The Impact of Poor Medication Adherence on Clinical Outcomes and Health Resource Use in Hypertension and/or Dyslipidaemia: A Systematic Literature Review

SERVIER

André Pascal Kengne,[1] Lucia Zhu,[2] Jingya Li,[3] Mandeep Kaur Bhatia,[4] Petar Atanasov,[2] Elitsa Ivanova,[5] Jean-Baptiste Briere,[5] Zeba M Khan[6]

[1]South African Medical Research Council, Cape Town, South Africa; [2]Amaris Consulting, Barcelona, Spain; [3]Amaris Consulting, Shanghai, China; [4]Amaris Consulting, Toronto, Canada; [5]Servier International, Suresnes, France; [6]Zebgene LLC, Malvern, US.

INTRODUCTION

- Cardiovascular diseases (CVDs) including coronary heart disease, stroke, peripheral arterial disease, and aortic disease, are the leading cause of morbidity and mortality globally.[1,2]
- Hypertension and dyslipidaemia are the two major risk factors of CVDs, therefore appropriate management of these risk factors could effectively improve survival.[2]
- Multiple pharmacological interventions exist to control of hypertension and dyslipidaemia. However, those medications are effective only if certain level of adherence is achieved.[3,4]

OBJECTIVE

- The study aimed to assess the impact of poor medication adherence on clinical outcomes and health resource use among patients with hypertension or dyslipidaemia.

METHODS

- A systematic review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) checklist to identify studies meeting the predefined PICOS (Population, Intervention, Comparator, Outcomes, and Study type) framework (**Table 1**).
- Embase, MEDLINE, and MEDLINE In-Process were searched from inception to February 1st, 2022, supplemented by hand-searching of conference abstracts published from January 2020 onwards.

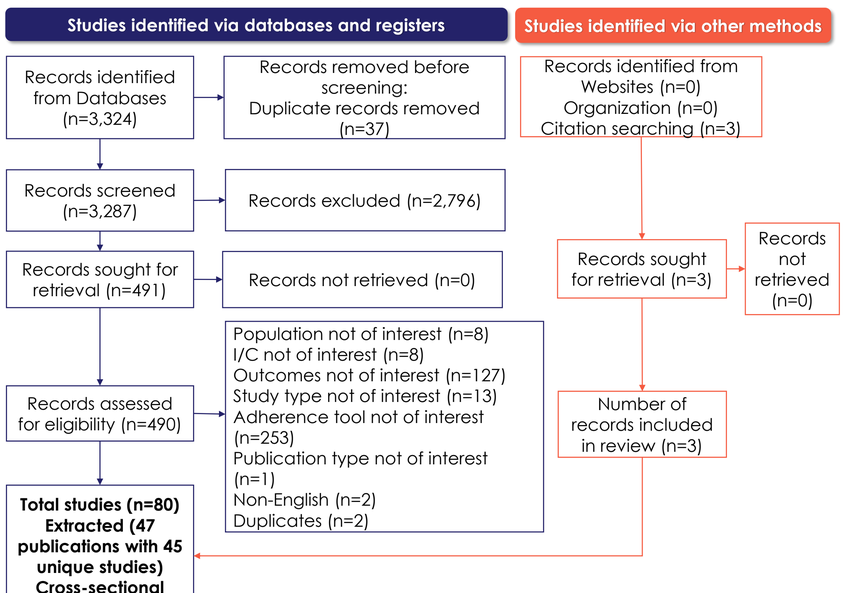
Table 1. PICOS framework

Element	Eligibility criteria
Population	• Adults with hypertension and/or dyslipidaemia
Intervention/Comparator	• Any pharmacological intervention for hypertension and/or dyslipidaemia
Outcomes	• Clinical outcomes, including blood pressure/serum lipid levels, cardiovascular events, survival/mortality • Health resource use and costs
Study type	• Observational studies (retrospective, prospective) and randomised controlled trials
Adherence measuring method	• Subjective method/self-reported using 8-item Morisky Medication Adherence Scale (MMAS-8) • Indirect methods: adherence is expressed as proportion of days covered (PDC), medication possession ratio (MPR), or medication gaps with any formula • Direct methods: urine/plasma drug monitoring
Publication type	• Peer-reviewed journals (publication date: no limits) • Conference abstracts from January 2020 onwards
Country	• No restriction

RESULTS

- A total of 3,287 publications were retrieved for screening after exclusion of duplicates, from which 47 publications with 45 unique studies were selected for data extraction and analysis (**Figure 1**).

Figure 1. PRISMA diagram for study selection

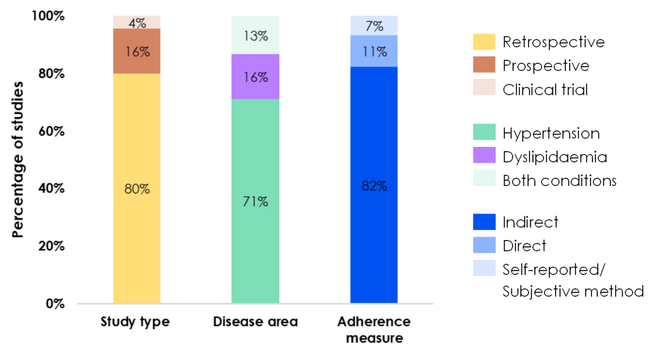


Abbreviations: I/C, intervention/comparator; PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses
Note: *Eligible cross-sectional studies were not analyzed due to no follow-up data

STUDY CHARACTERISTICS

- Forty-five studies met the inclusion criteria and of these 80% were retrospective cohort studies.
- Majority of the studies assessed patients with hypertension (71%) and 82% used indirect adherence methods based on pharmacy refill records.
- Majority of studies applied dichotomous criteria for adherence evaluation (n=24) and >80% was the most applied cut-off value for good adherence (**Figure 2**).

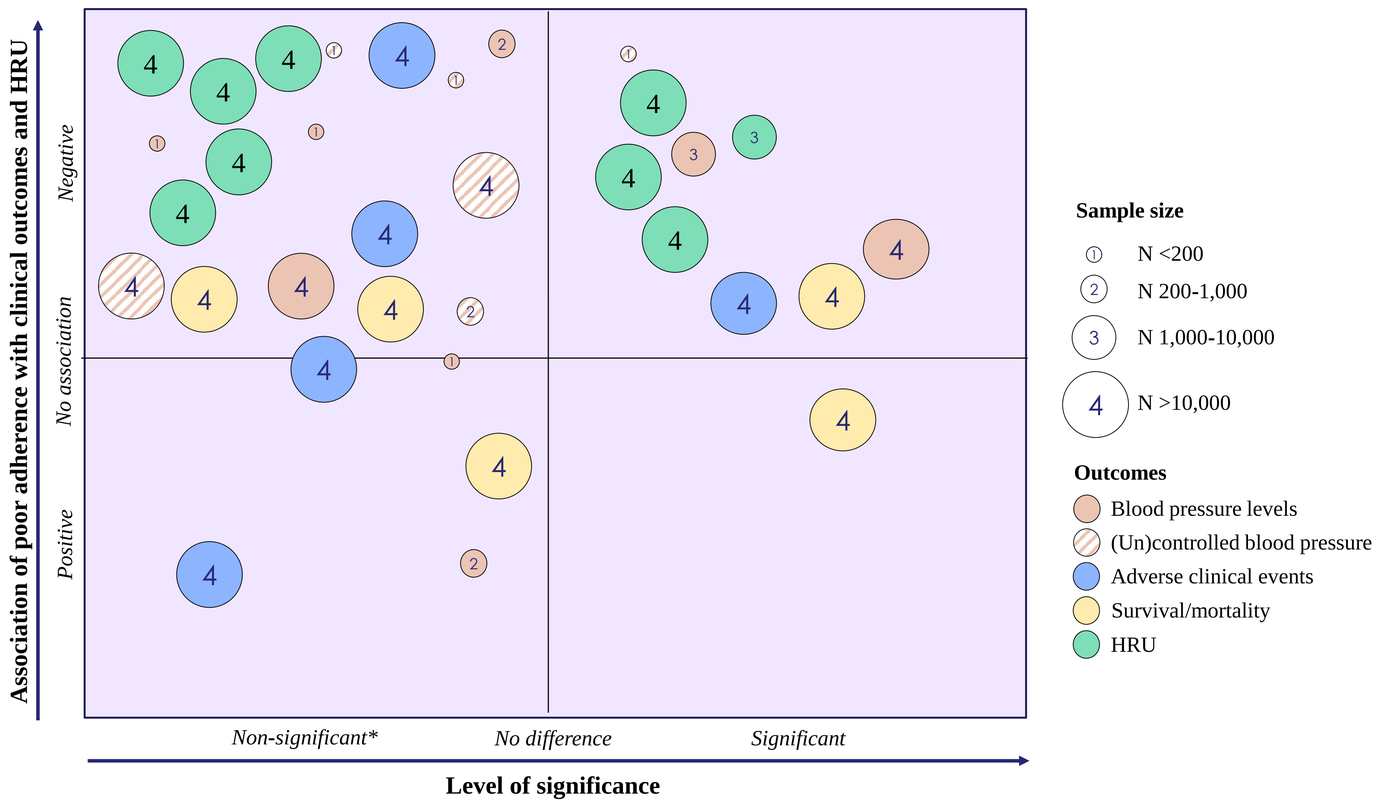
Figure 2. Study characteristics



HYPERTENSION

- A total of 38 studies included patients with hypertension and discussed the impact of poor adherence to antihypertensive medications.
- Of these studies, clinical outcomes including change in blood pressure (BP) and patients with controlled/uncontrolled BP were reported in 14 studies, incidence of adverse clinical events (i.e., CVD) and survival and mortality in six studies each and health resource use (HRU) in 18 studies.
- Most studies consistently showed the association of poor adherence with negative clinical outcomes, namely worse BP control, higher incidence or risk of CVD events, and higher rates or risk of mortality (**Figure 3**).
- Among newly diagnosed patients with hypertension, a significant reduction of systolic and diastolic blood pressure at month 6 was observed in the adherent group (≥80% PDC): -4.5 mm (95% confidence interval [CI]: -5.40, -3.77) and -6 mm (95% CI: -6.5, -5.4) of Hg, respectively. Whereas the systolic and diastolic blood pressure increased by 1.1 and 3.5 mm of Hg, respectively in the non adherent group.
- Poor adherence resulted in increased HRU including higher risk of CVD related hospitalization with an odds ratio of 1.11-1.43, longer length of stay: 16.0 days compared to 10.6 days for good adherent group, and higher medical, medication, and overall healthcare costs across all the studies.

Figure 3. Impact of poor adherence to anti-hypertensive medication on clinical outcomes and HRU

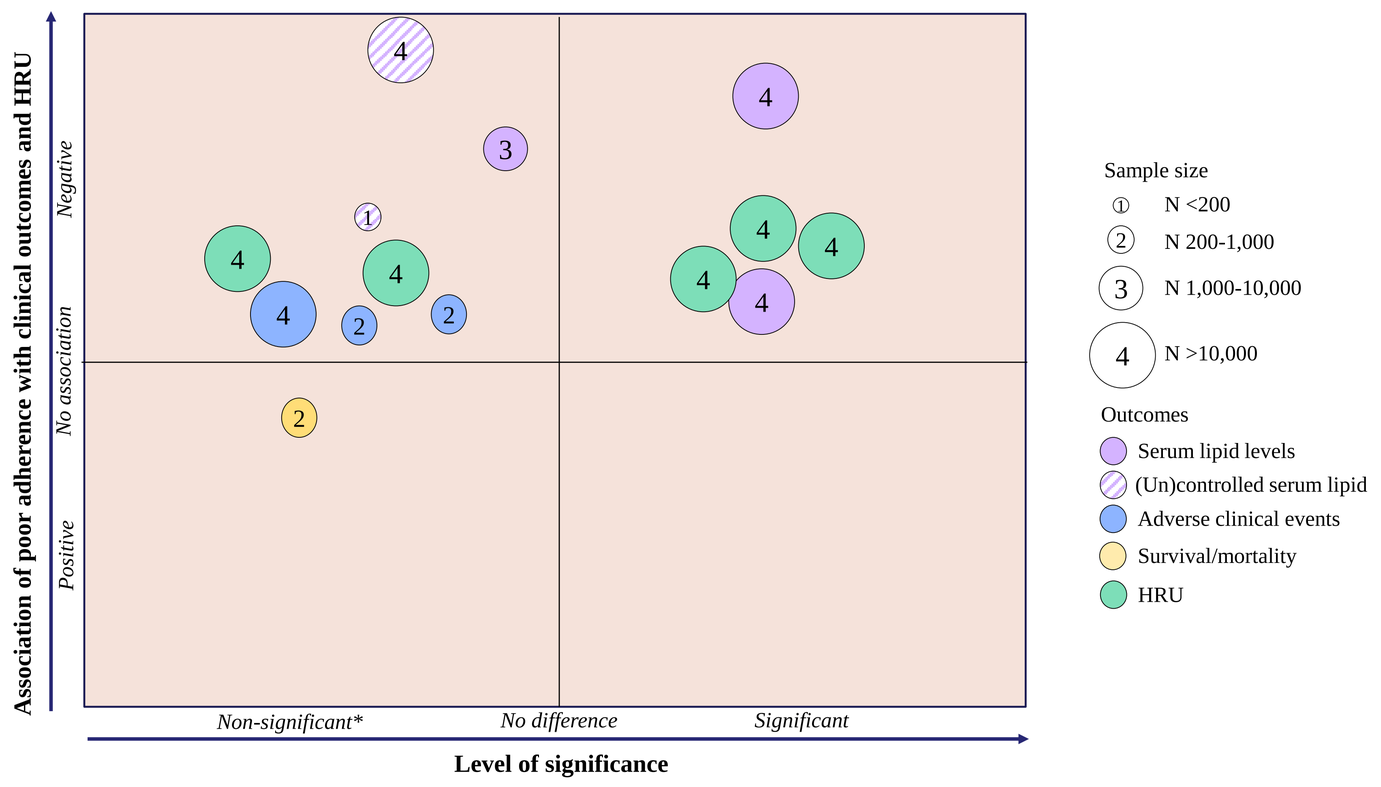


*Note: *Studies on the left side of the horizontal axis also included studies with no statistical significance reported*

DYSLIPIDAEMIA

- Thirteen studies discussed the impact of poor adherence to lipid-lowering medications on clinical outcomes and HRU.
- Patients with poor adherence had worse control of serum lipid levels (5/5 studies), higher incidence and/or risk of CVD events (3/3), and increased HRU (5/5) (**Figure 4**).
  - Patients who were adherent to medication experienced larger decrease in low-density lipoprotein cholesterol (LDL-C) levels ranging from -34.1 to -37.2 mg/dL compared to -18.0 mg/dL in the poor adherence groups (MPR or PDC <80%) in two studies.
  - Additionally, more patients with controlled LDL-C levels as well as significantly higher chance for controlled LDL-C levels in groups with good adherence.
  - Only one study on mortality outcomes reported contrasting results; with the risk of fatal CVD events being higher in the adherent group; however, the events were few and non-significant. Whereas the composite risk of fatal and non-fatal CVD events were lower in the adherent patients.
  - Poor adherence resulted in increased HRU including higher risk of CVD related hospitalization with an odds ratio of 1.12-1.26, higher annual inpatients days (average 1.18 more days), and higher medical, medication, and overall healthcare costs across all the studies.

Figure 4. Impact of poor adherence to lipid-lowering medication on clinical outcomes and HRU



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CONCLUSIONS

- Poor adherence to medication among patients with hypertension or dyslipidaemia is associated with poor clinical outcomes and increased HRU.
- Thus, there is a need to improve medication adherence in patients with hypertension or dyslipidaemia

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DISCLOSURES

The study was funded by Servier. JBB, EI are employees of Servier; LZ, JL, MKB, and PA are employees of Amaris Consulting who received funding from Servier for the study; ZK is a paid consultant for Servier; APK received an honorarium for his support in the study protocol and results interpretation.