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Short communication

Advancing pharmaceutical care in Kosovo: knowledge, attitudes and practice gaps among community pharmacists in arterial hypertension management

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Introduction

Hypertension is widely recognized as one of the most significant global public health challenges and remains a leading modifiable risk factor for cardiovascular morbidity and mortality worldwide, accounting for approximately 9.4 million deaths annually (WHO,2025). The management of hypertension has increasingly shifted toward multidisciplinary, patient-centered approaches where pharmacists have emerged as key contributors to chronic disease management.

In transitional countries like Kosovo, non-communicable diseases impose a heavy burden. Cardiovascular conditions are primary drivers of mortality, with regional data indicating a high hypertension prevalence of up to 33.6% among adults (Jerliu et al., 2013; Hashani et al., 2014). Despite being highly accessible primary points of contact, community pharmacists in Kosovo remain underutilized, with clinical roles frequently constrained by systemic barriers. This study aimed to evaluate the knowledge, attitudes and practices (KAP) of community pharmacists in Kosovo regarding hypertension management and to identify barriers affecting the implementation of pharmaceutical care services.

Materials and methods

A descriptive cross-sectional online survey was conducted between August and October 2025 among 100 pharmacists practicing across a total population of 747 active community pharmacies in Kosovo. Data were collected using a validated self-administered questionnaire comprising four domains: sociodemographic characteristics, attitudes toward hypertension management, clinical knowledge, and professional practice.

Statistical analyses were completed via Medcalc 23.5.2 software. Descriptive data were summarized using frequencies, percentages, means ± standard deviations (SD), or medians with interquartile ranges (IQR).

Results and discussion

The study cohort (n=100) comprised 70% female and 30% male respondents, with a mean age of 34.14 ± 6.91 years. The majority held a Master of Pharmacy degree (78%) and practiced in single independent pharmacies (62%), while experience was evenly distributed: <5 years (30%), 5–10 years (38%), and >10 years (32%).

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Attitude tracking demonstrated a strong professional consensus supporting pharmaceutical care. Pharmacists strongly agreed that patient education is essential to care (mean 4.57 ± 0.62) and improves treatment compliance (mean 4.67 ± 0.49). However, 79% identified severe time and resource constraints as primary barriers to consistent counseling (mean 4.14 ± 0.98). Over 80% noted that formal certification and continuing education would optimize clinical efficacy, echoing wider regional literature trends (Mishore et al., 2020; El Hajj et al., 2016).

Clinical knowledge was high overall (76%–95% correct), specifically in recognizing lifestyle risk factors (94%), identifying classic symptoms (95%), using current guidelines (94%), and identifying ACE-inhibitor side effects (93%). However, an important knowledge gap was identified: only 49% correctly rejected the false assertion that hyperkalemia is a principal side effect of calcium channel blockers (CCBs), indicating widespread confusion regarding electrolyte changes.

Categorical distribution mapping identified a a marked discrepancy between knowledge, attitudes and practice: 88.1% of pharmacists achieved "Good" overall knowledge and 92.1% demonstrated a "Good" attitude level, whereas only 15.8% achieved a "Good" practice score. Knowledge metrics did not vary significantly by gender or educational degree ($p>0.05$). However, subjective familiarity with hypertension heavily predicted objective knowledge ($p=0.019$), with "Very Familiar" practitioners outperforming "Familiar" peers (11.83 ± 0.86 vs. 10.97 ± 1.37). Pharmacists actively providing clinical services achieved significantly higher practice scores than non-providers (2.19 ± 0.51 vs. 1.45 ± 0.67; $p=0.000$). While 81% offered general services—principally blood pressure screening (71%) and medication reviews (57%)—only 14% utilized standardized longitudinal tracking tools. Knowledge positively correlated with attitude ($r=0.231$, $p=0.021$) and attitude with practice ($r=0.205$, $p=0.040$), but no direct correlation emerged between knowledge and practice ($r=0.124$, $p=0.218$), suggesting that operational settings act as primary intermediaries. Dominant barriers limiting service delivery included poor patient compliance (19%), high workload/time deficits (14%), and inadequate staffing (8%).

Conclusion

Community pharmacists in Kosovo demonstrated strong knowledge and positive attitudes toward hypertension management; however, these competencies were not consistently translated into routine clinical practice. The observed gap appears to be influenced by organizational and structural barriers rather than deficiencies in professional competence. Strengthening pharmacist-led hypertension services will require targeted continuing education, standardized practice protocols, improved interdisciplinary collaboration, and implementation of structured documentation and follow-up systems. Such measures may facilitate the transition from traditional dispensing roles toward comprehensive pharmaceutical care and medication therapy management.

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