MS.ID-IJPBS-2699
International Journal of Pharmacy and Biological Sciences-IJPBS™ (2026) 16 (2): 194-198
Online ISSN: 2230-7605, Print ISSN: 2321-3272
Research Article | Pharmaceutical Sciences | OA Journal | MCI Approved | Index Copernicus

Effectiveness of a Multi-Component Pharmacist-Led Intervention on MA and HRQoL in Indian Patients with Chronic Diseases: A Quasi-Experimental Study

Priyanka D[1*] and Ashok Kumar K[2]

[1*]Research Scholar, Faculty of Pharmaceutical Sciences, Motherhood University, Roorkee, Uttarakhand, India
[2]Research Supervisor, Faculty of Pharmaceutical Sciences, Motherhood University, Roorkee, Uttarakhand, India

Received: 20 Feb 2026 / Accepted: 15 Mar 2026/ Published online: 01 April 2026
***Corresponding Author Email:** priyanka1610229@gmail.com

Abstract

Background: Non-adherence to medication is a major barrier to achieving optimal health outcomes in chronic diseases. This study evaluated the effectiveness of a multi-component, pharmacist-led intervention in improving medication adherence and Health-Related Quality of Life (HRQoL) among patients with diabetes and/or hypertension in India. **Methods:** A quasi-experimental pre-post design was employed. A subset of 120 participants with low adherence (MMAS-8 score <6) were recruited from a larger cross-sectional study. The intervention, delivered over 9 months, included patient education, digital reminders, and personalized counseling. Adherence (MMAS-8) and HRQoL (SF-36 PCS/MCS, WHOQOL-BREF) were measured at baseline, 3, 6, and 9 months. A control group (n=98) received standard care. **Results:** Of the 120 participants in the intervention group, 105 completed the 9-month follow-up. The intervention group showed significant improvements in adherence (MMAS-8 score increased from 4.2 ± 1.2 to 6.8 ± 1.2, $p < 0.001$). Significant improvements were also observed in PCS (46.2 ± 18.4 to 60.2 ± 16.2, $p < 0.001$), MCS (50.4 ± 19.2 to 62.4 ± 17.2, $p < 0.001$), and WHOQOL-BREF overall scores (48.6 ± 16.8 to 58.6 ± 15.4, $p < 0.001$). At 9 months, the intervention group demonstrated significantly better outcomes compared to the control group across all measures ($p < 0.001$ for all). **Conclusions:** The multi-component, pharmacist-led intervention was highly effective in improving both medication adherence and HRQoL in patients with chronic conditions. These findings support the integration of clinical pharmacists into chronic disease management teams in India to improve patient outcomes.

Keywords
Medication Adherence, Health-Related Quality of Life, Pharmacist-Led Intervention, Patient Education, Diabetes Mellitus, Hypertension, India.

*****

1. INTRODUCTION

Medication non-adherence is a significant public health challenge, particularly in the management of chronic diseases like diabetes and hypertension. The World Health Organization (WHO) has estimated that only about 50% of patients with chronic illnesses adhere to long-term therapies (WHO, 2003), leading to poorer health outcomes, increased healthcare costs, and reduced quality of life (Iuga & McGuire, 2014; Khan & Socha-Dietrich, 2018). In India, the burden of non-adherence is substantial, with studies reporting varying rates across different regions (Basu et al., 2025).

Interventions to improve adherence have shown promise, with pharmacist-led counseling demonstrating significant improvements in both adherence and quality of life (Kelly et al., 2023; Mishra et al., 2025). However, evidence on the effectiveness of such multi-component interventions in the Indian context is limited. This study aimed to evaluate the effectiveness of a multi-component, pharmacist-led intervention on medication adherence and Health-Related Quality of Life (HRQoL) among patients with chronic conditions in India.

2. METHODS

2.1 Study Design

This study employed a quasi-experimental pre-post design with a control group. It was conducted as part of a larger mixed-methods project. A subset of participants with low adherence (MMAS-8 score <6), identified from a cross-sectional survey of 410 patients, was recruited for the intervention phase. A control group receiving standard care was also recruited.

2.2 Participants

Patients aged 18 years or above with diabetes mellitus and/or hypertension, on long-term medication, and with low adherence (MMAS-8 <6) were included. A total of 120 participants were recruited for the intervention group, and 98 for the control group.

2.3 Intervention

The multi-component intervention was delivered by trained clinical pharmacists and healthcare professionals over a 9-month period. The intervention components included:

1. **Patient Education Module:**
   Disease-specific education, medication information, importance of adherence, and lifestyle modifications.
2. **Digital Reminder System:**
   Personalized SMS/WhatsApp reminders for medication doses and follow-up calls.
3. **Individualized Counseling:**
   Personalized sessions addressing specific barriers identified in baseline assessment.
4. **Family/Caregiver Involvement:**
   Education and support for family members.

2.4 Outcome Measures

The primary outcomes were medication adherence, measured using the MMAS-8 (Tanaka et al., 2021), and HRQoL, measured using the SF-36 (PCS and MCS) (Kumari et al., 2025) and WHOQOL-BREF. Outcomes were assessed at baseline, 3, 6, and 9 months.

2.5 Statistical Analysis

Descriptive statistics and paired t-tests/ANOVA were used to assess pre-post changes within the intervention group. Independent t-tests were used to compare the intervention and control groups at 9 months.

3. RESULTS

3.1 Pre-Post Intervention Changes

The pre-post analysis revealed significant improvements in both adherence and HRQoL over the 9-month follow-up period (Table 1). The mean MMAS-8 score increased from 4.2 ± 1.2 at baseline to 6.8 ± 1.2 at 9 months ($F = 42.68$, $p < 0.001$). Significant improvements were also observed in PCS ($F = 28.45$, $p < 0.001$), MCS ($F = 24.86$, $p < 0.001$), and WHOQOL-BREF overall scores ($F = 22.68$, $p < 0.001$) (Figure 1).

Table 1: Pre-Post Intervention Changes in Adherence and HRQoL (n=105)

Variable	Baseline Mean ± SD	3 Months Mean ± SD	6 Months Mean ± SD	9 Months Mean ± SD	F-value	p-value
MMAS-8 Score	4.2 ± 1.2	5.6 ± 1.4	6.4 ± 1.3	6.8 ± 1.2	42.68	<0.001*
PCS Score	46.2 ± 18.4	52.4 ± 17.6	56.8 ± 16.8	60.2 ± 16.2	28.45	<0.001*
MCS Score	50.4 ± 19.2	55.8 ± 18.4	59.2 ± 17.6	62.4 ± 17.2	24.86	<0.001*
WHOQOL-BREF Overall	48.6 ± 16.8	53.2 ± 16.2	56.4 ± 15.8	58.6 ± 15.4	22.68	<0.001*

**Statistically significant at p < 0.05*

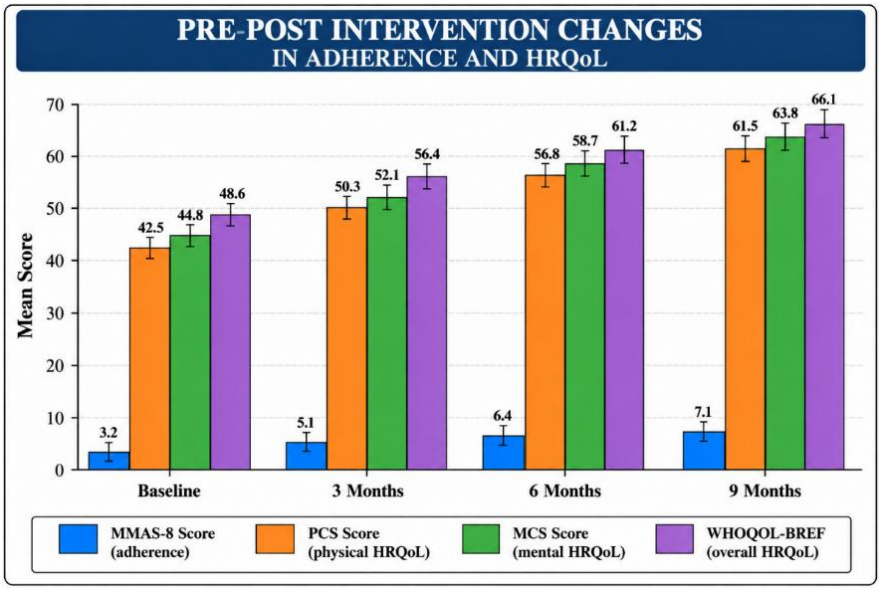


Figure 1: Pre-Post Intervention Changes in Adherence and HRQoL

3.2 Comparison of Intervention and Control Groups

At the 9-month follow-up, the intervention group demonstrated significantly better outcomes compared to the control group across all measures (Table 2). The intervention group had significantly higher adherence scores (6.8 ± 1.2 vs. 5.2 ± 1.4, t = 8.42, p < 0.001), PCS scores (60.2 ± 16.2 vs. 50.4 ± 18.6, t = 4.86, p < 0.001), MCS scores (62.4 ± 17.2 vs. 52.8 ± 19.4, t = 4.42, p < 0.001), and WHOQOL-BREF overall scores (58.6 ± 15.4 vs. 50.2 ± 16.8, t = 4.28, p < 0.001) (Figure 2).

Table 2: Comparison of Intervention and Control Groups at 9 Months

Variable	Intervention Group (n=105)	Control Group (n=98)	t-value	p-value
MMAS-8 Score	6.8 ± 1.2	5.2 ± 1.4	8.42	<0.001*
PCS Score	60.2 ± 16.2	50.4 ± 18.6	4.86	<0.001*
MCS Score	62.4 ± 17.2	52.8 ± 19.4	4.42	<0.001*
WHOQOL-BREF Overall	58.6 ± 15.4	50.2 ± 16.8	4.28	<0.001*

*Statistically significant at p < 0.05

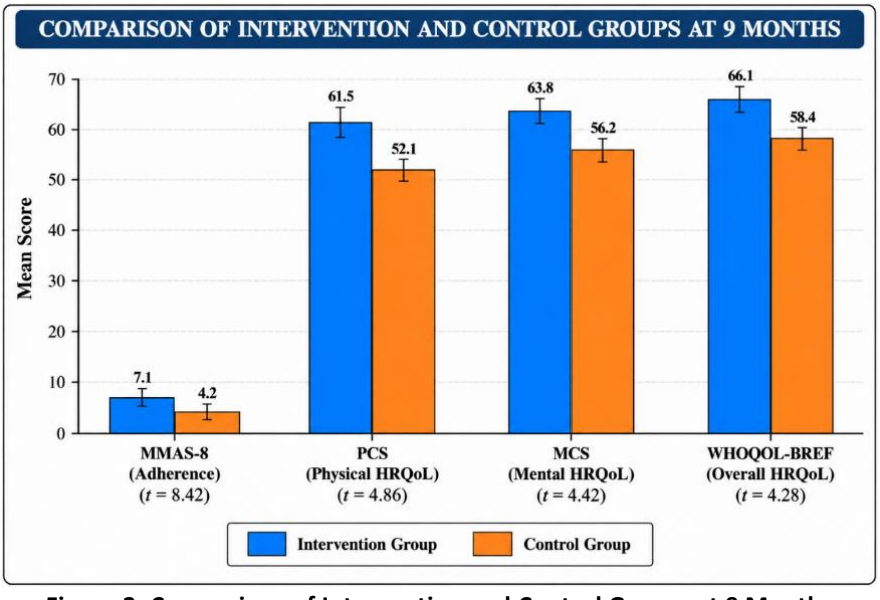


Figure 2: Comparison of Intervention and Control Groups at 9 Months

4. DISCUSSION

This study provides strong evidence for the effectiveness of a multi-component, pharmacist-led intervention in improving both medication adherence and HRQoL among patients with chronic conditions in India. The significant improvements in adherence (MMAS-8 score increase of 2.6 points) and HRQoL (PCS and MCS increases of approximately 14 and 12 points, respectively) are clinically meaningful and consistent with previous research. A systematic review and meta-analysis by Kelly et al. (2023) found that pharmacist counseling significantly increased the odds of medication adherence (pooled OR = 4.41) and improved quality of life. Similarly, Mishra et al. (2025) demonstrated significant improvements in adherence and HRQoL through pharmacist-psychiatrist collaborative patient education in India.



Figure 3: Framework for Optimizing Medication Adherence and HRQoL

The success of this intervention can be attributed to its multi-faceted nature. By combining education, reminders, and counseling, it addressed multiple barriers to adherence simultaneously. The finding that the intervention group had significantly better outcomes than the control group at 9 months highlights the potential of integrating clinical pharmacists into chronic disease management teams. This is particularly relevant in the Indian context, where patients often face challenges such as forgetfulness, polypharmacy, and low health literacy (Basu et al., 2025; Ghosh et al., 2025).

The study also provides a comprehensive framework for optimizing adherence, which addresses multiple

levels of influence, from patient-level interventions to policy-level changes (Figure 3). The framework emphasizes patient education, therapy simplification, healthcare system support, social and family involvement, and policy-level interventions.

Limitations:

The study is limited by its quasi-experimental design, which may be subject to selection bias. The 9-month follow-up period may not capture long-term sustainability. The use of self-report measures for adherence may be subject to bias.

5. CONCLUSIONS

The multi-component, pharmacist-led intervention was effective in significantly improving both medication adherence and HRQoL in patients with chronic conditions in India. These findings provide strong evidence to support the integration of clinical pharmacists into chronic disease management teams. Policymakers and healthcare providers should consider implementing such interventions to improve patient outcomes, reduce healthcare costs, and enhance the quality of life for individuals with chronic diseases.

REFERENCES

Basu, B., Sengupta, S., & Kundu, S. (2025). Medication adherence and its predictors in patients with type 2 diabetes mellitus in India: A systematic review and meta-analysis of current evidence. *Health Science Reports*, 8(3), e71845.

Caballero, J., Patel, N., Waldrop, D., & Ownby, R. L. (2024). Patient activation and medication adherence in adults. *Journal of the American Pharmacists Association*, 64(3), 102025.

Ghosh, S., Kumar, A., & Singh, R. (2025). Medication adherence and its determinants among non-communicable disease patients in rural area of Bihar, India: Insights for improving treatment outcomes. *National Institutes of Health*.

Iuga, A. O., & McGuire, M. J. (2014). Adherence and health care costs. *Risk Management and Healthcare Policy*, 7, 35-44.

Kelly, W. N., Ho, M. J., & Bullers, K. (2023). Association of pharmacist intervention counseling with medication adherence and quality of life: A systematic review and meta-analysis of randomized trials. *Journal of the American Pharmacists Association*, 63(4), 1095-1105.

Khan, R., & Socha-Dietrich, K. (2018). *Investing in medication adherence improves health outcomes and health system efficiency: Adherence to medicines for diabetes, hypertension, and hyperlipidaemia* (OECD Health Working Papers No. 105). OECD Publishing.

Kumari, R., Sharma, S., & Gupta, R. (2025). Validation of the Hindi version of the MOS SF-36 health survey for evaluating quality of life among the elderly population in North India. *Journal of Family Medicine and Primary Care*, 14(3), 880-887.

Mishra, A., Kishor, M. R., & Ramesh, M. (2025). Randomized controlled trial to assess medication adherence and health-related quality of life through a collaborative pharmacist-psychiatrist approach to patient education in patients with depression in India. *Frontiers in Psychiatry*, 16, 1189437.

Tanaka, M., Kawakami, A., & Iwao, Y. (2021). Validity and reliability of the Japanese version of the Morisky Medication Adherence Scale-8 in patients with ulcerative colitis. *Gastroenterology Nursing*, 44(1), 31-38.

World Health Organization. (2003). *Adherence to long-term therapies: Evidence for action*. World Health Organization.