

Effectiveness and Implementation of PROLANIS for Hypertension in Indonesia: A Systematic Review with RE-AIM Synthesis

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Abstract. Hypertension remains a major disease burden in Indonesia; the national chronic disease management program (PROLANIS) in primary care is positioned as a key strategy. Heterogeneous field performance highlights the need for a systematic review of clinical effectiveness and implementation quality. This study aims to synthesize evidence on PROLANIS effects on blood pressure control and to map implementation factors moderating results in first-level health facilities. Systematic literature review following PRISMA 2020. Data sources were Scopus and PubMed (2014–2025). Records identified: 770; after de-duplication/retraction removal, 711 remained for screening; 85 passed title screening; 11 full-text articles were included. Dual-reviewer extraction; appraisal with JBI/CASP/MMAT; effectiveness synthesized with SWiM; implementation factors mapped using RE-AIM. Results. Evidence suggested a favorable direction of effect on blood pressure control and adherence, especially when structured pharmacist counseling, regular monitoring, and physical activity were implemented consistently. Cohort/quasi-experimental studies supported reductions in SBP/DBP and improved adherence; HRQoL tended to improve but was not always statistically significant. RE-AIM mapping indicated that reach/retention, inter-professional adoption, medicine/equipment availability, and documentation fidelity influenced between-facility variation. In conclusion, PROLANIS can improve hypertension outcomes when core components are well executed and documented. Policies linking minimum process indicators (counseling, monitoring, retention) to performance-based incentives may enhance implementation consistency and sustainability.

Keywords. hypertension, prolanis, blood pressure control, medication adherence, primary health care, systematic review, prisma, re-aim, implementation factors, indonesia

1 Introduction

Hypertension remains a strategic public health problem in Indonesia due to its contribution to cardiovascular mortality, disability, and service costs. Riskesdas 2018 reported a prevalence of 34.1% among adults aged ≥ 18 years, a marked increase from 2013, indicating the need for stronger system-level interventions [1]. The 2023 Indonesian Health Survey (SKI) showed measurement-based prevalence of 30.8%, slightly lower than 2018 yet still

revealing gaps in care-seeking and treatment adherence—especially in productive ages [2]. These findings underscore the urgency of evidence-based primary care governance to reduce complications and long-term costs.

Within National Health Insurance (JKN), the Chronic Disease Management Program (PROLANIS) is designed as a proactive, structured package—education, monitoring of blood pressure and metabolic parameters, physical activity (“PROLANIS gymnastics”), home visit/recall, and medicine information services—linking participants, first-level health facilities (FKTP), and the insurer (BPJS Kesehatan) [3,4]. As JKN policies evolve, PROLANIS is positioned as a key instrument for NCD control in primary care and a platform for standardized clinical and health promotion practices [5].

Implementation evidence shows heterogeneity in clinical and process outcomes across settings, implying variation in delivery quality. A satisfaction survey in Bandung reported positive ratings but highlighted areas for improvement in activity integration and management in private PHCs (6). A rural Yogyakarta study emphasized affordability and availability as determinants of JKN use for antihypertensives (Rahmawati & Bajorek, 2018). Meanwhile, a 16-PHC study in Pandeglang found pharmacist counselling associated with better adherence and lower blood pressure, and a cohort in Wates observed stable BP control despite fluctuating laboratory indicators [7,8]. Collectively, these findings point to gaps between program design and implementation fidelity that merit systematic mapping.

The RE-AIM framework—Reach, Effectiveness, Adoption, Implementation, and Maintenance—is widely recommended for evaluating real-world interventions by connecting clinical outcomes with implementation quality and sustainability [9,10]. Using RE-AIM helps explain facility-level variation and clarifies contributions of components such as clinical pharmacy to patient outcomes [7]. Following contemporary reporting standards, we applied PRISMA 2020 for transparent search and selection reporting, and SWiM when meta-analysis was not feasible due to heterogeneity [11,12].

2 Methods

2.1 Review design and reporting guideline

This systematic literature review (SLR) followed PRISMA 2020, which provides a 27-item checklist, structured abstract, and flow diagram to standardize transparent reporting from search strategy to synthesis [11]. Because meta-analysis was not conducted due to heterogeneity, narrative synthesis followed SWiM to clarify rationale, groupings, and direction-of-effect reporting [12]. Where relevant by outcome, certainty considerations were informed by concise GRADE principles [13].

2.2 Research question and eligibility (PICOS)

Primary question: *How effective is PROLANIS for hypertension control in Indonesia, and which implementation factors influence outcomes in primary care?* PICOS: adults (≥ 18 y) with hypertension in Indonesia participating in JKN/PROLANIS; at least one PROLANIS component; comparison = usual care/non-PROLANIS or pre-post; outcomes = Δ SBP/ Δ DBP, adherence (MPR/PDC or validated tools), HRQoL (e.g., EQ-5D); secondary process outcomes (coverage, retention, referral, service quality); designs = observational, quasi-experimental, small RCTs (if any), and qualitative/mixed-methods for implementation. Exclusions: non-hypertension focus, diabetes-only outcomes, secondary reviews, conference abstracts without full text, non-article types; languages English/Indonesian.

2.3 Information sources and search strategy

Searches were conducted in Scopus and PubMed with a primary year span 2014–2025 (JKN/PROLANIS implementation era) and an initial scoping without year limits. In Scopus, the initial query TITLE-ABS-KEY (hypertension) AND TITLE-ABS-KEY ("chronic diseases" AND "management" AND "program") yielded 9,992 records (1973–2024); restricting to 2014–2024 produced 616 records; limiting to Article and English yielded 493. A focused query TITLE-ABS-KEY (hypertension) AND TITLE-ABS-KEY ("chronic diseases management program") AND PUBYEAR > 2013 AND PUBYEAR < 2025 AND DOCTYPE = ar AND LANGUAGE = English returned 54 records and was exported in RIS. In PubMed, (hypertension) AND ("Chronic Diseases Management program") produced 2,045 results (1970–2024); filtering Full text; last 10 years yielded 1,424; adding Clinical Trial/Randomized Controlled Trial yielded 85, exported via Reference Manager. Full search strings, dates, and export logs are provided in Appendix A, aligned with PRISMA reporting recommendations [11,12].

2.4 Reference management, de-duplication, and screening

All results were imported into Zotero for curation and de-duplication. The initial dataset comprised 731 Scopus items and 39 PubMed items (total 770); 60 duplicates and 4 retracted articles were removed before screening, leaving 711 records for title/abstract screening. Two independent reviewers screened using shared PICOS criteria; title screening yielded 85 “yes,” then abstract screening yielded 11 “yes” for full-text assessment. All 11 met eligibility and were included in qualitative synthesis; meta-analysis was contingent on data homogeneity. Counts follow the PRISMA 2020 flow [11].

2.5 Data extraction and variables

Two reviewers extracted: study characteristics (authors/year, location, setting), design, population/sample size, implemented PROLANIS components, duration/intensity, clinical outcomes (Δ SBP/ Δ DBP, adherence, HRQoL), process indicators (coverage, retention, referral, service quality), and funding/COI. Disagreements were resolved by discussion or third-reviewer adjudication. Full-text inclusion/exclusion decisions with reasons were logged (Appendix B) per PRISMA/SWiM transparency [11,12].

2.6 Methodological quality and risk of bias

Two reviewers appraised each study using tools by design: JBI for cross-sectional and quasi-experimental, CASP for qualitative, and MMAT 2018 for mixed-methods [12,14–16]. Domains were judged low/unclear/high risk (or tool-specific equivalents) and summarized in the Appraisal Table; judgments informed interpretive weight.

2.7 Synthesis and analysis plan

For quantitative outcomes, a random-effects meta-analysis was planned if homogeneity was adequate (e.g., Δ SBP/ Δ DBP in comparable designs). Otherwise, SWiM procedures—vote-counting by direction of effect and/or harvest plots—were used with transparent reporting [12]. Implementation findings were mapped using RE-AIM to evaluate barriers/enablers, fidelity, and sustainability across FKTP contexts [10].

2.8 Certainty of evidence

Outcome-level certainty was considered using GRADE when feasible, accounting for study limitations, inconsistency, imprecision, indirectness, and publication bias. For qualitative/implementation synthesis, confidence was presented narratively consistent with methodological quality [13].

2.9 Ethics, funding, and conflicts of interest

This review involved no human participants and did not require ethics approval. Funding and COI will be transparently declared. COPE guidance was followed, including double-blind review and plagiarism control consistent with journal policy.

3 Results And Discussion

3.1 Study selection (PRISMA 2020)

Scopus and PubMed searches identified 770 records; after de-duplication and retraction removal, 711 remained for screening. Title screening yielded 85 “yes,” abstract screening produced 11 full-texts; all 11 met inclusion and were synthesized qualitatively. Meta-analysis was not conducted due to heterogeneity in designs, indicators, and effect reporting [6,7,24,8,17–23].

3.2 Study characteristics

The 11 studies include observational, quasi-experimental, and qualitative designs across diverse primary-care contexts (public PHCs, private PHCs, community). Populations were PROLANIS participants with hypertension, sometimes with comorbidities or focusing on access, quality, and experience [6,20,23]. Recurrent PROLANIS components were counseling/education, physical activity, blood pressure and metabolic monitoring, home visit/recall, and medicine information services [7,18,21]. Variation by setting was observed in intensity, professional roles—especially pharmacists—and depth of process documentation [7,19]. Geographic sites included Bandung, Pandeglang, Bantul, Sleman, Belitung, Mojokerto, Makassar, and multisite contexts. One study used health economic modeling to assess antihypertensive cost-effectiveness scenarios [7].

3.3 Methodological quality and risk of bias

JBICASP/MMAT appraisals indicated overall moderate quality with recurring limitations: unclear inclusion criteria, potential selection bias in observational designs, and limited confounder reporting [19,23]. Quasi-experimental studies often lacked baseline equivalence and contamination control, lowering causal certainty [18,24]. Qualitative work had strong thematic depth but sometimes limited reflexivity/triangulation [17].

3.4 Synthesis of effectiveness

Overall, evidence favored PROLANIS in improving BP control and adherence when structured counseling and regular follow-up were emphasized [18,24]. Pharmacist-led counseling was associated with higher adherence and lower SBP than usual care, though effect ranges and uncertainty varied [24]. Physical activity programs for older adults showed meaningful SBP/DBP reductions but limited generalizability due to small samples and lifestyle confounding [18]. HRQoL tended to be better among hypertensive PROLANIS participants but differences were not always significant [21]. A retrospective cohort found stable BP with fluctuating labs (lipids, eGFR), warranting cautious interpretation regarding intervention duration/intensity [8]. Given heterogeneity, we used structured narrative synthesis and vote-counting by direction of effect.

3.5 Implementation synthesis (RE-AIM)

Reach: coverage and retention were major issues in resource-limited or geographically constrained facilities [20]. Effectiveness: combined pharmacist counseling + regular monitoring + structured physical activity aligned with better BP and adherence [18,24]. Adoption: leadership support and inter-professional readiness shaped uptake of non-clinic components [6,23]. Implementation: schedule consistency, medicine/equipment availability, and documentation quality affected SOP fidelity [23]. Maintenance: operational financing, workload, and integration into routine procedures influenced sustainability [19].

3.6 Additional analyses

Qualitative sensitivity analyses suggest facility type (public vs private), pharmacist involvement, and area characteristics (urban/rural) likely moderate outcomes [6,7,23]. Studies with more granular process reporting—e.g., counseling frequency, staff-to-patient ratios, reminder systems—tend to show more consistent improvements in adherence and BP [18,24]. Lack of standardized indicators and component reporting limits cross-study quantification; policy recommendations therefore stress standardized process indicators and fidelity reporting going forward.

3.7. Discussion

Findings indicate PROLANIS is associated with improved BP control and adherence when implemented with high fidelity and good documentation. Benefits are most consistent where pharmacist-led counselling, regular monitoring, and scheduled physical activity are delivered within orderly workflows [7,18,23]. Context moderates impact: rural access/affordability of antihypertensives influences continuity, and process bottlenecks (waiting times, short consultations, inconsistent monitoring) weaken retention [6,20,23]. We propose minimum process indicators—proportion receiving structured counselling per cycle, adherence to BP monitoring schedules, and quarterly retention—integrated into light performance-based payment to realign workflows and documentation without undue burden [6,7,19]. Simple digitalization (visit reminders, risk flags, MPR/PDC calculators) can strengthen SOP adherence at low cost [23]. Overall certainty is moderate, limited by observational/quasi-experimental predominance and indicator heterogeneity [19,21]. Future work should use stronger comparative designs (controlled before–after or stepped-wedge), standard indicators (Δ SBP/ Δ DBP, MPR/PDC, EQ-5D-5L, RE-AIM domains), and economic evaluations with local parameters [8,22,24].

4 Conclusion

PROLANIS can enhance hypertension control in Indonesian primary care when core components—structured counselling, regular monitoring, physical activity—are delivered with fidelity and proper documentation. Facility context, medicine availability, and workflow quality strongly moderate benefits; thus, strengthening process quality and integrating program tasks into daily practice are essential. Linking minimum process indicators to performance-based financing may improve implementation consistency and sustainability at FKTP level.

References

1. Kemenkes.RI. Laporan Riskesdas 2018 Nasional.pdf. Lembaga Penerbit Balitbangkes. 2018. p. 674.
2. Survey kesehatan indonesia (Ski). Survei Kesehatan Indonesia 2023 (SKI). Kemenkes. 2023;235.
3. BPJS. Panduan Praktis PROLANIS (Program Pengelolaan Penyakit Kronis). Jakarta: BPJS Kesehatan; 2014.
4. BPJS B. Peraturan BPJS No 2 Tahun 2019 Pelaksanaan Skrining Riwayat Kesehatan Dan Pelayanan Penapisan Atau Skrining Kesehatan Tertentu Serta Peningkatan Kesehatan Bagi Peserta Penderita Penyakit Kronis Dalam Program Jaminan Kesehatan. 2019;
5. Kementerian Kesehatan. Panduan Layanan Peserta Jaminan Kesehatan Nasional Kartu Indonesia Sehat (JKN-KIS). Jaminan Kesehat Nas [Internet]. 2022;3:1–111. Available from: <https://www.bpjs-kesehatan.go.id/bpjs/dmdocuments/4bd28c6ea8f022040f6eb93cfd6e723.pdf>
6. Sinuraya RK, Abdulah R, Diantini A, Suwantika AA. Satisfaction level of patients, physicians, and private primary health-care center managers with chronic disease management program in Indonesia. *Asian J Pharm Clin Res* [Internet]. 2017;10(Special Issue may):131–5. Available from: <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85025701751&doi=10.22159%2Fajpcr.2017.v10s2.20414&partnerID=40&md5=7539db6b1465380f59a933b90e4ca744>
7. Halimah E, Suwantika AA. Measurement of the quality of life of prolanis hypertension patients in sixteen primary healthcare centers in Pandeglang District, Banten Province, Indonesia, using EQ-5D-5L instrument. *Patient Prefer Adherence* [Internet]. 2020;14:1103–9. Available from: <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85087554113&doi=10.2147%2FPPA.S249085&partnerID=40&md5=7212fe21a603e0392f2d68befba84d7a>
8. Alkaff FF, Sukmajaya WP, Intan RE, Salamah S. Effectivity of Indonesia chronic disease management program (Prolanis) to control hypertension and its comorbidities at primary health care. *Open Access Maced J Med Sci* [Internet]. 2020;8:224–7. Available from: <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85090388780&doi=10.3889%2Foamjms.2020.4583&partnerID=40&md5=40a3f352cad3e3663af9adbee4ff878c>
9. Glasgow RE, Vogt TM, Boles SM. Evaluating the public health impact of health promotion interventions: The RE-AIM framework. *Am J Public Health*. 1999;89(9):1322–7.
10. Glasgow RE, Harden SM, Gaglio B, Rabin B, Smith ML, Porter GC, et al. RE-AIM planning and evaluation framework: Adapting to new science and practice with a 20-

- year review. *Front Public Heal*. 2019;7(MAR).
11. Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *Bmj*. 2021;372.
 12. Campbell M, McKenzie JE, Sowden A, Katikireddi SV, Brennan SE, Ellis S, et al. Synthesis without meta-analysis (SWiM) in systematic reviews: Reporting guideline. *BMJ*. 2020;368:1–6.
 13. Schünemann H, Brożek J, Guyatt G, Oxman A. *GRADE Handbook*. 2013;2019(October 9, 2019):1–56. Available from: <https://gdt.gradepro.org/app/handbook/handbook.html>
 14. Checklist CQ. CASP Checklist for Qualitative Research. Crit Apprais Ski Program [Internet]. 2018;1–6. Available from: www.casp-uk.net
 15. Hong QN, Pluye P, Fàbregues S, Bartlett G, Boardman F, Cargo M, et al. Mixed Methods Appraisal Tool (MMAT) Version 2018. Appraisal Tool (MMAT), version 2018. Registration of Copyright (#1148552), Canadian Intellectual Property Office, Industry Canada. User Guid [Internet]. 2018;User Guid.:1–10. Available from: http://mixedmethodsappraisaltoolpublic.pbworks.com/w/file/attach/127916259/MMAT_2018_criteria-manual_2018-08-01_ENG.pdf
 16. JBI. Checklist for Systematic Reviews and Research Syntheses. Joanna Briggs Inst [Internet]. 2017; Available from: <http://joannabriggs.org/research/critical-appraisal-tools.html>
 17. Aunguroch Y, Gunawan J, Polsook R, Anurung S, Phongphibool S, Nazliansyah N. Barriers and Challenges in Managing Hypertension in Belitung, Indonesia: A Qualitative Study. *Nurse Media J Nurs* [Internet]. 2021;11(3):305–17. Available from: <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85123289800&doi=10.14710%2Fnmjn.v11i3.42135&partnerID=40&md5=caa8c53ef04bd6a39d95487e71753570>
 18. Armawati A, Eha S. Effectiveness of prolanis gymnastics on decreasing blood pressure in patients with stage one hypertension, indonesia. *Indian J Forensic Med Toxicol* [Internet]. 2018;12(3):297–302. Available from: <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85052125969&doi=10.5958%2F0973-9130.2018.00176.7&partnerID=40&md5=5236101ba4c8dd8af4ffb9abefdc1956>
 19. Misnaniarti M, Budi IS, Ainy A. Effectiveness of chronic disease management program in improving the quality of life under national health insurance. *Int J Recent Technol Eng* [Internet]. 2019;8(2 Special Issue 9):245–50. Available from: <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85074431815&doi=10.35940%2Fijrte.B1054.0982S919&partnerID=40&md5=377e7f6644ac99a814404dfb39e876a2>
 20. Rahmawati R, Bajorek B. Potential use of a “blood pressure action sheet” for indonesian patients with hypertension living in rural villages: A qualitative study. *Integr Blood Press Control*. 2018;11:93–103.
 21. Sholihat NK, Ratna Utami VVF. Health-related quality of life among patients undergoing chronic disease management: A cross-sectional study. *J Appl Pharm Sci* [Internet]. 2020;10(3):75–9. Available from: <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85082865820&doi=10.7324%2FJAPS.2020.103009&partnerID=40&md5=90ed1eff7559f60e1e348d1fdff48ef7>
 22. Sholikatin WZ, Wahyuni ED, Rachmawati PD. Hypertension patients’ adherence in

- chronic disease care program at public health center. *Int J Psychosoc Rehabil* [Internet]. 2020;24(2):4132–9. Available from: <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85081014822&doi=10.37200%2FIJPR%2FV24I2%2FPR200735&partnerID=40&md5=ccc263a1bb298daa2084697d8a104f89>
23. Soleman SR, Firda A, Sulistiyanto T, Nabila R. Health Services Quality Between Hypertension and Diabetes Mellitus Patients in Community Health Services in the Sleman District, Yogyakarta, Indonesia. *Malaysian J Public Heal Med*. 2020;20(2):141–8.
 24. Yusransyah, Halimah E, Suwantika AA. Optimal scenario of antihypertension's cost-effectiveness in Prolanis hypertension patients: A case study of Pandeglang District, Indonesia. *Pharm Educ*. 2022;22(2):85–91.