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Short communication

From adherence assessment to pharmaceutical care prioritization: Integrating ADHERE-7, medication regimen complexity and polypharmacy into a community pharmacy screening framework

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Introduction

Multimorbidity and polypharmacy are increasingly common among patients receiving chronic pharmacotherapy and are associated with medication-related problems, treatment burden and reduced medication adherence. While medication adherence reflects patient behaviour and barriers to treatment implementation, medication regimen complexity represents an objective measure of the practical challenges associated with medication use. Poor adherence has been consistently associated with adverse clinical outcomes and increased healthcare resource utilization (Kengne et al., 2024).

The Medication Regimen Complexity Index (MRCI) and the ADHERE-7 questionnaire capture complementary dimensions of medication use. MRCI provides an objective assessment of treatment complexity (Wimmer et al., 2017), whereas ADHERE-7 identifies patient-reported barriers and behaviours associated with medication use (Bužančić Balen et al., 2024). However, their integration into practical pharmaceutical care screening approaches remains limited.

Identifying patients most likely to benefit from pharmacist-led interventions is particularly important in routine community pharmacy practice, where resources for comprehensive medication review may be constrained. Therefore, the aim of this study was to evaluate the relationship between medication adherence, regimen complexity and medication burden and to develop a pragmatic pharmaceutical care screening framework for patient prioritization.

Materials and methods

A cross-sectional observational study was conducted among 120 community pharmacy patients in North Macedonia undergoing pharmacist-led medication therapy assessment. Data collected included age, sex, number of comorbidities, number of medications, ADHERE-7 score and MRCI score. Medication adherence was assessed using ADHERE-7, while medication regimen complexity was evaluated using the MRCI. Polypharmacy was defined as the concurrent use of ≥5 medications and excessive polypharmacy as ≥10 medications. High regimen complexity was defined as MRCI >20.

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Continuous variables were reported as mean ± standard deviation (SD), while categorical variables were presented as frequencies and percentages. Associations between adherence, regimen complexity and medication burden were assessed using Spearman's rank correlation coefficient. Statistical significance was defined as $p < 0.05$.

Results and discussion

The study population was predominantly middle-aged and older, with 87.5% of patients aged ≥50 years and 42.5% aged ≥70 years. The cohort represented a typical cardiometabolic population characterized by multimorbidity, chronic pharmacotherapy and substantial treatment burden.

Patients had a mean of 2.45 ± 0.74 comorbidities and 6.55 ± 3.03 medications. Polypharmacy (≥5 medications) was present in 70.8% of patients, while excessive polypharmacy (≥10 medications) was observed in 12.5%. The mean ADHERE-7 score was 23.79 ± 5.08 and the mean MRCI score was 22.56 ± 9.42. High medication regimen complexity was identified in 46.7% of patients.

Medication adherence was significantly associated with therapeutic burden. ADHERE-7 scores demonstrated inverse correlations with MRCI ($\rho = -0.548$, $p < 0.001$), number of medications ($\rho = -0.471$, $p < 0.001$) and number of comorbidities ($\rho = -0.351$, $p < 0.001$). Patients with high regimen complexity demonstrated significantly lower adherence scores than those with lower complexity (21.34 vs. 26.71, $p < 0.001$), while patients exposed to excessive polypharmacy had markedly lower adherence scores than those receiving fewer than ten medications (18.60 vs. 24.53, $p = 0.001$).

To translate these findings into routine practice, a hierarchical pharmaceutical care screening framework was developed by integrating adherence, regimen complexity and medication burden. The categories represent a pragmatic pharmaceutical care triage framework derived from observed score distributions and clinically relevant complexity thresholds. Category I (Routine Follow-up) included patients with ADHERE-7 ≥25 and MRCI ≤20. Category II (Targeted Monitoring) included patients with ADHERE-7 <25 or MRCI >20. Category III (Structured Medication Review) included patients with ADHERE-7 <25 and MRCI >20. Category IV (Intensive Pharmaceutical Care) included patients with ADHERE-7 <22, MRCI >30 and excessive polypharmacy. Application of the framework enabled meaningful stratification of patients according to pharmaceutical care needs. Among patients with available MRCI data, 39.5% were classified as Category I, 28.6% as Category II, 24.4% as Category III and 7.6% as Category IV. Overall, 32.0% of patients were identified as requiring either structured medication review or intensive pharmaceutical care interventions.

Conclusion

Lower medication adherence was associated with with greater regimen complexity, medication burden and comorbidity burden. By integrating ADHERE-7, MRCI and polypharmacy, the proposed framework provides a practical pharmaceutical care triage tool. Application of the framework identified 32.0% of patients as candidates for structured medication review or intensive pharmaceutical care interventions, indicating that approximately one in three community pharmacy patients may require pharmacist-led services beyond routine dispensing and counselling. Although the proposed framework requires prospective validation, it offers a pragmatic approach for identifying patients with increased therapeutic burden and may facilitate more efficient allocation of pharmaceutical care resources in routine practice.

References

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