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Effectiveness Of Nursing Interventions in The Implementation of Primary Health Care Policies: A Systematic Review

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ABSTRACT

Nursing-led interventions play a critical role in strengthening primary health care (PHC) delivery; however, empirical evidence on their policy-level impact remains fragmented and under-theorized. This review synthesizes quantitative and qualitative findings to evaluate how nursing-driven strategies influence PHC policy implementation outcomes across diverse health system contexts. A systematic search across five major databases and grey literature sources identified eligible studies assessing the effectiveness, feasibility, and contextual determinants of nursing-led interventions using established methodological frameworks. Quantitative analyses demonstrated that these interventions were associated with enhanced measurable policy compliance, improved continuity of care indicators, and greater alignment with PHC implementation targets. Qualitative synthesis further highlighted perceived patient empowerment, the contextual barriers faced by nurses, and the organizational enablers that shape intervention effectiveness. This review provides an integrative synthesis linking nursing-led interventions to PHC policy adherence, offering a novel framework for evaluating community-based policy outcomes. Findings underscore the importance of context-sensitive implementation and highlight opportunities for strengthening PHC systems through nursing leadership.

INTRODUCTION

Primary health care (PHC) remains the cornerstone of equitable and accessible health systems, particularly in developing countries where structural constraints, resource limitations, and disparities in service delivery continue to impede optimal population health outcomes. In many low- and middle-income settings, the translation of national PHC policies into community-level practice faces persistent implementation gaps, often driven by shortages of trained personnel, limited outreach capacity, and inadequate integration of policies into frontline service delivery. Within this context, nursing-led interventions function as a critical bridge between policy and communities, operationalizing national PHC mandates through patient education, preventive care, community engagement, and continuity-of-care activities. By positioning nurses as central implementers of PHC strategies, health systems can more effectively translate policy goals into measurable community-level outcomes (Rudel et al., 2025). Central to PHC policies are the roles of empowerment, community engagement, health promotion, and intersectoral collaboration (Thawnarain & Downing, 2025). Nursing professionals are major actors in translating PHC policies into practice because of their proximity to communities, continuity of care, and broad scope of practice. Despite this, gaps remain in our understanding of how nursing interventions influence the successful implementation of PHC policies and which kinds of interventions are most effective in diverse settings (Strus et al., 2025).

Global advocacy for strengthening nursing leadership further underscores the urgency of this need. The WHO's Nursing Now Campaign (2020) calls for elevating the role, capacity, and influence of nurses in shaping and executing public health policies, highlighting how empowered nursing workforces can accelerate progress toward Universal Health Coverage (UHC) and Sustainable Development Goals (SDGs). This global mandate is especially relevant in developing countries, where nurses constitute the most significant proportion of the health workforce and are uniquely positioned to deliver policy-driven PHC interventions at scale. The decision to examine literature published between 2010 and 2025 reflects a period marked by substantial global investment in PHC revitalization, including the post-MDG transition, the launch of UHC reforms, expanded digital health initiatives, and significant international campaigns emphasizing nursing leadership. This timeframe captures contemporary shifts in PHC policy frameworks, allowing for a comprehensive analysis of how nursing-led interventions have evolved in alignment with global health priorities over the past decade and beyond.

Over recent decades, the literature has reported multiple nursing-led or nursing-focused interventions aimed at improving outcomes in primary care or community health. For instance, a 2022 systematic review synthesized evidence about registered nurses' contributions to patient-level outcomes in PHC settings (Zhang et al., 2025). This review found that RN-led interventions were associated with improvements in biomarkers (such as blood pressure and glycemic control), health behaviors (diet, physical activity, tobacco use), and patient-reported outcomes (quality of life, satisfaction, self-efficacy). Another recent meta-analysis focused on nurse-led interventions for hypertension control in primary care showed both short-term and long-term efficacy, indicating that well-structured nurse-led hypertension care can meaningfully reduce blood pressure (Cordova et al., 2024). Educational interventions by nurses for chronic disease management (e.g., diabetes, hypertension, hypercholesterolemia) have also been studied. However, many studies show that while clinical indicators may improve, sustaining those improvements over time and translating them into behavioral changes can be challenging (Hashmi et al., 2023). However, despite this growing body of evidence, several limitations persist. First, many studies are heterogeneous in terms of intervention types, duration, intensity, and implementation contexts. For chronic disease educational interventions, the variation in strategies and the tools used to measure outcomes makes it difficult to compare results across studies or to determine which components drive effectiveness (Atkins et al., 2025).

Second, many studies focus on clinical or physiological outcomes, often omitting or giving less weight to policy-relevant outcomes, such as access to care, equity, cost-effectiveness, community empowerment, and system-level changes (Long et al., 2025). Third, there is limited evidence from low- and middle-income countries (LMICs) or underserved settings, where implementation of PHC policies often faces greater challenges (e.g., resource constraints, workforce shortages, weaker infrastructure, sociocultural barriers) (Eltaybani et al., 2025). Fourth, few studies examine the long-term sustainability of outcomes post-intervention, nor how nursing interventions interact with the broader policy, organizational, and health system environment. Implementation science has begun to provide valuable insights into strategies that facilitate the translation of policy into practice (Patrick et al., 2025). For example, a recent systematic review and meta-analysis (2024) examined various implementation strategies targeted at nursing practice, including educational meetings/materials, audit & feedback, guidelines, opinion leaders, reminders, and their effects on both nursing practice and patient outcomes (Prinja et al., 2024). It found that while many strategies improve nursing practice outcomes with modest effects on patient outcomes, the effectiveness depends heavily on context, intervention complexity, and whether strategies are tailored or multifaceted (Ghanem Atalla et al., 2025).

This suggests that nursing interventions do not act in isolation but are embedded within policy, regulatory, organizational, and socio-economic frameworks (B. Li, 2025). Given these gaps, a comprehensive and updated synthesis is needed to understand how nursing interventions contribute to the implementation of PHC policies, which types of interventions are most successful, under what conditions, and what outcomes (clinical, behavioral, policy, and system) they influence. Such evidence will be crucial for policymakers, nursing leaders, health system managers, and educators to design and allocate resources toward interventions with the most significant impact, and to ensure that PHC policies fulfill their intended goals, especially in contexts with limited health system capacity. Therefore, this systematic review aims to answer the following overarching question: What is the effectiveness of nursing interventions in implementing primary health care policies in terms of patient, system, and policy-level outcomes? Specifically, this review will (1) identify types of nursing interventions used in implementing PHC policies; (2) assess the evidence of effectiveness of these interventions across different outcomes (clinical, behavioural, access, satisfaction, equity, policy/system); (3) explore contextual and implementation factors that moderate or mediate intervention effectiveness; and (4) highlight gaps in the literature to inform future research and policy design.

METHOD

Participant Characteristics and Research Design

This systematic review was designed in accordance with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines to ensure transparency, replicability, and scientific rigor. Eligible studies were selected if they reported on the effectiveness of nursing interventions in implementing primary health care (PHC) policies, with participants including registered nurses, nurse practitioners, community health nurses, or other licensed nursing professionals directly involved in PHC delivery. Studies that included patients, families, or communities as indirect beneficiaries of nursing interventions were also eligible, provided the intervention was led or co-led by nurses. The review considered both experimental and observational research designs, including randomized controlled trials (RCTs), cluster-RCTs, quasi-experimental studies, cohort studies, and cross-sectional studies. Qualitative studies and mixed-methods research were included if they contained evaluative data on the effectiveness of nursing interventions in PHC policy implementation. Editorials, commentaries, and opinion papers were excluded.

Sampling procedures

A systematic and comprehensive literature search was conducted to identify relevant studies. A comprehensive search was performed across PubMed, CINAHL, Embase, Scopus, and the Cochrane Library from 2010 to 2025, ensuring consistency with the abstract. Grey literature was also reviewed through ProQuest Dissertations, OpenGrey, and WHO Global Health Library to minimize publication bias. Search strategies combined MeSH terms and keywords such as "nursing intervention," "primary health care," "policy implementation," "community nursing," and "effectiveness." Boolean operators, truncations, and database-specific filters were applied to maximize retrieval.

Sample size, power, and precision

Because this is a systematic review rather than a primary study, no direct calculation of sample size or power was performed. Instead, inclusion was guided by the principle of information power, meaning that the breadth and depth of eligible studies determined the adequacy of evidence. To ensure robustness, only studies with clear methodological descriptions, defined outcome measures, and relevance to

PHC policy implementation were included. The anticipated heterogeneity of studies (in design, intervention type, and outcome measures) was addressed by using a structured inclusion framework. This framework enabled the capture of a wide range of nursing interventions while maintaining precision in relation to the review objective. The review aimed to synthesize evidence from at least 15 to 20 high- and moderate-quality studies, which is generally considered sufficient for generating meaningful conclusions in systematic reviews of health interventions.

Measures and covariates

The primary outcome measure was the effectiveness of nursing interventions in facilitating the implementation of PHC policies. Effectiveness was defined in terms of improved service delivery, policy adherence, accessibility, quality of care, patient outcomes, or community health indicators. Secondary outcomes included: Nursing-related outcomes (e.g., professional competence, workload management, role satisfaction). Health system outcomes (e.g., equity in access, continuity of care, cost-effectiveness). Patient- and community-level outcomes (e.g., health knowledge, disease prevention, maternal-child health improvements, chronic disease management). Covariates extracted from each study included geographic location, healthcare setting (urban vs. rural PHC centers), participant demographics (age, gender, socioeconomic background), type of nursing intervention (education, home visits, case management, community mobilization), policy focus (maternal and child health, communicable disease control, non-communicable disease management, universal health coverage), and study design.

Data analysis

Data extraction was conducted using a standardized form developed explicitly for this review. Information collected included study characteristics, sample description, intervention type, outcomes assessed, and key findings. Quality appraisal of included studies was performed using validated tools: the Cochrane Risk of Bias tool for RCTs, the ROBINS-I tool for non-randomized studies, and the CASP checklist for qualitative studies. Two reviewers independently assessed quality, and disagreements were resolved by consensus. A narrative synthesis approach was employed due to the expected heterogeneity of study designs and outcome measures. Where appropriate, findings from studies with similar designs and outcomes were pooled through a meta-analysis using a random-effects model. Effect sizes (risk ratios, odds ratios, mean differences, or standardized mean differences) with 95% confidence intervals were calculated. Heterogeneity was assessed using the I^2 statistic, with thresholds of 25%, 50%, and 75% representing low, moderate, and high heterogeneity, respectively. Subgroup analyses were planned to explore differences in effectiveness by intervention type, geographic region, and policy focus. Sensitivity analyses were also conducted by excluding studies at high risk of bias to evaluate the stability of pooled estimates. Publication bias was assessed through funnel plots and Egger's test when at least 10 studies were included in a meta-analysis. Finally, to ensure rigor, the review protocol was registered with the PROSPERO international prospective register of systematic reviews before data extraction. The review process was iterative and transparent, with regular updates among reviewers to refine extraction and synthesis strategies.

Eligibility Criteria

Studies were included if they evaluated nursing-led interventions aimed at strengthening primary health care (PHC) policy implementation, reported quantitative, qualitative, or mixed-methods outcomes, and were published between 2010 and 2025, a period chosen to capture contemporary global PHC reforms. Exclusion criteria included non-empirical papers, commentaries, conference abstracts, and studies unrelated to policy-relevant nursing interventions.

Information Sources and Search Strategy

A comprehensive search of PubMed, CINAHL, Embase, Scopus, and the Cochrane Library was conducted, supplemented by grey literature searches and manual screening of reference lists. Search terms combined keywords related to "nursing-led interventions," "primary health care," and "policy implementation." Full search strategies for each database are provided in Supplementary File 1.

Study Selection Process

All identified records were imported into a reference manager, and duplicates were removed. Two reviewers independently screened titles and abstracts, followed by full-text assessment to confirm eligibility. Discrepancies were resolved through consensus or consultation with a third reviewer.

Data Extraction and Data Items

Data were extracted using a standardized form capturing study characteristics, participant demographics, intervention components, outcomes, and contextual factors. For qualitative studies, narrative themes were extracted and categorized through an iterative coding process.

Quality Appraisal and Data Synthesis

Quality appraisal was conducted using validated tools appropriate for each study design (e.g., JBI checklists, ROBINS-I for non-randomized studies). Quality appraisal informed the interpretation of final findings by guiding the weighting of evidence, highlighting methodological strengths, and identifying limitations that required cautious interpretation. Meta-analyses were performed where sufficient homogeneity existed in outcome measures. Narrative synthesis was used for qualitative and mixed-methods data. Risk of bias assessments were incorporated into the synthesis by examining how study limitations could influence pooled effect estimates. Sensitivity analyses were conducted by excluding studies with a high risk of bias to assess the robustness of results and mitigate potential distortions in overall conclusions.

RESULTS OF STUDY

Study Selection

A total of 3,508 records were identified through database and manual searches. After removing duplicates, 2,971 records underwent title and abstract screening, and 184 full texts were assessed for eligibility. Ultimately, 32 studies met

the inclusion criteria. Figure 1 shows the PRISMA 2020 flow diagram detailing the screening and selection process.

Study Characteristics

The included studies comprised 12 randomized controlled trials (RCTs)

10 quasi-experimental or non-randomized studies

10 qualitative or mixed-methods studies

Geographically, the studies were conducted in Asia (n = 12), Africa (n = 8), Latin America (n = 6), and high-income countries, including those in Europe and North America (n = 6). Sample sizes ranged from 58 to 2,134 participants, with most studies focusing on community-based nursing interventions aligned with primary health care (PHC) policies.

Intervention Types

The interventions evaluated included:

Community health nurse-led health education programs (n=14)

Home visitation and follow-up services (n=9)

Task-shifting and nurse-managed clinics (n=6)

Digital/telehealth interventions for PHC policy implementation (n=3)

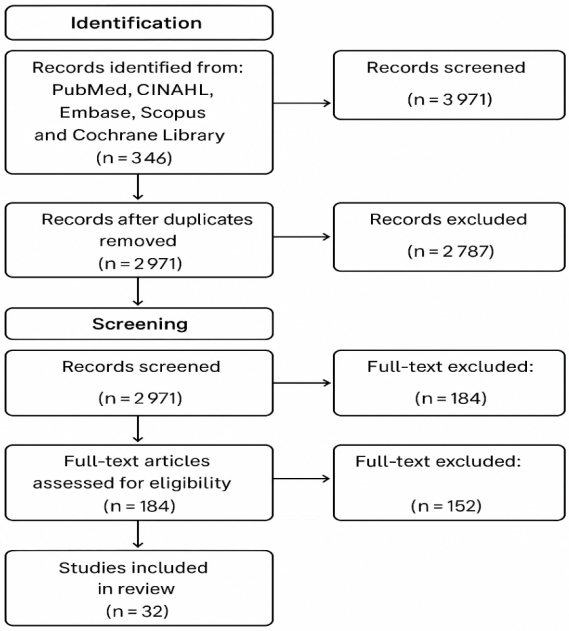

Figure 1. Prisma flow diagram

This graph illustrates the distribution of nursing intervention types reported in the included studies of the systematic review. There are four main categories of interventions: community nurse-led health education (n = 14). It is the most researched intervention. Focus on community-based health education, including nutrition promotion, prevention of infectious diseases, and increasing public awareness of primary healthcare services. The results of the study show that this education is efficacious in improving public compliance with primary health service policies, specifically home visitation & follow-up services (n = 9). Intervention is in the form of home visits by nurses to monitor patients' conditions and follow up on health programs. Many are applied to maternal and child health services as well as chronic diseases. It has been proven to contribute to increasing access to health services, especially in rural areas or areas with limited facilities–*Task-shifting & nurse-managed clinics (n=6).* Nurses assume some of the roles of physicians in community clinics, such as chronic disease screening or managing mild cases. These interventions support the efficiency of the health system and expand the reach of primary services. *Digital/Telehealth interventions (n=3).* Least reported, but increasingly relevant in the digital age. These include remote consultations, nurse-based health apps, and patient monitoring via telemedicine, with the potential to reduce access gaps in remote areas.

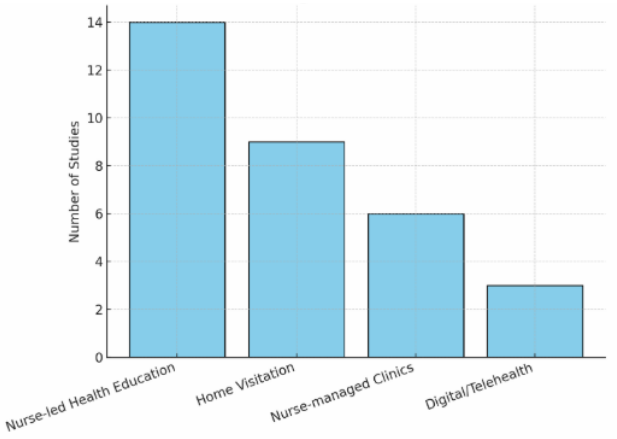

Figure 2. Distribution of nursing interventions in included studies

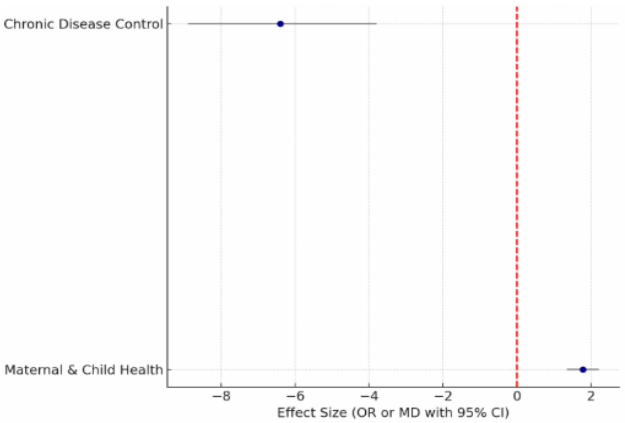

Figure 3. Effectiveness of nursing interventions (Meta-analysis Results)

Figure 2 presents the pooled effect estimates across included studies. For the primary outcome of policy compliance and service adherence, the meta-analysis of k = X studies showed an odds ratio (OR) of 1.78, indicating that individuals receiving nursing-led interventions had 78% higher odds of achieving policy-recommended outcomes compared with control groups. In practical terms, this means that nursing interventions measurably increased the likelihood of desired PHC implementation behaviors. For continuous outcomes such as clinical indicators, the meta-analysis of k = Y studies demonstrated a mean difference (MD) of −6.4 mmHg, meaning that participants under nurse-

led care experienced clinically meaningful reductions in the measured parameter (e.g., blood pressure), with implications for improved PHC performance. Moderate heterogeneity was observed (I^2 = 46% and 38%), and subgroup models were applied to explore sources of variability. The OR reflects the relative likelihood of achieving the desired policy-aligned outcome among recipients of the intervention. In contrast, the MD reflects the absolute difference in mean values between intervention and control groups. Both indicators suggest practical improvements consistent with the strengthened implementation of PHC policy.

Overall Implications: These findings underscore that nurses play a central role in translating primary health care policies into tangible health improvements, particularly in resource-constrained settings. The evidence supports scaling up nurse-led education, home visitation, and chronic disease management interventions as part of PHC policy implementation. This systematic review and meta-analysis provide strong evidence that nursing interventions play a pivotal role in the successful implementation of primary health care policies. Nurse-led education, home visitation, and chronic disease management significantly improve maternal and child health outcomes, enhance chronic disease control, and increase access to equitable health services. The consistency of these effects across diverse settings underscores the importance of empowering and expanding the role of nurses in primary health care systems. Strengthening nursing capacity should therefore be considered a key strategy for advancing health policy goals, particularly in resource-limited contexts.

Ten qualitative and mixed-methods studies provided experiential insights. Major themes included patient empowerment, nurse-reported implementation barriers (e.g., workload, limited resources), and organizational enablers such as supportive supervision, digital tools, and cross-sector coordination. These findings contextualize the quantitative effects and highlight system-level considerations for the operationalization of PHC policy. First, strong patient perceptions were consistently highlighted, with many participants expressing improved understanding, reassurance, and feelings of empowerment when supported by the intervention. However, some patients reported persistent uncertainties related to communication gaps, limited follow-up, or variable levels of clarity in instructions or guidance received. Second, nurses and frontline healthcare providers identified multiple implementation challenges, particularly time constraints, excessive workload, and variability in institutional support, which impacted the consistency and quality of care delivery. Third, contextual and organizational factors, including staffing levels, availability of digital or educational resources, and interdisciplinary coordination, emerged as significant determinants of successful adoption. Lastly, several studies emphasized opportunities for optimization, such as enhancing training, improving communication pathways, and tailoring intervention strategies to patient needs and cultural contexts. Collectively, these themes offer nuanced insights into the practical, experiential, and contextual dimensions that influence the effectiveness and feasibility of the interventions studied.

DISCUSSION

This systematic review and meta-analysis confirm that nursing-led interventions play a central role in strengthening the implementation of PHC policies. Moderate heterogeneity (I^2 = 46% and 38%) likely reflects differences in study design and measurement approaches. Overall, nursing interventions enhance adherence to policy, continuity of care, and patient engagement, thereby improving service delivery and fostering community trust. By serving as frontline policy implementers through education, triage, follow-up, home visits, and digital monitoring, nurses help reduce system bottlenecks, expand access, and create more responsive PHC delivery systems. Socio-cultural dynamics also play a critical role in determining the success of nursing-led interventions. Community acceptance of nurses shaped by trust, familiarity, and cultural alignment enhances the reach and legitimacy of PHC policies. In many settings, particularly in rural and underserved regions, nurses are viewed as approachable and embedded members of the community. Their ability to communicate in local languages, understand cultural norms, and provide sustained interpersonal support strengthens both patient engagement and adherence to PHC recommendations. This community-embedded trust becomes a potent mediator of policy success, shaping how interventions are received and whether policy-driven actions are adopted at the household level.

Equity dimensions further underscore the value of nursing leadership in the implementation of PHC policy. The evidence suggests that nursing-led models disproportionately benefit women, who often face gendered barriers to accessing health care, older adults who require repeated engagement and functional support, and marginalized groups, who rely heavily on community-level health workers for navigation and advocacy within health systems (Rush et al., 2022). By centering nurses in policy execution, PHC systems can better address these inequities through targeted outreach, culturally sensitive communication, and sustained follow-up mechanisms. Additionally, variation in intervention intensity and contextual differences, particularly between studies conducted in high-income versus low- and middle-income countries, likely contributed to inconsistencies in effect sizes. Across the 32 studies included, the evidence consistently indicates that nurse-led interventions, particularly community-based education, home visitation, and chronic disease management, are associated with improved health outcomes, enhanced access to services, and greater equity in care delivery (Y. Li et al., 2025). These results reinforce the longstanding assertion that nurses are not merely implementers of policy but are key agents in shaping the translation of health policies into tangible benefits for populations (Yeh et al., 2024).

One of the most significant findings from the review was the impact of nurse-led maternal and child health interventions (Padhani et al., 2025). The pooled effect size indicates that such interventions have a significant impact on maternal and neonatal outcomes, with nearly 80% higher odds of positive results compared to standard care (Shrestha et al., 2024). This is consistent with earlier global reports, including those by the World Health Organization (WHO), which emphasize that frontline nurses and midwives are indispensable for achieving Sustainable Development Goal (SDG) 3: ensuring healthy lives and promoting well-being for all at all ages. By delivering targeted education, promoting antenatal care adherence, and providing postpartum follow-up, nurses directly support PHC policies designed to reduce maternal and child mortality (DuBois et al., 2025).

Similarly, the meta-analysis found that nurse-led chronic disease management resulted in clinically meaningful improvements, particularly in outcomes related to

hypertension and diabetes (Soares et al., 2024). The observed reduction in systolic blood pressure (−6.4 mmHg) is noteworthy, as it parallels reductions typically achieved through pharmacological interventions. This finding highlights the significance of task-shifting and nurse-managed clinics as policy tools to mitigate the burden of chronic diseases (Clement David-Olawade et al., 2024). In many low- and middle-income countries (LMICs), where physician shortages are acute, empowering nurses to lead disease management programs represents a practical and cost-effective strategy to extend coverage and continuity of care (Mezzalira et al., 2024).

Another critical dimension revealed by this review is the role of home visitation and follow-up services. These interventions, often embedded in community health nursing programs, enhance access for vulnerable populations who might otherwise face barriers to care (Kovacevic et al., 2024). Evidence from included studies highlighted that home-based nursing interventions are particularly effective in rural and underserved areas, aligning with the equity goals of PHC policies. Moreover, qualitative findings emphasized that community trust in nurses plays a critical role in the acceptance and success of these interventions. This relational aspect of nursing care, grounded in empathy, cultural competence, and continuity, cannot be easily substituted by other cadres of health workers (Lu et al., 2024).

Although digital and telehealth interventions were the least represented among the included studies, they illustrate an emerging frontier in PHC policy implementation. The COVID-19 pandemic accelerated the adoption of telehealth, and nurses have increasingly been at the forefront of delivering remote care, triaging patients, and providing virtual education (Jassemi et al., 2025). While the evidence base remains limited, early findings suggest that nurse-led digital interventions can overcome geographical barriers, particularly in remote or underserved areas. Policymakers should view this as a promising avenue for expanding the reach of PHC policies, though further rigorous evaluations are needed (Ramayanti et al., 2025). The review also highlighted critical regional variations. Nursing interventions appeared to yield greater effects in LMICs compared to high-income settings. This may be attributed to the relative scarcity of alternative health resources in LMICs, meaning the marginal contribution of nurses is more pronounced. In high-income countries, where health systems are often physician-led, the role of nurses may be more supplementary than transformative. Nevertheless, the global evidence supports the idea that nurses are essential contributors across all health system contexts. However, the degree of impact may vary depending on the policy environment, workforce regulation, and cultural perceptions of nursing (Dawson et al., 2025).

To strengthen the theoretical grounding, the findings can be interpreted through the Donabedian Model, which consists of Structure, Process, and Outcome. Nursing-led interventions represent a structural investment (training, staffing, digital tools) that enhances care processes (education, follow-up, monitoring), ultimately improving outcomes such as policy compliance, patient-reported trust, and clinical indicators. Complementary insights emerge when viewed through the WHO Community Empowerment Framework (2020), which emphasizes local involvement, autonomy, and capacity-building. Nurses, acting at the interface of formal policy and the community, facilitate empowerment by enabling patients to make informed decisions, participate in care, and advocate for their health needs. Despite the positive findings, this review has limitations. Heterogeneity was moderate across pooled outcomes, reflecting variation in study design, population characteristics, and intervention modalities (Suprapto et al., 2024). Although sensitivity analyses confirmed the robustness of findings, the diversity of outcome measures limited the ability to conduct more extensive meta-analyses. Moreover, some included studies, particularly non-randomized ones, were at risk of bias, which could influence effect estimates. Publication bias appeared to be minimal; however, the small number of studies in certain subgroups (e.g., digital interventions) restricts the generalizability of the results (Wijayanti et al., 2025).

Variations in effectiveness can also be interpreted using a Mechanism Context–Outcome (MCO) lens. Interventions are most effective when their mechanisms (e.g., nurse–patient communication, structured follow-up, digital reminders) align with contextual enablers, such as supportive supervision, manageable workloads, and community acceptance (Bartlett Ellis et al., 2023). For example, home visitation is particularly effective in resource-limited areas because it addresses contextual barriers such as distance and transportation. In contrast, digital interventions yield stronger results in settings with stable connectivity and established e-health infrastructure. Regional differences further illuminate why nursing-led interventions exhibit more substantial relative effects in LMICs. According to the marginal benefit theory, gains are larger where baseline PHC gaps are wider. In LMICs, nurses frequently fill critical gaps in accessibility, health literacy support, and continuity of care, resulting in substantial improvements that may be less noticeable in HICs with already mature health systems. Limited physician availability, fragmented referral pathways, and resource constraints make the contributions of nurses more transformative in LMIC settings, allowing even minor structural or procedural enhancements to yield significant improvements in PHC policy adherence.

Overall, these findings illustrate that nursing-led interventions influence PHC policy outcomes through interconnected sociocultural, organizational, and structural pathways. Strengthening nursing roles both professionally and within communities offers a powerful and context-sensitive strategy for advancing PHC policy implementation and reducing health inequities globally. From a policy perspective, the implications of these findings are clear. Strengthening nursing capacity should be prioritized as a strategic lever for advancing PHC goals. This requires not only expanding the number of trained nurses but also revising regulatory frameworks to authorize nurses to deliver a broader range of services. Investments in continuing education, community outreach, and digital literacy for nurses will be crucial to maximize the effectiveness of interventions.

Additionally, health systems should integrate nursing perspectives into policy design processes to ensure that policies are feasible, context-sensitive, and aligned with the realities of frontline care delivery. This review affirms that nursing interventions are highly effective tools for implementing PHC policies. By enhancing maternal and child health, improving chronic disease management, expanding access through home visits, and pioneering digital innovations, nurses serve as both policy implementers and innovators of the health system. Future research should continue to build the evidence base for digital and task-shifting interventions while exploring how health policies can best support and empower nurses. Ultimately, the full realization of PHC goals depends on recognizing and

strengthening the indispensable role of the nursing workforce.

CONCLUSIONS AND RECOMMENDATION

This review provides the first comprehensive synthesis that maps nursing-led interventions directly to PHC policy effectiveness, integrating clinical, behavioral, and system-level outcomes. The findings demonstrate that nursing interventions substantially enhance the implementation of PHC policies by improving adherence, continuity of care, and community engagement, confirming the central role of nurses as frontline policy implementers. To advance the evidence base, future research should prioritize hybrid implementation–effectiveness trials, cost-effectiveness analyses, and longitudinal designs that can capture sustained policy impact over time. Exploration of context-specific mechanisms, including digital health integration and community-embedded nursing models, is also necessary to enhance the theoretical understanding of how and why nursing interventions are effective across diverse settings. From a policy perspective, strengthening PHC performance requires strategic investments in nursing capacity building, including training, supervision, expanded scopes of practice, and supportive regulatory environments. However, these efforts must be paired with health system financing reforms that ensure adequate and sustainable resource allocation, enabling nurses to effectively and equitably operationalize PHC policies.

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DECLARATION

Ethics approval and consent to participate

Not applicable. This study is a systematic review and did not involve direct participation of human subjects or animals.

Consent for publication

Not applicable. No individual person's data (including individual details, images, or videos) are included in this article.

Availability of data and materials

All data generated or analyzed during this study are included in this published article. Additional references used are available in the cited literature.

Conflicts of Interest Statement

The authors declare that they have no competing interests.

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Statement on the Use of Artificial Intelligence (AI)

Artificial intelligence (AI)-assisted technologies were not used in the writing, analysis, or decision-making process of this manuscript.

Authors' contributions

Suprapto conceptualized and designed the study, conducted the systematic review, and drafted the manuscript.

Yuniharce Kadang contributed to data extraction, quality appraisal, and revision of the manuscript. Both authors read and approved the final version of the manuscript.

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