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Short communication

Implementation of the first pharmacist-led New Medicine Service in N. Macedonia for patients initiating antihypertensive therapy: Outcomes of a collaborative pharmaceutical care initiative

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Introduction

Cardiovascular diseases remain the leading cause of mortality worldwide, while hypertension is one of the most important modifiable cardiovascular risk factors. Poor medication adherence continues to compromise treatment outcomes despite the availability of effective antihypertensive therapies (Williams et al., 2024).

New Medicine Service (NMS) is a structured pharmaceutical care intervention designed to support patients during the initiation of long-term pharmacotherapy. Pharmacist-led NMS programs have been shown to improve adherence, patient understanding and treatment persistence (Elliott et al., 2017; 2020).

To the best of our knowledge, this project represents the first structured pharmacist-led NMS implemented in N. Macedonia through a collaborative initiative involving Alkaloid AD Skopje, the Faculty of Pharmacy, Ss. Cyril and Methodius University in Skopje and a national network of community pharmacists. The service was developed to support patients initiating perindopril therapy, improve adherence and establish a standardized pharmaceutical care model in community pharmacy practice.

Materials and methods

The NMS was initially piloted in September 2025 and subsequently expanded during 2026 to a nationwide network of 100 trained pharmacists, providing structured support to more than 700 patients initiating antihypertensive therapy with perindopril. The intervention consisted of three consecutive phases: *Phase 1 (Initiation*): patient enrolment, baseline assessment, identification of patient expectations and potential barriers to treatment, followed by structured counselling regarding medication use, treatment goals, adverse effects and lifestyle recommendations; *Phase 2 (7–14 days)*: assessment of adherence, identification of adverse effects and treatment-related concerns, reinforcement of educational messages and implementation of adherence-support measures and

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Phase 3 (approximately 30 days): evaluation of treatment continuation, blood pressure control, adverse effects and referral to physicians when therapy adjustment was required.

Results and discussion

The service demonstrated high patient engagement throughout the follow-up period. During the initial consultation, 24% of patients raised questions related to medication administration, expected therapeutic effects, treatment duration, previous therapy and potential drug interactions. During the second consultation, 14% of patients reported additional concerns, predominantly related to adverse effects, blood pressure variability, dose modifications and continuation of treatment after blood pressure normalization.

Patient education represented a central component of the intervention. The teach-back approach and individualized counselling enabled pharmacists to address misconceptions and improve patient understanding of therapy. Similar educational approaches have previously been identified as key contributors to improved adherence in structured NMS programs (Elliott et al., 2020).

A high adherence rate of 94% was observed among patients participating in the service, substantially exceeding the adherence rates commonly reported for antihypertensive therapy worldwide (50–70%) (WHO, 2023). Only 6% of patients were classified as non-adherent. The most frequent causes of non-adherence included forgetfulness during the early treatment phase and self-initiated discontinuation following perceived clinical improvement.

Approximately 10% of patients reported transient adverse effects during the first weeks of therapy, most commonly headache, dizziness and weakness. These symptoms resolved during subsequent follow-up and generally did not require treatment discontinuation.

Blood pressure control issues requiring further intervention were identified in approximately 6% of patients. Nine patients were referred for treatment intensification because of persistent hypertension, whereas three patients required dose reduction due to hypotension. Following physician consultation and therapy adjustment, blood pressure stabilization was reported in all referred patients (n = 12).

An important finding of the project was that pharmacist counselling and follow-up were associated with prevention of potential treatment discontinuation in 41% of identified at-risk patients. Interventions included counselling regarding transient adverse effects, encouragement to continue treatment until therapeutic benefits became evident, and promotion of regular blood pressure monitoring.

Beyond adherence outcomes, the project demonstrated the feasibility of implementing an advanced pharmaceutical care service through effective collaboration between community pharmacists, physicians, academia and the pharmaceutical industry. Such interdisciplinary cooperation represents an important step toward strengthening patient-centered healthcare services in N. Macedonia.

Conclusion

The first pharmacist-led New Medicine Service implemented in N. Macedonia achieved high patient acceptance and a 94% adherence rate, while enabling early identification and management of treatment-related problems. The findings demonstrate the value and feasibility of structured pharmaceutical care services and support their broader implementation in chronic disease management.

References

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