randomized intervention studies will be considered. Pediatric studies, acute-care interventions, single-professional interventions, reviews, protocols, editorials, case reports, and studies without medication-adherence outcomes will be excluded.

Information Sources and Search Strategy

A systematic literature search will be conducted in **PubMed/MEDLINE, Embase, CINAHL, Scopus, Web of Science, and Cochrane CENTRAL**, from database inception to the final search date. Search terms will combine controlled vocabulary and keywords related to *chronic disease, medication adherence, multidisciplinary teams, interprofessional care, collaborative care, and team-based interventions*. Reference lists of eligible articles and relevant systematic reviews will also be screened.

Study Selection and Data Extraction

Two reviewers will independently screen titles and abstracts, assess potentially eligible full-text articles, and extract data using a standardized form. Disagreements will be resolved through consensus or consultation with a third reviewer. Extracted information will include study characteristics, population, chronic disease, MDT composition, intervention components, adherence measures, follow-up duration, and clinical outcomes. The selection process will be documented using the PRISMA 2020 flow diagram.

Results

The available evidence indicates that multidisciplinary and collaborative team-based interventions can improve medication adherence and related clinical outcomes among adults with chronic diseases, although the magnitude of benefit varies according to disease type, team composition, intervention intensity, and method of measuring adherence. The identified studies predominantly involved patients with diabetes mellitus and cardiovascular conditions, particularly heart failure, while multidisciplinary interventions generally incorporated pharmacists, physicians, nurses, dietitians, and other healthcare professionals. Common intervention components included medication review, individualized counseling, patient education, self-management support, telephone follow-up, adherence monitoring, and coordination between healthcare professionals.

Pharmacists were particularly prominent within the multidisciplinary models. Their responsibilities included medication therapy management, identification of medication-related problems, adherence assessment, counseling, and communication with physicians and other professionals. Nurses frequently provided education, monitoring, follow-up, and coordination, while physicians retained responsibility for clinical evaluation and therapeutic decision-making. More comprehensive interventions additionally incorporated dietitians or nutritionists, especially for diabetes and cardiovascular disease management.

Table 1. Characteristics of Selected Studies Examining Collaborative or Multidisciplinary Interventions

Study	Disease	Sample	MDT/Collaborative Model	Follow-up	Major Outcome
Al Adawi et al. (2024)	Type 2 diabetes	400 enrolled; 299 completed	Pharmacist integrated with usual clinical care	12 months	Greater improvement in metabolic outcomes
Al Hamarneh et al. (2018)	Type 2 diabetes	200	Physician–community pharmacist collaboration	12 months	Medication adherence increased from 64% to 84%
Lee et al. (2022)	Type 2 diabetes with polypharmacy	264	Pharmacist, physician, nurse and dietitian collaborative care	6 months	Improved HbA1c, self-management and quality of life
Neves et al. (2016)	Uncontrolled type 2 diabetes	RCT	Pharmacist–physician collaborative model	Follow-up intervention	Improved glycemic control;

					adherence change predicted HbA1c improvement
Cui et al. (2022)	Heart failure with comorbidities	RCT	Cardiologist, pharmacist, nurse and nutritionist	8 weeks	Improved medication adherence and symptom management

Improvements in medication adherence were observed across several collaborative-care models. In a physician–community pharmacist collaborative intervention involving 200 adults with type 2 diabetes, medication adherence increased from 64% at baseline to 84% after 12 months ($p = .001$). Improvements were also reported in medication administration practices, knowledge of adverse effects, diet, exercise, and awareness of diabetes-related complications (Al Hamarneh et al., 2018). These findings suggest that the effect of collaborative care may extend beyond medication-taking behavior to broader patient self-management.

Evidence from heart failure similarly supports a multidimensional approach. Cui et al. (2022) evaluated a multidisciplinary management program involving a cardiologist, clinical pharmacist, registered nurse, and nutritionist. The intervention combined multiprofessional visits, education, telephone follow-up, symptom monitoring, and medication management. The nurse acted as a liaison between patients and the wider professional team, illustrating the importance of care coordination rather than simply involving multiple professionals independently.

The evidence therefore suggests that successful adherence interventions commonly combine several strategies. Medication counseling alone may be supplemented by medication review, individualized education, monitoring, behavioral reinforcement, and repeated contact with healthcare professionals. This multicomponent structure is particularly relevant to chronic disease because medication non-adherence may arise from several simultaneous barriers.

Considerable variation was evident in the composition of multidisciplinary teams. Pharmacist–physician collaboration represented one frequently investigated model, whereas more comprehensive interventions included nursing and nutritional professionals. Lee et al. (2022), for example, evaluated a community pharmacist-involved collaborative model for patients with type 2 diabetes and polypharmacy. The intervention incorporated medication therapy management and telephone follow-up alongside visits involving family physicians, nurses, and dietitians. Among 264 randomized participants, the intervention group experienced a significantly greater reduction in HbA1c than the physician-centric control group (-0.32% versus -0.06% , $p = .038$), together with significant improvements in self-management and quality of life.

Table 2. Main Components of MDT-Based Medication Adherence Interventions

Intervention component	Main professional contribution	Expected adherence mechanism
Medication review/optimization	Pharmacist and physician	Reduces medication-related problems and treatment complexity
Medication counseling	Pharmacist/nurse	Improves medication knowledge and correct use
Patient education	Nurse, pharmacist, physician	Improves understanding of disease and treatment
Self-management support	Nurse/pharmacist/dietitian	Strengthens patient participation and confidence
Telephone follow-up	Nurse/pharmacist	Reinforces adherence between clinical visits
Lifestyle management	Dietitian/nurse	Integrates medication use with disease self-management
Care coordination	Entire MDT	Reduces fragmentation and improves continuity
Adherence monitoring	Pharmacist/nurse	Identifies non-adherence and enables targeted intervention

Multidisciplinary Team-Based Interventions to Improve Medication Adherence in Adults with Chronic Diseases: A Systematic Review..

The benefits of collaborative interventions were not restricted to adherence measures. Al Adawi et al. (2024) evaluated pharmacist-led collaborative diabetes care in a multicenter study. Of 400 initially enrolled patients, 299 completed the required follow-up. After one year, HbA1c declined by 3.59 percentage points in the intervention group compared with 2.17 percentage points in the control group, with significant improvements also reported for blood pressure and lipid-related outcomes. Pharmacists provided repeated counseling concerning medication use, insulin administration, self-monitoring, lifestyle modification, adverse effects, and medication adherence.

Similarly, pharmacist–physician collaborative management has demonstrated clinically meaningful improvements in diabetes control. In the study by Al Hamarneh et al. (2018), fasting blood glucose decreased from 155 mg/dL to 125 mg/dL after 12 months, while HbA1c decreased from approximately 7.5% to 6.8%. These improvements occurred alongside the increase in medication adherence, suggesting a potential relationship between improved medication-taking behavior and better disease control.

Evidence from a randomized Brazilian study further supports this relationship. A pharmacist–physician collaborative model was more effective than usual care in improving individualized glycemic control among patients with uncontrolled type 2 diabetes, and greater improvement in medication adherence was identified as a significant predictor of improvement in HbA1c (Neves et al., 2016).

Collectively, the evidence suggests that multidisciplinary interventions are most promising when they move beyond one-time patient education and provide continuing, coordinated support. The recurring components across successful models included pharmacist involvement, individualized medication management, structured patient education, repeated follow-up, and communication between healthcare professionals.

Table 3. Overall Synthesis of MDT Effects

Outcome	Overall direction of evidence	Interpretation
Medication adherence	Generally improved	MDT interventions can address multiple adherence barriers simultaneously
Medication knowledge	Improved	Education and counseling strengthen understanding of treatment
Self-management	Improved	Repeated multidisciplinary contact supports patient participation
HbA1c	Generally improved in diabetes studies	Better medication management may contribute to improved glycemic control
Quality of life	Improvement reported in some studies	Benefits may extend beyond adherence
Blood pressure/lipids	Mixed to favorable	Effects vary across interventions and outcomes
Patient satisfaction	Generally favorable	Collaborative care appears acceptable to patients

Nevertheless, the findings should be interpreted cautiously because interventions, populations, follow-up periods, adherence measures, and MDT definitions differed across studies. The current evidence is particularly concentrated in diabetes care, limiting direct generalization across all chronic diseases. The final systematic review should therefore quantify these differences following complete study selection and risk-of-bias assessment and determine whether statistical pooling is sufficiently appropriate. Where substantial clinical or methodological heterogeneity prevents meta-analysis, a structured narrative synthesis should be used.

Discussion

The findings of this systematic review indicate that multidisciplinary team (MDT)-based interventions represent a promising approach to improving medication adherence among adults with chronic diseases. Across the reviewed evidence, interventions involving coordinated contributions from physicians, pharmacists, nurses, dietitians, and other healthcare professionals were generally associated with

improvements in medication-taking behavior, patient knowledge, self-management, and selected clinical outcomes. However, the magnitude and consistency of these effects varied according to chronic disease, MDT composition, intervention components, follow-up duration, and the method used to measure adherence. These variations highlight the complexity of medication adherence and suggest that the effectiveness of MDT care depends not simply on the number of professionals involved, but on the extent to which their roles are coordinated around individual patient needs.

A particularly important finding was the prominent role of pharmacists within multidisciplinary interventions. Pharmacists frequently contributed through medication review, identification of drug-related problems, assessment of adherence, patient counseling, and communication with prescribing physicians. This finding is consistent with previous evidence showing that pharmacist-led interventions can improve adherence in chronic disease populations, particularly when counseling is combined with individualized and multicomponent strategies (Farhana et al., 2025). Pharmacist involvement may be especially valuable for patients experiencing polypharmacy, complex medication regimens, adverse effects, or limited understanding of their treatment. Nevertheless, pharmacist interventions appear to achieve greater value when integrated with the clinical decision-making of physicians and the continuing patient support provided by nurses and other professionals.

Nurses also played an important role in education, monitoring, follow-up, and coordination between patients and other members of the healthcare team. This observation is supported by Berardinelli et al. (2024), who reported beneficial effects of nurse-led interventions on medication adherence across chronic disease populations. Nurses often maintain frequent contact with patients and are therefore well positioned to identify practical and behavioral barriers that may not emerge during routine physician consultations. Collaboration between nurses and pharmacists may further combine medication expertise with continuing patient-centered monitoring, providing a more comprehensive approach to adherence management (Celio et al., 2018).

The findings also suggest that multicomponent interventions may be more appropriate than isolated educational approaches. Successful MDT programs commonly combined medication optimization, individualized education, behavioral support, adherence monitoring, lifestyle management, and structured follow-up. This is consistent with the multidimensional nature of medication adherence. Kardas et al. (2021) demonstrated that adherence is influenced by numerous interacting determinants involving the patient, treatment, disease, socioeconomic environment, and healthcare system. Consequently, providing medication information alone may have limited effectiveness when non-adherence is primarily related to treatment complexity, adverse effects, psychological barriers, financial difficulties, or inadequate continuity of care.

Importantly, improvements associated with MDT interventions extended beyond medication adherence. Studies involving patients with type 2 diabetes demonstrated improvements in glycemic control, self-management, and quality of life following collaborative care. For example, Lee et al. (2022) reported significantly greater improvement in HbA1c among patients receiving a community pharmacist-involved collaborative care intervention compared with physician-centered care. Similarly, Al Adawi et al. (2024) reported improvements in HbA1c and other metabolic indicators following pharmacist-led collaborative diabetes management. These findings suggest a plausible pathway whereby coordinated MDT care improves medication use and disease self-management, which may subsequently contribute to better clinical outcomes. Despite these positive findings, considerable heterogeneity should be acknowledged. The included evidence differed in patient populations, chronic conditions, professional composition, intervention intensity, adherence measures, and follow-up periods. Furthermore, much of the available evidence was concentrated in diabetes and cardiovascular care, which may limit generalizability to other chronic diseases. Medication adherence was also assessed using different approaches, including self-reported measures and more objective methods, making direct comparison between studies difficult. These methodological differences may partly explain variation in reported intervention effectiveness.

Overall, the findings suggest that the principal advantage of multidisciplinary care may arise from integrating complementary professional competencies rather than simply increasing the number of healthcare providers involved. Effective MDT models should establish clear professional roles, mechanisms for information sharing, individualized assessment of adherence barriers, and continuity of follow-up. Future research should identify the optimal combinations of healthcare professionals and intervention components, adopt standardized adherence measures, evaluate long-term sustainability, and examine cost-effectiveness. Further studies are also required across a broader range of chronic diseases and healthcare systems to determine how multidisciplinary adherence interventions can be effectively adapted and implemented in routine clinical practice.

Conclusion

Multidisciplinary team-based interventions represent a valuable approach to improving medication adherence among adults with chronic diseases. The evidence reviewed suggests that coordinated involvement of physicians, pharmacists, nurses, dietitians, and other healthcare professionals can address the multiple clinical, behavioral, educational, and socioeconomic factors that influence adherence. Interventions combining medication review and optimization, individualized patient education, behavioral support, adherence monitoring, and structured follow-up appear particularly promising. Pharmacists and nurses play important complementary roles through medication management, counseling, patient education, monitoring, and continuity of care, while physicians provide essential clinical oversight and therapeutic decision-making.

The potential benefits of multidisciplinary care extend beyond medication adherence to improvements in disease self-management and selected clinical outcomes, including glycemic control and quality of life. However, substantial variation in team composition, intervention design, adherence measurement, patient populations, and follow-up periods limits the ability to identify a single optimal model of multidisciplinary care. Future studies should therefore use standardized adherence measures, clearly define professional roles and intervention components, assess long-term sustainability and cost-effectiveness, and include a broader range of chronic diseases and healthcare settings. Overall, integrating coordinated multidisciplinary medication-adherence strategies into routine chronic disease management may strengthen patient-centered care and contribute to improved treatment outcomes..

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