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Review Article

Medication Adherence and Clinical Outcomes in Dispensing and Non-Dispensing Practices

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ABSTRACT

Medication adherence is a critical determinant of clinical outcomes across healthcare delivery models. In both dispensing and non-dispensing practices, pharmacists and other healthcare professionals play pivotal roles in ensuring patient compliance and optimizing therapeutic outcomes. This review evaluates existing evidence on the relationship between medication adherence and clinical results, comparing different practice settings, and explores interventions aimed at improving adherence. Findings suggest that dispensing practices offer opportunities for continuous patient counseling and follow-up, while non-dispensing practices often rely on collaborative care models. Integrating adherence-enhancing strategies in both contexts is essential for maximizing health benefits.

INTRODUCTION

Medication adherence, defined as the extent to which patients take medications as prescribed, is a cornerstone of effective healthcare delivery. Poor adherence is associated with increased morbidity,

mortality, and healthcare costs¹. Globally, it is estimated that only about 50% of patients with chronic illnesses adhere to long-term therapies². This challenge affects various healthcare settings, including both dispensing and non-dispensing practices. In dispensing practices, such as

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community pharmacies, pharmacists are directly involved in the supply of medicines, allowing opportunities for face-to-face counseling³. Conversely, non-dispensing practices involve pharmacists in roles such as clinical consultation, medication review, and therapeutic monitoring, without direct medicine supply⁴. Understanding the differences in medication adherence and its clinical implications across these models is crucial for optimizing patient outcomes.

2. Methods (Search Strategy And Selection Criteria)

A focused literature synthesis was conducted encompassing systematic reviews, meta-analyses, randomized controlled trials (RCTs), quasi-experimental designs, and high-quality observational studies published through 2025. The search targeted pharmacist roles, effects of dispensing channels, medication adherence, and clinical outcomes. Key databases and sources included PubMed/PMC, Cochrane Library, JAMA Network, BMC Health Services Research, and the American Journal of Managed Care (AJMC), along with implementation and modelling studies. Search terms comprised: “pharmacist-led intervention adherence,” “non-dispensing pharmacist,” “comprehensive medication management,” “dispensing channel mail order retail adherence,” and “medication review readmission randomized trial.” Priority was given to meta-analyses, systematic reviews, and large-scale trials. Quantitative data from pooled analyses were summarized to capture direction and magnitude of effects.^{11, 12, 13}

3. Definitions And Conceptual Framework

- **Dispensing practice:** Pharmacy services focused primarily on medication supply, including prescription verification and brief counselling on proper use and safety at the point of dispensing. These services may also include recommendations for over-the-counter medications⁷.
- **Non-dispensing/clinical pharmacy practice:** Pharmacist services that encompass structured

medication therapy management (MTM), comprehensive medication management (CMM), medication reviews, dose optimization, deprescribing, and collaborative care with prescribers, often within clinical or hospital settings⁸. Non-dispensing models enhance adherence by addressing cognitive barriers (patient knowledge), behavioural factors (reminder systems, simplified regimens), socioeconomic challenges (medication affordability, access), and therapeutic optimization to reduce adverse effects and increase perceived benefits—all crucial for sustained medication use.^{11, 12}

4. Evidence From Dispensing Practices

4.1 Dispensing and Adherence: Refill Patterns and Channel Effects

Pharmacy dispensing channels significantly influence medication refill behaviours. Several retrospective database analyses and systematic reviews show higher refill adherence among mail-order pharmacy users compared to community or retail pharmacy users, across therapeutic classes such as diabetes, hypertension, and hyperlipidaemia^{4, 9, 10}. However, these findings may be confounded by selection bias, as mail-order users often receive extended 90-day supplies and differ socioeconomically from retail users, complicating causal interpretations.

4.2 Clinical Impact of Routine Dispensing with Brief Counselling

Studies isolating the impact of routine dispensing without additional clinical follow-up reveal mixed outcomes: some report modest gains in medication knowledge and surrogate adherence markers, while others find minimal or no effects on adherence or long-term clinical endpoints^{7, 11}. Where benefits are observed, they are typically driven by supplemental structured counselling or post-dispensing follow-up rather than the dispensing process alone.

Takeaway: Dispensing channels and supply logistics affect refill adherence metrics, but



dispensing without systematic clinical support often fails to produce meaningful physiological improvements.^{7,9}

5. Evidence From Non-Dispensing (Clinical Pharmacy) Models

5.1 Systematic Reviews and Meta-Analyses

Robust evidence from systematic reviews and meta-analyses demonstrates that pharmacist-led, non-dispensing interventions such as comprehensive medication reviews, home visits, and clinic-embedded pharmacist care consistently enhance medication adherence and lead to improved clinical outcomes, including better glycemic control, blood pressure regulation, lipid profiles, and fewer medication-related hospitalizations^{12,13,14}.

5.2 High-Quality Randomized Evaluations

Cluster-randomized and crossover trials of hospital-based comprehensive medication reviews and post-discharge pharmacist follow-up have shown significant reductions in medication-related problems and hospital readmissions when interventions include medication reconciliation, patient counselling, and outpatient follow-up^{15,16}.

5.3 Integrated Non-Dispensing Pharmacists in Primary Care

Embedding pharmacists in general practice, with responsibilities for medication reviews, dose adjustments, and direct patient follow-up, is associated with decreased medication-related hospitalizations, improved disease-specific outcomes, and enhanced adherence compared to standard care. The degree of pharmacist integration and collaboration with prescribers substantially influences the magnitude of these effects^{17,18,19}.

5.4 Comprehensive Medication Management (CMM) Outcomes

Structured, patient-centered CMM programs correlate with reduced hospital readmissions, improved disease control, and better health-related quality of life in real-world settings. However, standardization of implementation and outcome measurement remains an ongoing need^{20,21}.

Takeaway: The preponderance of evidence favours pharmacist-led non-dispensing clinical services for improving both adherence and clinical outcomes, especially when interventions are well-integrated into care pathways and include longitudinal follow-up.

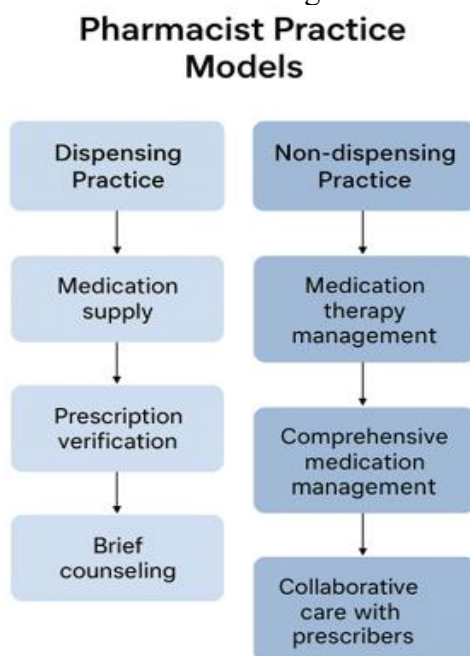


Figure 1: Overview of Pharmacist Practice Models

6. Comparative Synthesis: Why Non-Dispensing Models May Outperform Dispensing

Key mechanisms for superior outcomes in non-dispensing models include:

1. Comprehensive medication assessment and problem solving (reconciliation, interaction checks, side effect management) to reduce discontinuation²²
2. Scheduled longitudinal follow-up visits and accountability through MTM/CMM appointments and outreach²³
3. Direct collaboration with prescribers enabling medication regimen adjustments and enhanced monitoring¹⁷
4. Behavioural support interventions such as pill organizers, regimen simplification, and personalized counselling to address adherence barriers¹²

7. Measurement Challenges And Evidence Heterogeneity

Research on adherence and outcomes is complicated by heterogeneous adherence measures (e.g., proportion of days covered [PDC], medication possession ratio [MPR], self-report), variable clinical endpoints, differing follow-up durations, and potential selection bias in observational studies comparing mail-order and retail channels. Many studies rely on pharmacy claims data, which effectively capture refill patterns but lack clinical detail, while clinical trials provide richer outcomes but often in smaller cohorts. Standardizing adherence metrics combined with disease-specific clinical outcomes and healthcare utilization endpoints is critical for future meta-analytic clarity^{4, 24}.

8. Practical Implications For Pharmacy Practice And Policy

1. Enhance dispensing with structured clinical elements such as scheduled medication

reviews and adherence follow-ups to improve outcomes beyond transactional dispensing²³.

2. Promote integrated pharmacist roles within primary care teams to reduce medication-related hospitalizations and enhance adherence¹⁷.
3. Utilize dispensing channel strengths, like mail-order pharmacy's improved refill adherence, in conjunction with tele pharmacy or remote CMM to ensure clinical oversight⁴.
4. Adopt standardized outcome measures for CMM/MTM programs to facilitate comparability across studies and settings²⁷.

9. Gaps And Future Research Directions

- There is a need for causal trials directly comparing comprehensive dispensing-plus-counselling interventions with integrated non-dispensing care to evaluate incremental benefits and cost-effectiveness.
- Implementation science studies should identify integration factors (e.g., prescriber collaboration, electronic health record access, reimbursement models) that predict non-dispensing model success¹⁸.
- More high-quality trials in low- and middle-income countries (LMICs) are essential to assess scalability and affordability of pharmacist interventions in diverse contexts¹¹.

10. Limitations Of This Review

This narrative synthesis incorporates systematic reviews, RCTs, and observational data but does not constitute a formal systematic review with meta-analysis. Variability in study designs, adherence metrics, and healthcare systems limits direct comparability. Nevertheless, convergence across high-quality evidence supports the principal conclusions.

11. CONCLUSION



Across various chronic conditions and healthcare environments, non-dispensing pharmacist interventions such as CMM, clinic-embedded pharmacists, and structured medication reviews consistently yield greater improvements in medication adherence and clinically significant outcomes compared to routine dispensing alone. Dispensing channels, particularly mail-order, can enhance refill adherence and should be complemented by clinical oversight. Scaling non-dispensing services, aligning reimbursement, and embedding pharmacists within care teams are pragmatic strategies to bridge adherence gaps and advance population health.

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