INTERNATIONAL JOURNAL OF PHARMACEUTICAL SCIENCES
[ISSN: 0975-4725; CODEN(USA): IJPS00]
Journal Homepage: https://www.ijpsjournal.com

OPEN ACCESS

Review Article

Medication Adherence Across Medical Conditions: A Comprehensive Evidence-Based Review

Toofan Singh*, Pulamarasetti Soma Sekhar, Omkar Rai, Karan Gupta

B R Nahta College of Pharmacy, Mandsaur University, Mandsaur, Madhya Pradesh, India

ARTICLE INFO

Published: 19 Aug 2026
Keywords:
Medication adherence; Chronic disease; Patient compliance; Adherence measurement; Pharmacotherapy; Medication persistence; Healthcare outcomes.
DOI:
10.5281/zenodo.22023789

ABSTRACT

Background: Medication adherence is a critical determinant of treatment success in chronic disease, but adherence varies considerably across clinical conditions and care settings.[1-3] Objective: To review and critically synthesize evidence on medication adherence across disease areas, with emphasis on determinants, measurement approaches, outcomes, and interventions.[1,2,4] Data sources: The evidence base was derived from the provided literature set, including systematic reviews, meta-analyses, cohort studies, randomized trials, and narrative reviews addressing cardiovascular disease, diabetes, asthma, chronic obstructive pulmonary disease (COPD), human immunodeficiency virus (HIV), cancer, rheumatologic disorders, and psychiatric disorders.[5-7] Review methods: An evidence-based review was conducted to compare adherence prevalence, drivers, consequences, and interventions across conditions while considering measurement heterogeneity, translational relevance, and implementation barriers.[1,5,8] Results: Across chronic disease areas, approximately half of patients are estimated to be nonadherent to their pharmacological regimens, although substantial variation exists by condition and measurement approach.[1,3,8,9] Particularly important adherence challenges were reported in respiratory disease, diabetes, psychiatric disorders, oral anticancer therapy, and rheumatologic conditions, whereas HIV outcomes remained strongly associated with adherence.[7,9-12] Interventions with the greatest apparent benefit were generally multidisciplinary and targeted, and included pharmacist support, education, reminders, regimen simplification, and digital follow-up; however, intervention evidence remained inconsistent across conditions.[4,13-15] Conclusion: Medication adherence should be considered a condition-specific and system-dependent clinical variable that requires improved measurement and strategically targeted interventions to optimize health outcomes.[1,2,16]

INTRODUCTION

Long-term pharmacotherapy is a cornerstone of management in cardiovascular disease, diabetes,

***Corresponding Author:** Toofan Singh
Address: *B R Nahta College of Pharmacy, Mandsaur University, Mandsaur, Madhya Pradesh, India*
Email : tufan782815@gmail.com

Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

respiratory disease, HIV, cancer, rheumatic disorders, and psychiatric conditions; however, medication adherence remains a persistent challenge despite decades of research.[1,17-19] Across chronic disease populations, medication nonadherence is commonly estimated at 30% to 50%, and is associated with disease progression, unplanned hospitalization, mortality, and substantial healthcare waste.[2,5,13,17]

A central difficulty in interpreting the literature is the marked heterogeneity in how adherence is defined and measured. Studies variably assess initiation, implementation, persistence, refill adherence, bottle opening, and biological confirmation of medication intake, and reported adherence rates depend heavily on the measurement strategy used.[1,8,16] Self-reported adherence remains common because of its practicality, but it frequently overestimates adherence compared with refill-based or electronically monitored measures.[1,7,13,20]

The evidence further suggests that differences in adherence across medical conditions are not explained by a single mechanism. Rather, they reflect variation in symptom burden, treatment complexity, patient beliefs, monitoring requirements, healthcare access, economic constraints, and methodological approaches to adherence assessment.[3,16,42] The purpose of this review is therefore to synthesize the available evidence on medication adherence across chronic disease areas, with emphasis on cross-condition variation, determinants of adherence, intervention effectiveness, and major research gaps affecting clinicians, patients, and researchers.[2,4,5]

2. MEDICATION ADHERENCE ACROSS CONDITIONS

2.1 Overall prevalence and burden

Nonadherence is common across most chronic disease settings, although its prevalence differs substantially between conditions and datasets. In an analysis of eight medical conditions within a single healthcare system, asthma showed the lowest adherence rate at 33%, whereas diabetes was 51%, and five other conditions had medication possession ratios of approximately 75%.[9] Within diabetes, oral antidiabetic medication possession ratios ranged from 42% in Switzerland to 67% in Canada, while antihypertensive medication possession ratios ranged from 53% to 71%, illustrating the effects of geography and financing on adherence.[3]

The clinical and economic implications of poor adherence are consistent across disease groups. Better adherence has been associated with improved outcomes and lower hospitalization risk and healthcare costs, while nonadherence contributes to increased utilization and avoidable expenditure.[2,5,12,21]

2.2 Condition-specific variation

In psychiatric disorders, pooled analyses indicate that approximately 49% of patients are nonadherent overall, with estimated nonadherence rates of 56% in schizophrenia, 50% in major depressive disorder, and 44% in bipolar disorder.[10] In HIV, adherence remains especially consequential because virologic and immunologic outcomes are strongly linked to medication-taking behavior. Early studies showed that adherence below 95% was strongly associated with virologic failure, and more recent evidence continues to demonstrate dose-response relationships between adherence and viral suppression.[12,23]

Respiratory disease presents a particularly complex adherence problem because medication-taking behavior and inhaler technique both

influence treatment effectiveness. In asthma and COPD, nonadherence includes failures of initiation, implementation, persistence, and correct inhaler use, and is associated with poorer disease control, lower quality of life, and higher healthcare costs.[14,22,24,25] In lower-resource settings, economic barriers may become dominant; for example, in Kyrgyzstan, 80.7% of patients reported poor adherence and 68.3% cited financial barriers.[22]

Rheumatology and oncology also show marked variability in adherence. In rheumatoid arthritis, nonadherence estimates have ranged from 1.5% to 100% depending on the medication assessed and the measurement method employed.[7,26] For oral anticancer therapy, adherence varies widely across studies, with side effects, beliefs, and regimen characteristics frequently influencing implementation and persistence.[11,27]

Table 1. Cross-condition evidence on adherence prevalence and impact.

Evidence statement	Strength of claim
Nonadherence affects about half of chronic disease patients, although rates vary widely by condition and method.[1,2,8,13]	Strong
Respiratory disease, diabetes, and psychiatric illness show particularly large adherence gaps in many datasets.[9,10,22]	Strong
Better adherence improves outcomes and lowers hospital use or costs across several disease groups.[2,12,21]	Strong

3. DETERMINANTS AND MEASUREMENT OF ADHERENCE

Medication adherence is influenced by patient-related, therapy-related, condition-related, socioeconomic, and health-system factors.[16,29] Across conditions, recurring determinants include younger age, lower income, lower educational attainment, cost burden, side effects, comorbidity, inadequate follow-up, poor communication, and treatment beliefs.[4,9,30]

Although these determinants are shared across disease areas, their relative importance differs by condition. In cardiometabolic disease, insurance coverage, co-payments, and polypharmacy appear especially important, and refill-based measures dominate the literature.[29,40] In respiratory disease, inhaler technique, device satisfaction, age, and economic barriers are particularly relevant.[22,25] In HIV, regimen complexity, psychiatric illness, and retention in care remain major concerns, while rapid treatment initiation may improve adherence.[12,20,32] In cancer and rheumatoid arthritis, side effects, trust, treatment agreement, and perceived benefit are especially influential.[11,34,35]

Table 2. Shared and condition-specific adherence determinants.

Condition group	Common barriers	Notable modifiers	Measurement caveat
Cardiovascular	Cost, polypharmacy, low follow-up	Insurance and co-payments matter	Refill data dominate.[29,40]
Respiratory	Inhaler technique, device satisfaction, cost	Adolescents and patients in LMICs at increased risk	Technique and medication use both matter.[22,25]
HIV	Regimen complexity, psychiatric illness, retention in care	Rapid initiation can improve adherence	Self-report tends to overestimate adherence. [12,20,32]
Cancer and rheumatoid arthritis	Side effects, beliefs, low perceived benefit	Trust and treatment agreement matter	Large variation by measurement method. [11,34,35]

3.1 Measurement challenges

Measurement remains one of the most important methodological limitations in adherence research. Patients frequently report greater adherence than is observed with more objective measures, particularly in chronic disease.[1,16] Among studies published between 2019 and 2024, self-report was used in 72% of chronic disease adherence studies, compared with 22% using refill data, 2.5% using electronic monitoring, and 1.3% using biologic assays.[1] In HIV adherence meta-epidemiology, self-report was associated with group-level adherence estimates that were 16.14% higher than indirect measures.[20]

More objective approaches, including pharmacologic assays, electronic monitoring, and ingestible sensors, may provide better performance characteristics than self-report, particularly in antiretroviral therapy.[31] Point-of-care tenofovir urine testing has also been identified as a potentially useful clinical option.[31] Nevertheless, no single measure is appropriate for all purposes, and multimethod approaches are generally necessary for accurate assessment.[8,16]

4. CONDITION-SPECIFIC CLINICAL PATTERNS AND CONSEQUENCES

Clinical patterns of adherence differ across conditions, but poor adherence is consistently associated with inferior outcomes.

Table 3. Condition-specific adherence patterns and clinical consequences.

Condition	Adherence pattern	Clinical consequence	Key evidence
HIV	High adherence remains strongly tied to viral suppression	Lower virologic failure and better CD4 trends	[12,23]
Asthma/COPD	Frequently poor, with technique errors and persistence problems	Worse disease control and higher healthcare use	[14,24,41]
Oral cancer therapy	Highly variable, often limited by side effects and beliefs	Worse outcomes in most studies	[11,33,34]
Rheumatoid arthritis	Moderate adherence, with wide method-driven variation	Lower treatment effectiveness and persistence	[7,35,36]
Psychiatric disorders	High nonadherence with relapse risk	Rehospitalization and symptom worsening	[10,30,37]

In oncology, rheumatology, and psychiatry, treatment beliefs appear to exert a particularly strong influence on medication-taking behavior. In breast cancer, the patient-provider relationship and positive medication beliefs were among the strongest individual-level predictors of adherence, while depression, anticipated side effects, self-efficacy, and social support were also important.[34] Similar themes have been reported in rheumatoid arthritis, where treatment agreement, trust, and information were more influential than disease activity in shaping adherence.[35]

Psychiatric adherence is additionally complicated by stigma, limited insight, suspiciousness, substance use, and access barriers. Qualitative evidence highlights the importance of shared decision-making, stable treatment routines, and support networks in improving adherence behavior.[30,37] Collectively, these findings indicate that cognitive and behavioral determinants are especially important translational targets in mental health, oncology, and rheumatology.

5. INTERVENTIONS TO IMPROVE ADHERENCE

Adherence interventions have evolved from descriptive work on prevalence and burden toward multicomponent and digitally supported strategies, although implementation has not always kept pace with the evidence base.[15,38]

Multicomponent approaches predominate in the intervention literature, and combinations of education, behavioral support, reminders, and monitoring generally appear more effective than any single strategy alone.[4,13,17] In mental health, combined behavioral and educational interventions have shown the greatest benefit for schizophrenia and bipolar disorder, although differences between intervention types were not statistically significant across subgroups.[39]

Digital interventions have shown heterogeneous effects across disease areas, but they generally appear more useful when integrated with broader support strategies rather than used in isolation. Meta-analytic evidence indicates that mobile health applications can improve medication adherence in chronic disease, with more favorable effects observed for interactive functions, advanced reminders, data sharing, and pill-dispensing features.[15] In cardiovascular disease, most mobile technology studies reported some benefit, although several trials found no difference compared with usual care, underscoring the importance of implementation context.[6,28]

Pharmacist-led and system-level strategies are also important. In respiratory disease, pharmacist-led interventions have been associated with improvements in adherence and disease control, although follow-up periods are often short.[14] Practical strategies such as co-payment reduction and regimen simplification may be scalable in routine care, although their effects are frequently modest.[13,40] In asthma and COPD, counseling combined with digital follow-up has often appeared cost-effective, but the optimal implementation model remains uncertain.[41]

Table 4. Comparative evidence for major adherence interventions.

Intervention type	Evidence pattern	Main limitation
Pharmacist-led care	Improves adherence and disease control in respiratory disease	Often limited by short follow-up.[14]
Mobile applications and reminders	Modest average improvement across chronic disease	Trials are often short in duration and of low certainty.[15,28]
Co-payment reduction and regimen simplification	Practical and scalable in routine care	Effects are often modest.[13,40]
Counseling plus digital follow-up	Frequently appears cost-effective in asthma/COPD	Best-practice implementation model remains uncertain.[41]

6. CRITICAL DISCUSSION

The evidence synthesized in this review indicates that medication adherence should not be treated as a uniform construct across chronic disease. Rather, it is a condition-specific and system-dependent clinical variable shaped by symptom burden, treatment burden, beliefs, healthcare access, and the methods used to measure adherence.[1,3,16,42] This helps explain why adherence estimates differ so widely across diseases and settings, and why intervention effects are often inconsistent across studies.

A second major issue is that measurement heterogeneity continues to limit cross-study comparability and translational relevance. Heavy reliance on self-report, together with inconsistent definitions of initiation, implementation, and persistence, makes it difficult to determine whether observed differences between conditions

reflect true behavioral variation or methodological artifact.[1,8,16,20,31] The problem is especially important when adherence is used as a secondary endpoint or when studies have short follow-up and limited objective verification.[15,28]

The current evidence base is also uneven across medical specialties. Respiratory disease, cardiovascular disease, and HIV have relatively mature adherence literatures with clearer links to outcomes, whereas cancer, rheumatology, and psychiatry continue to show substantial gaps in intervention evidence despite high clinical burden.[12,24,26,27,37,39] This imbalance limits clinical generalization and may delay implementation of adherence support in populations where its impact could be considerable.

7. RESEARCH GAPS

Several important research gaps emerge from the provided manuscript. First, adherence measurement remains insufficiently standardized, limiting valid comparison across studies and conditions.[1,2,16] Second, long-term pragmatic trials remain limited, particularly in cancer, rheumatology, psychiatry, and low-resource settings.[2,5,22,26,27] Third, adherence is frequently treated as a secondary endpoint, and intervention studies often have short follow-up, inconsistent outcome measures, and limited blinding, reducing interpretability.[15,28] Finally, mental health, oncology, and lower-resource populations remain underrepresented in intervention research despite substantial clinical and economic burden.[2,10,11,22]

8. FUTURE PERSPECTIVES

Future adherence research should align more closely with translational medicine and regulatory science priorities. Standardized adherence reporting, more consistent incorporation of adherence endpoints into clinical trials and real-world evidence studies, and individualized adherence support based on behavioral phenotype and care setting are key priorities.[1,2,16] Precision-oriented approaches may be particularly valuable in HIV, oncology, psychiatry, and biologic therapies, where treatment success depends on complex interactions between behavior, monitoring, and pharmacologic response.[11,32,36]

Digital tools are also likely to remain important, but their value will depend on how well they are integrated into multidisciplinary care models and adapted to patient needs.[6,15,38,41] Future work should therefore move beyond simple reminder functions toward targeted, context-sensitive strategies that address both shared and condition-specific barriers to medication use.

9. CONCLUSION

Medication nonadherence is common across chronic medical conditions and is consistently associated with worse outcomes, greater healthcare utilization, and higher costs.[2,5,12,21] However, adherence varies substantially by disease area, healthcare context, and measurement strategy, and should therefore be interpreted as a condition-specific and system-dependent clinical variable rather than a single universal phenomenon.[1,3,16] The available evidence supports multicomponent, targeted, and context-aware interventions, but also highlights persistent weaknesses in measurement, long-term evaluation, and implementation across underrepresented conditions. Improving adherence research and practice will require better standardization, more rigorous and pragmatic intervention studies, and individualized support strategies that reflect the clinical realities of different patient populations.[1,2,4,16]

DECLARATIONS

Funding: The author received no specific funding for this work.

Conflicts of interest: The author declares no conflicts of interest.

Ethics approval: Not applicable, as this study is a review of previously published literature and involved no human participants or animals.

Data availability: All data discussed are contained within the cited references.

Author contributions: Toofan Singh: Conceptualization, literature search, literature analysis, manuscript preparation, and writing of the original draft.

REFERENCES

1. Dunbar-Jacob J, Zhao J. Medication adherence measurement in chronic diseases: a state-of-the-art review of the literature. Nurs Rep. 2025;15. doi:10.3390/nursrep15100370.
2. Achterbosch M, Aksoy N, Obeng GD, Ameyaw D, Ágh T, Van Boven JFM. Clinical and economic consequences of medication nonadherence: a review of systematic reviews. Front Pharmacol. 2025;16. doi:10.3389/fphar.2025.1570359.
3. Patel S, Huang M, Miliara S. Understanding treatment adherence in chronic diseases: challenges, consequences, and strategies for improvement. J Clin Med. 2025;14. doi:10.3390/jcm14176034.
4. Konstantinou P, Kassianos A, Georgiou G, Panayides A, Papageorgiou A, Almas I, et al. Barriers, facilitators, and interventions for medication adherence across chronic conditions with the highest non-adherence rates: a scoping review with recommendations for intervention development. Transl Behav Med. 2020. doi:10.1093/tbm/ibaa118.
5. Cutler R, Fernandez-Llimos F, Frommer M, Benrimoj C, García-Cárdenas V. Economic impact of medication non-adherence by disease groups: a systematic review. BMJ Open. 2018;8. doi:10.1136/bmjopen-2017-016982.
6. Arshed M, Mahmud A, Minhat H, Ying LP, Umer MF. Effectiveness of mHealth interventions in medication adherence among patients with cardiovascular diseases: a systematic review. Diseases. 2023;11. doi:10.3390/diseases11010041.
7. Aksoy N, Ozturk N, Ágh T, Kardas P. Adherence to the antirheumatic drugs: a systematic review and meta-analysis. Front Med. 2024;11. doi:10.3389/fmed.2024.1456251.
8. Lam WY, Fresco P. Medication adherence measures: an overview. Biomed Res Int. 2015;2015. doi:10.1155/2015/217047.
9. Rolnick S, Pawloski P, Hedblom BD, Asche S, Bruzek R. Patient characteristics associated with medication adherence. Clin Med Res. 2013;11:54-65. doi:10.3121/cmr.2013.1113.
10. Semahegn A, Torpey K, Manu A, Assefa N, Tesfaye G, Ankomah A. Psychotropic medication non-adherence and its associated factors among patients with major psychiatric disorders: a systematic review and meta-analysis. Syst Rev. 2020;9. doi:10.1186/s13643-020-1274-3.
11. Lasala R, Santoleri F. Association between adherence to oral therapies in cancer patients and clinical outcome: a systematic review of the literature. Br J Clin Pharmacol. 2021;88:1999-2018. doi:10.1111/bcp.15147.
12. Paterson D, Swindells S, Mohr JA, Brester M, Vergis E, Squier C, et al. Adherence to protease inhibitor therapy and outcomes in patients with HIV infection. Ann Intern Med. 2000;133:21-30. doi:10.7326/0003-4819-133-1-200007040-00004.
13. Kini V, Ho PM. Interventions to improve medication adherence: a review. JAMA. 2018;320:2461-2473. doi:10.1001/jama.2018.19271.
14. Adisa R, Ufuah UF, Ige O. Impact of pharmacist-led intervention in medication adherence and inhaler usage on asthma and chronic obstructive pulmonary disease

control: a quasi-experimental study. BMC Health Serv Res. 2024;24. doi:10.1186/s12913-024-11683-9.
15. Kim SK, Park SY, Hwang HR, Moon SH, Park J. Effectiveness of mobile health intervention in medication adherence: a systematic review and meta-analysis. J Med Syst. 2025;49. doi:10.1007/s10916-024-02135-2.
16. Schnorrerova P, Matalová P, Wawruch M. Medication adherence: measurement methods and approaches. Bratisl Lek Listy. 2024;125(4):264-273. doi:10.4149/bll_2024_40.
17. Brown MT, Bussell JK. Medication adherence: WHO cares? Mayo Clin Proc. 2011;86(4):304-314. doi:10.4065/mcp.2010.0575.
18. Ni Z, Wu B, Yang Q, Yan LL, Liu C, Shaw R. An mHealth intervention to improve medication adherence and health outcomes among patients with coronary heart disease: randomized controlled trial. J Med Internet Res. 2022;24. doi:10.2196/27202.
19. Iacob S, Iacob D, Jugulete G. Improving the adherence to antiretroviral therapy, a difficult but essential task for a successful HIV treatment—clinical points of view and practical considerations. Front Pharmacol. 2017;8. doi:10.3389/fphar.2017.00831.
20. Liao R, Tang Z, Zhang N, Hu L, Chang Z, Ren J, et al. Discrepancies between self-reported medication adherence and indirect measurement adherence among patients undergoing antiretroviral therapy: a systematic review. Infect Dis Poverty. 2024;13. doi:10.1186/s40249-024-01221-4.
21. Sokol M, McGuigan K, Verbrugge R, Epstein R. Impact of medication adherence on hospitalization risk and healthcare cost. Med Care. 2005;43:521-530. doi:10.1097/01.mlr.0000163641.86870.af.
22. Tabyshova AK, Sooronbaev T, Akylbekov A, Mademilov M, Isakova A, Erkinbaeva A, et al. Medication availability and economic barriers to adherence in asthma and COPD patients in low-resource settings. NPJ Prim Care Respir Med. 2022;32. doi:10.1038/s41533-022-00281-z.
23. Tchakoute CT, Rhee SY, Hare CB, Shafer R, Sainani KL. Adherence to contemporary antiretroviral treatment regimens and impact on immunological and virologic outcomes in a US healthcare system. PLoS One. 2022;17. doi:10.1371/journal.pone.0263742.
24. Jansen EM, Van De Hei SJ, Dierick B, Kerstjens H, Kocks J, Van Boven JFM. Global burden of medication non-adherence in chronic obstructive pulmonary disease and asthma: a narrative review of the clinical and economic case for smart inhalers. J Thorac Dis. 2021;13:3846-3864. doi:10.21037/jtd-20-2360.
25. Mäkelä M, Backer V, Hedegaard M, Larsson K. Adherence to inhaled therapies, health outcomes and costs in patients with asthma and COPD. Respir Med. 2013;107(10):1481-1490. doi:10.1016/j.rmed.2013.04.005.
26. Fraser L, Ailabouni NJ, Ellett LK, Tan JM, Freeman A, Proudman S, et al. A scoping review of disease-modifying antirheumatic drug nonadherence in rheumatoid arthritis: measurement, prevalence and implications for clinical practice. Br J Clin Pharmacol. 2025;91:3330-3340. doi:10.1002/bcp.70280.
27. Rosenberg SM, Petrie K, Stanton A, Ngô LH, Finnerty E, Partridge A. Interventions to enhance adherence to oral anti-neoplastic agents: a scoping review. J Natl Cancer Inst. 2020. doi:10.1093/jnci/djz244.
28. Peng Y, Wang H, Fang Q, Xie L, Shu L, Sun W, et al. Effectiveness of mobile applications on medication adherence in adults with chronic diseases: a systematic review and meta-analysis. J Manag Care Spec Pharm. 2020;26. doi:10.18553/jmcp.2020.26.4.550.
29. López-Pineda A, Martínez-Muñóz M, Nouni-García R, Esquerdo-Arroyo A, Carbonell-Soliva Á, Ramirez-Familia E, et al. Methods and validity indicators for measuring adherence to statins in secondary cardiovascular prevention: a systematic review. Syst Rev. 2025;14. doi:10.1186/s13643-025-02853-9.

30. García S, Martínez-Cengotitabengoa M, López-Zurbano S, Zorrilla I, López P, Vieta E, et al. Adherence to antipsychotic medication in bipolar disorder and schizophrenic patients. J Clin Psychopharmacol. 2016;36:355-371. doi:10.1097/JCP.0000000000000523.
31. Spinelli MA, Haberer J, Chai P, Castillo-Mancilla J, Anderson P, Gandhi M. Approaches to objectively measure antiretroviral medication adherence and drive adherence interventions. Curr HIV/AIDS Rep. 2020;17:301-314. doi:10.1007/s11904-020-00502-5.
32. Chen H, Tao R, Wu L, Chen C, He J. Rapid antiretroviral therapy and treatment outcomes among people living with HIV: exploring the mediating roles of medication adherence. Front Public Health. 2024;12. doi:10.3389/fpubh.2024.1420609.
33. Partridge A, Avorn J, Wang PS, Winer E. Adherence to therapy with oral antineoplastic agents. J Natl Cancer Inst. 2002;94(9):652-661. doi:10.1093/jnci/94.21.1652.
34. Lin C, Clark R, Tu P, Bosworth H, Zullig LL. Breast cancer oral anti-cancer medication adherence: a systematic review of psychosocial motivators and barriers. Breast Cancer Res Treat. 2017;165:247-260. doi:10.1007/s10549-017-4317-2.
35. Balsa A, De Yébenes MGJ, Carmona L. Multilevel factors predict medication adherence in rheumatoid arthritis: a 6-month cohort study. Ann Rheum Dis. 2021;81:327-334. doi:10.1136/annrheumdis-2021-221163.
36. Rosenberg V, Chodick G, Xue Z, Faccin F, Amital H. Real-world data of adherence and drug survival of biologics in treatment-naïve and treatment-experienced adult patients with rheumatoid arthritis. Adv Ther. 2023;40:4504-4522. doi:10.1007/s12325-023-02607-w.
37. Issac A, Nayak SG, George R, Priyadarshini T, Jacob J. Barriers and facilitators to medication adherence among individuals with mental disorders: a qualitative systematic review and evidence synthesis. Nurs Health Sci. 2025;27. doi:10.1111/nhs.70153.
38. Jakob R, Harperink S, Rudolf AM, Fleisch E, Haug S, Mair J, et al. Factors influencing adherence to mHealth apps for prevention or management of noncommunicable diseases: systematic review. J Med Internet Res. 2021;24. doi:10.2196/35371.
39. Loots E, Goossens E, Vanwesemael T, Morrens M, Van Rompaey B, Dilles T. Interventions to improve medication adherence in patients with schizophrenia or bipolar disorders: a systematic review and meta-analysis. Int J Environ Res Public Health. 2021;18. doi:10.3390/ijerph181910213.
40. Neiman A, Ruppar T, Ho M, Garber L, Weidle P, Hong Y, et al. CDC Grand Rounds: improving medication adherence for chronic disease management—innovations and opportunities. MMWR Morb Mortal Wkly Rep. 2017;66:1248-1251. doi:10.15585/mmwr.mm6645a2.
41. Van Boven JV, Lavorini F, Ágh T, Sadatsafavi M, Patino O, Muresan B. Cost-effectiveness and impact on healthcare utilization of interventions to improve medication adherence and outcomes in asthma and COPD: a systematic literature review. J Allergy Clin Immunol Pract. 2024. doi:10.1016/j.jaip.2023.12.049.
42. Bentley S, Exall E, Morgan L, Roche N, Khunti K, Rossom R, et al. Improving assessment of adherence behaviors and drivers: targeted literature review and concept elicitation interviews in multiple countries and disease populations. Patient Prefer Adherence. 2024;18:1231-1242. doi:10.2147/PPA.S433662.

HOW TO CITE: Toofan Singh, Pulamarasetti Soma Sekhar, Omkar Rai, Karan Gupta, Medication Adherence Across Medical Conditions: A Comprehensive Evidence-Based Review, Int. J. of Pharm. Sci., 2026, Vol 4, Issue 8, 2914-2922. https://doi.org/10.5281/zenodo.22023789