Міністерство охорони здоров'я України
Національний фармацевтичний університет
Інститут підвищення кваліфікації спеціалістів фармації
Кафедра клінічної фармакології

АКТУАЛЬНІ ПИТАННЯ КЛІНІЧНОЇ ФАРМАКОЛОГІЇ ТА КЛІНІЧНОЇ ФАРМАЦІЇ (TOPICAL ISSUES OF CLINICAL PHARMACOLOGY AND CLINICAL PHARMACY)

Матеріали науково-практичної
Internet-конференції з міжнародною участю
28 жовтня 2025 року
м. Харків

Харків
НФаУ
2025

POLYPHARMACY AND HYPERTENSION: EVALUATING DRUG-DRUG INTERACTIONS AND THE PHARMACIST'S ROLE IN RISK REDUCTION

Kebaili G., Otrishko I.A., Vietrova K.V.
National University of Pharmacy, Kharkiv, Ukraine
Department of pharmacology and clinical pharmacy
gkebaili18@gmail.com

Introduction: Polypharmacy, as the co-administration of five or more drugs, is a common issue in hypertensive groups everywhere in the world, specifically in Ukraine and Eastern European countries, where there is a high occurrence of diffuse comorbidity (Diaconu C. et al., 2021; Hrebenyk M. et al., 2025). This is a multifaceted phenomenon that is also associated with high numbers of drug-drug and food-drug interactions, hence obscuring blood pressure control and aggravating adverse drug reactions risk (Zare P. et al., 2024). The impact of multimorbidity has a great capacity in elevating difficulties in pharmacotherapy in aged hypertensive groups everywhere in the world (Nicholson K. et al., 2024).

Aim: The objective of this piece is to evaluate clinical importance of drug interactions in polypharmacy in hypertensive individuals, emphasizing risk minimization by pharmacists as well as effectiveness of pharmacovigilance mechanisms, against international as well as Ukrainian healthcare environments.

Materials and methods: A comprehensive systematic peer-reviewed journal article review, from 2019 to 2025, was undertaken, employing databases such as PubMed, ScienceDirect, and PMC. The search terms applied were «polypharmacy and hypertension», «drug interactions of antihypertensives», «pharmacist`s role in polypharmacy» and «pharmacovigilance and hypertension». Inclusive criteria consisted of observational cohorts, retrospective case series, clinical trials, and epidemiological surveys describing polypharmacy prevalence, adverse clinical outcomes, pharmacist interventions, and pharmacovigilance activities internationally as well as in Eastern Europe and in Ukraine specifically.

Results and their discussion: Hypertension is a multifaceted cardiovascular disease that calls for advanced therapeutic strategies that frequently require combination pharmacotherapy in order to reach desired blood pressure levels. The treatment of hypertension has moved towards adopting evidence-based guidelines that suggest dual therapy for the majority of patients, with single-pill combinations being favored to improve adherence and also to simplify regimens. Prevalence of polypharmacy in hypertensive populations worldwide ranges from 12% to 81%, and a maximum prevalence is in populations from Eastern European countries such as Romania and Ukraine (Diaconu C. et al., 2021; Zare P. et al., 2024; Hrebenyk M. et al., 2025). Risk factors for drug-drug interactions include: older age (especially >65 years), male gender (odds ratio 2.5), polypharmacy (>4 medications raises drug-drug interactioni risk by 400%), several comorbidities (diabetes, cardiovascular disease, chronic kidney disease), renal impairment (decreases drug clearance). Vulnerable groups, such

as older patients with several comorbidities, are at heightened risk from both the inherent complexity of their illness and the greater possibility of clinically relevant interactions. This group needs special consideration and individualized therapeutic strategies to weigh efficacy against safety. Complex polypharmacy exists alongside poor blood pressure control in Ukraine, and there is suboptimal adherence despite most being regular users of antihypertensive medication (Hrebenyk M. et al., 2025). The study indicates that adherence to regular systematic antihypertensive treatment is consistent with reduced mortality, and medication management is a very crucial factor favoring reduced mortality (Hrebenyk M. et al., 2025). Polypharmacy and multimorbidity have a substantial increase in risk of hospitalization as well as in nonadherence (Nicholson K. et al., 2024). Medication appropriateness, adherence, and clinical results are improved through pharmacist-driven interventions (Nicholson K. et al., 2024). Pharmacovigilance frameworks, strengthened in European countries, are vital in tracking adverse reactions as well as refining safe therapy (European Medicines Agency, 2023). Pharmacists / clinical pharmacists play a crucial role in reducing drug–drug interaction risks in hypertensive patients by conducting targeted medication reviews and Medication Therapy Management (MTM) programs. Pharmacists review all medications taken by patients, including prescription medications, OTC medications, and supplements, to detect potential DDIs, contraindications, and dosing problems. A 2025 meta-analysis of 95 randomized controlled trials (31,262 patients) showed that pharmacist-conducted reviews lowered systolic blood pressure by 5.3 mmHg (95% CI –6.3 to –4.4) and diastolic pressure by 2.3 mmHg (95% CI –2.9 to –1.8) versus usual care (Gastens V. et al., 2025). During MTM services, pharmacists provide personalized education, simplify regimens, and communicate with physicians. Such programs reduce cardiovascular risk: a 2020 cohort study found that MTM targeted at hypertension decreased 10-year cardiovascular event risk by 44% (RR 0.56; 95% CI 0.42–0.74) and increased medication adherence rates by 30% (Thompson H. et al., 2025). Pharmacists stratify patients according to DDI risk – targeting the elderly and individuals on ≥5 medications – and apply customized monitoring (e.g., electrolyte monitoring for RAAS inhibitor combinations). They also set up electronic alert systems and educate patients about interaction symptom recognition. Cumulatively, these pharmacist-led interventions realize quantifiable enhancement in blood pressure control, minimize DDI-associated adverse effects, and improve cardiovascular outcomes in the long term.

Conclusions: Pharmacists / clinical pharmacists are important players in risk reduction through specialized medication management and their involvement in pharmacovigilance systems. Further interprofessional collaboration and international approaches are needed to improve outcomes and safety in pharmacotherapy in hypertension.