



# Implementation science frameworks for evaluating primary health care interventions in low- and middle-income countries: a scoping review

## Marcos científicos de implementación para evaluar las intervenciones de atención primaria de salud en países de ingresos bajos y medios: una revisión exploratoria

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**Isabel Cristina Jaimes-Montaña**  <https://orcid.org/0000-0003-0882-4226>  
Grupo de Investigación Promoción de la Salud y Prevención de la Enfermedad,  
Universidad de Caldas, Manizales, Caldas, Colombia  
[isabel.jaimes@ucaldas.edu.co](mailto:isabel.jaimes@ucaldas.edu.co)

**Consuelo Vélez-Álvarez**  <https://orcid.org/0000-0001-7274-7304>  
Universidad de Caldas, Manizales, Caldas, Colombia  
[consuelo.velez@ucaldas.edu.co](mailto:consuelo.velez@ucaldas.edu.co)

**María Cecilia González-Robledo**  <https://orcid.org/0000-0002-4987-3684>  
Instituto Nacional de Salud Pública Cuernavaca, Morelos, México  
[cecilia.gonzalez@insp.mx](mailto:cecilia.gonzalez@insp.mx)

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### Abstract

Primary Health Care (PHC) is understood and operationalized in multiple ways, and this variability complicates how implementation is assessed in low- and middle-income countries (LMICs). We conducted a scoping review to map how PHC-oriented interventions in LMICs have been evaluated using the Reach, Effectiveness, Adoption, Implementation, and Maintenance (RE-AIM) framework and other implementation science approaches. Eighteen eligible articles were included. The interventions covered prevention, early detection, and management of chronic communicable and non-communicable conditions, in addition to maternal, child, and mental health. Most studies reflected selective PHC models, and Africa contributed the largest share of publications. RE-AIM was explicitly applied in seven studies; the remaining articles used other implementation science frameworks, most often within mixed-method designs. Overall, findings aligned with the stated study designs and generally followed appropriate reporting practices. This review offers a pragmatic map of how implementation science frameworks are being used to evaluate PHC interventions across LMIC setting.

## Key Words

Primary Care, Primary Health Care, Evaluation, Implementation Science, Implementation Research.

## Resumen

La Atención Primaria de Salud (APS) se entiende y se operacionaliza de múltiples maneras, y esta variabilidad complica la evaluación de la implementación en los países de ingresos bajos y medianos (PBMIs). Se realizó una revisión de alcance con el objetivo de mapear cómo las intervenciones orientadas a la APS en PBMIs han sido evaluadas utilizando el marco RE-AIM (Alcance, Efectividad, Adopción, Implementación y Mantenimiento) y otros enfoques de la ciencia de la implementación. Se incluyeron dieciocho artículos elegibles. Las intervenciones abarcaron la prevención, la detección temprana y el manejo de enfermedades crónicas transmisibles y no transmisibles, así como la salud materna, infantil y mental. La mayoría de los estudios reflejaron modelos selectivos de APS, y África aportó la mayor proporción de publicaciones. El marco RE-AIM fue aplicado explícitamente en siete estudios; los artículos restantes utilizaron otros marcos de ciencia de la implementación, con mayor frecuencia dentro de diseños de métodos mixtos. En general, los hallazgos fueron coherentes con los diseños de estudio declarados y siguieron, en términos generales, prácticas adecuadas de reporte. Esta revisión ofrece un mapa pragmático de cómo los marcos de la ciencia de la implementación están siendo utilizados para evaluar intervenciones de APS en contextos de PBMIs.

## Palabras clave

Atención Primaria, Atención Primaria de la Salud, Evaluación, Ciencia de la Implementación, Investigación en Implementación.

## I. INTRODUCTION

The achievement of Universal Health Coverage (UHC) remains a central objective of the 2030 Agenda for Sustainable Development (1). There is broad international agreement that progress toward this goal depends largely on the organization and delivery of health services through a Primary Health Care (PHC) approach (2). In this regard, the Declaration of Astana emphasizes that effective PHC implementation requires adequate and sustainable financing, well-trained multidisciplinary health teams working under decent conditions, and the provision of comprehensive and integrated care capable of addressing the fragmentation and segmentation commonly observed in insurance-based health systems (3).

Over time, PHC has been conceptualized in multiple ways. It has been described as a model of care, a specific level of service delivery (often the first level or low-complexity care), and a broader approach to health policy and system organization. As a result, its implementation has varied substantially across settings (4). In the literature, terms such as Primary Care, Primary Health Care, Selective Primary Care, and Comprehensive Primary Care are frequently used, often with different underlying meanings. In some contexts, PHC is understood primarily as the first point of contact with the health system, providing basic and low-complexity services and acting as a gateway to further care (Primary Care or Primary Health Care) (5). In other cases, PHC is framed as a selective strategy focused on a limited package of services targeting specific population groups, particularly for the prevention and management of infectious diseases, chronic non-communicable conditions, maternal and child health, and other vulnerable populations (Selective Primary Care). Alternatively, more comprehensive conceptions emphasize PHC as an approach oriented toward health equity, social participation, and intersectoral action (Comprehensive Primary Care) (6). These structural and contextual differences not only influence how PHC-based interventions are implemented in low- and middle-income countries (LMICs), but also complicate their systematic evaluation in real-world settings.

Importantly, prevailing PHC models tend to reflect the broader characteristics of the health systems in which they are developed and applied (4). Evidence consistently shows that universal health systems outperform segmented models in terms of quality, efficiency, and equity. This advantage is closely linked to the organization of comprehensive and integrated PHC, appropriate financing mechanisms, and the predominance of publicly provided services under effective state regulation to ensure universal access (3).

By contrast, countries with health systems characterized by segmented insurance schemes, particularly in LMICs, face persistent challenges in implementing PHC. These difficulties are often associated with limited recognition of health as a fundamental human right (3,7). In several South American countries, health system reforms formally introduced PHC-based models grounded in comprehensive primary care principles. However, their implementation has largely depended on existing social protection arrangements. As a consequence, PHC provision has mirrored the segmentation of social protection, relying on selective and targeted insurance schemes, increased participation of private insurers, and the exclusion of certain population groups from effective access to health services (7). Across the region, countries with less successful PHC implementation and poorer health outcomes tend to share common features, including fragmented health systems, weak political commitment to equity, the persistence of hospital-centered curative models, and limited community participation (8).

Implementation science has made important contributions to the design, implementation, and evaluation of evidence-based interventions, services, and programs in both clinical and community contexts. Its application has been particularly valuable for assessing PHC-based interventions, as it allows for the examination of how such initiatives function under real-world conditions, thereby strengthening the relevance and effectiveness of health care delivery (9).

Several well-documented examples illustrate the application of implementation research to PHC-based mental health programs in LMICs. These include initiatives such as the Programme for Improving Mental Healthcare (PRIME) (10), the Emerging Mental Health Systems in LMICs (EMERALD) project (11), and the ImpleMentAll program, which focuses on tailored implementation strategies for eHealth interventions (12). These initiatives have reported substantial progress in countries such as Ethiopia, Uganda, South Africa, India, and Kosovo.

In South Africa, implementation research has also been instrumental in addressing low coverage of antiretroviral therapy among people living with HIV. The HIV-STRETCH (Streamlining Tasks and Roles to Expand Treatment and Care for HIV) strategy was designed to expand access to treatment by redistributing tasks related to antiretroviral initiation and follow-up (13). Evaluated through a pragmatic randomized trial, this intervention demonstrated that training nurses to initiate and manage antiretroviral therapy increased coverage of care, ultimately supporting its scale-up as a national policy.

Among the frameworks commonly used in implementation research, the Reach, Effectiveness, Adoption, Implementation, and Maintenance (RE-AIM) framework has been widely applied for the planning and evaluation of interventions across diverse health domains (14). Its use has been documented in areas such as physical activity promotion in LMICs (15), public health policy, chronic disease self-management, and nursing practice (16). In 2015, RE-AIM was identified as a best-practice framework for evaluating public health interventions by integrating both implementation processes and outcomes. Its adaptability has been demonstrated through more than two decades of application across different populations, settings, and health-related behaviors (17). From an evaluative perspective, extending RE-AIM to incorporate dimensions such as representativeness, maintenance, and organizational-level factors allows for a more comprehensive assessment that goes beyond effectiveness alone (18).

In LMICs, implementation research using frameworks such as RE-AIM has proven particularly useful for understanding the functioning and sustainability of interventions within pragmatic health system contexts. Nonetheless, important barriers remain, especially those related to data availability. Unlike high-income countries with robust and interoperable health information systems, data in LMICs are often limited, fragmented, and not easily accessible for evaluation purposes (19).

Despite these advances, significant research gaps persist in the evaluation of intervention implementation, particularly within PHC-based care models (20). Accordingly, the aim of this review is to analyze the scientific evidence on the evaluation of PHC implementation in LMICs.

## II. METHODS

A scoping review was conducted using the 6-step methodological framework proposed by Arksey and O'Malley (21) and the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) extension tailored

for this type of review (PRISMA-ScR) (22). Completed studies were assessed using the Standards for Reporting Implementation Studies (StaRI) checklist (23). The StaRI checklist was applied for descriptive purposes only, to identify the extent to which reporting standards for implementation studies were addressed in the included articles. No scoring system or comparative assessment between studies was performed, in line with the objectives of a scoping review.

### ***Stage 1: identifying the research question***

The focus of this review was to analyze the scientific evidence regarding the implementation evaluation of PHC interventions or programs in LMICs. Therefore, the following research questions guided the literature search:

- 1) What is the PHC model in which the intervention/program is framed, and what is the structure of the health system in the country where it is implemented?
- 2) What methodologies and implementation science designs are applied in the included studies?
- 3) What is the effectiveness of the implemented PHC-based interventions, and what are the reporting standards of completed studies?
- 4) What are the facilitators and challenges of implementing PHC interventions/programs?

### ***Stage 2: identifying relevant studies***

#### ***Eligibility criteria***

Evaluative research and implementation protocols of PHC-based interventions, including implementation research, process evaluation, hybrid implementation, and effectiveness studies, were encompassed in the review. The inclusion criteria comprised quantitative, qualitative, and Mixed-methods study approaches published in peer-reviewed scientific journals between January 1, 2011, and February 28, 2023. The studies were required to be conducted in LMICs and presented in English and/or Spanish language. Exclusion criteria involved economic evaluations, letters to the editor, review articles, publications in non-peer-reviewed journals, articles in languages other than English or Spanish, and those outside the established period.

The selection of the time frame since 2011 took into account the implementation of the Renewed PHC in 2008 (5) for which progress was made in its implementation.

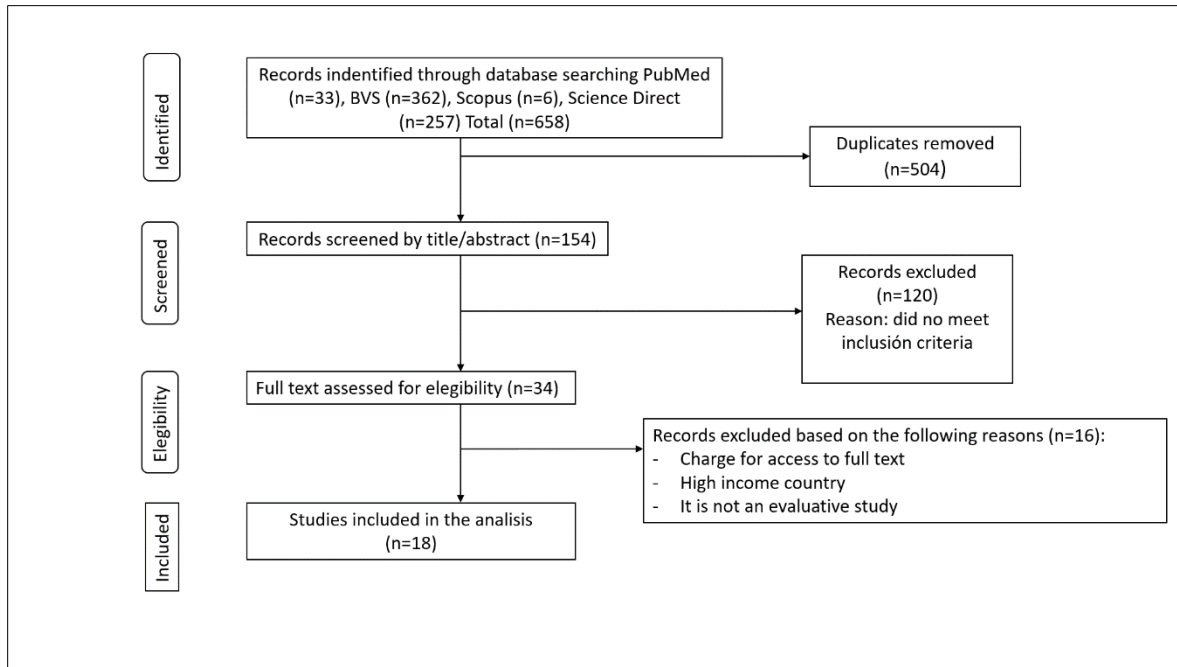
Various types of PHC interventions with a focus on health promotion and disease prevention were analyzed. This encompassed community health programs and interventions, those operating at the first level of care, attention to specific diseases or populations, as well as interventions related to e-health.

#### ***Information sources and search***

The database search was conducted in March 2023. Four databases were consulted: PubMed, Scopus, ScienceDirect and Virtual Health Library. The search equations employed keywords such as "primary care," "primary care health," and "primary care practice." Boolean operators (AND, OR) and specific descriptors including "RE-AIM framework," "implementation research," "evaluating implementation," "evaluation frameworks," "community level," "hospital setting," and "low-middle income countries" were used to refine the search.

### ***Stage 3: study selection***

After full-text screening, reviewers compared their eligibility decisions and discussed discrepancies until consensus was reached. This process resulted in 18 studies being included in the final synthesis. Study selection is summarized using the PRISMA flow diagram (Figure 1).



**Figure 1.** Documents selection flowchart.

**Stage 4: charting data**

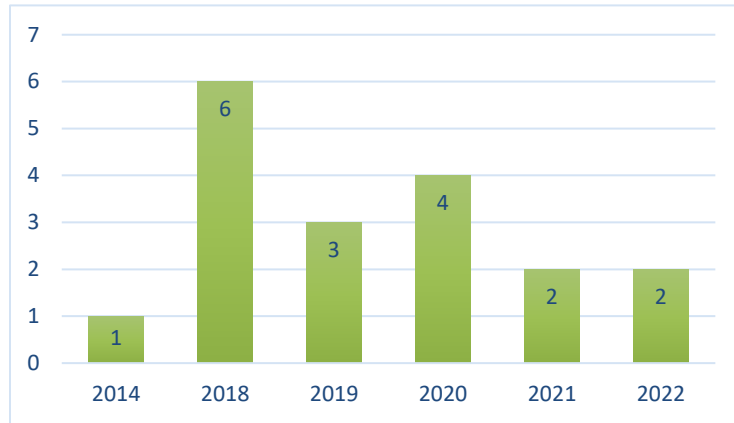
Records were compiled in Microsoft Excel and de-duplicated. Three public health reviewers with PHC research experience independently screened titles and abstracts. Citations judged potentially eligible were then retrieved and assessed in full text against the predefined inclusion criteria.

**Stage 5: collating, summarizing, and reporting the results**

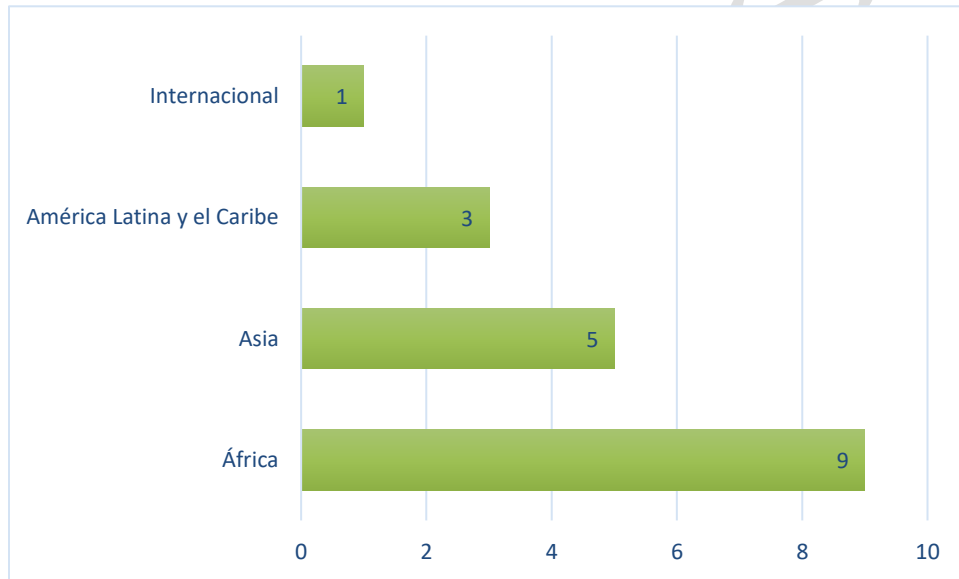
Extracted data were synthesized using an inductive thematic approach, allowing themes and categories to emerge directly from the review questions. Results are presented as a narrative summary supported by structured tables (24).

**III. RESULTS**

Included studies were published between 2014 (earliest identified) and 2023 (26-43), with a visible rise in output around 2018 (Figure 2). Most studies were conducted in African settings (Figure 3). Countries were classified using World Bank income categories (25); analyses focused on low-, lower-middle-, and upper-middle-income groups. Table 1 summarizes the distribution of study countries by income level.



**Figure 2.** Number of studies per year of publication. Source: authors.



**Figure 3.** Number of studies per world region. Source: authors.

**Table 1.** Income classification of the countries of the studies.

<b>Country, Region</b>	<b>Group according to income</b>
Ethiopia, Africa	Low
South Africa, Southern Africa	Upper-middle
Ghana, Africa	Lower-middle
Togo, Africa	Low
Nigeria, Africa	Low
Malawi, Africa	Low
Tanzania, Africa	Lower-middle
Burkina Faso, Africa	Low
Ruanda, Africa	Low
Colombia, América Latina y el Caribe	Upper-middle
Argentina, América Latina y el Caribe	Upper-middle

Guatemala, América Latina y el Caribe	Lower-middle
Jordania, Asia	Upper-middle
Filipinas, Asia	Lower-middle
Pakistan, Asia	Lower-middle
India, Asia	Lower-middle

**Descriptions of the Studies**

The included literature evaluated PHC implementation across multiple domains. Most studies centered on prevention, early detection, and long-term management of chronic conditions, alongside maternal and child health. Additional topics included HPV/cervical cancer prevention, digital and mobile health initiatives, mental health services, tuberculosis, HIV care, and eye health programs. Of the 18 included papers, 11 explicitly used implementation science designs or analytic approaches.

Study protocols are summarized by objectives in Tables 2-3, whereas outcomes from completed evaluations are reported in Tables 4-5. Across both protocols and completed studies, seven articles described an explicit application of the RE-AIM framework (Table 3).

**Table 2.** Science implementation study protocols (26-29).

Last name first author/year	Country	Study type	Evaluation	Intervention	PHC model	Aim	Target population of the intervention
Eaton/ 2021 (26)	Nigeria	Mixed study	Process evaluation  Theoretical framework based on Medical Research Council's Guidelines on Process Evaluation.	mental health Gap Action Programme (mhGAP)  Mental Health Scale Up Nigeria (mhSUN)	Selective	Determine the extent to which the intervention was carried out according to the plans developed (fidelity), to examine the effect of postulated moderating factors and local context, and the perception of the program by primary care staff and implementers.	Cohort of patients comprising a sample of patients with each of the 3 major diagnoses of epilepsy, psychosis and depression
Agarwal/2019 (27)	Philippines	Cluster randomized controlled trial	Three-phase mixed methods study	Adapt the Community Health Assessment Program (CHAP) to Philippine context (CHAP-P) and evaluate the effect on glycated	Primary Care	To adapt the CHAP model to a Philippine context and evaluate the effect of CHAP-P on glycated hemoglobin (HbA1c) compared to a random sample	Individuals ≥40 years of age

				hemoglobin (HbA1c) compared to a random sample of community residents in control communities.		of community residents in control communities.	
Sudfel/2019 (28)	Tanzania	Proof-of-concept cluster-randomized controlled trial	Study participants will be assessed at midline (9 months of follow-up) and endline (18 months of follow-up) for primary and secondary outcomes.	Supply-side community health worker (CHW) delivered child health, nutrition, and responsive stimulation intervention alone and in combination with a demand-side conditional cash transfer (CCT)	Selective	Provide evidence on the effect of CHWs and conditional cash transfers on child growth and development. The results of the trial may be generalizable to similar settings in sub-Saharan Africa.	Women/caregivers and their infants
Ridde/ 2014 (29)	Burkina Faso	Longitudinal multiple case study design	Process evaluation	performance-based financing (PBF) to improve the delivery of healthcare services.	Selective	Study will enable researchers and decision makers to gain a better understanding of the factors that can influence the implementation and the sustainability of complex interventions aiming to increase healthcare quality as well as equity.	Maternal and child healthcare services

**Table 3.** Study protocols using RE-AIM framework.

Last name first author/year	Country	Study type	Evaluation	Intervention	PCH model	Aim	Target population of the intervention
Yifter/2021(37)	Ethiopia	Type-3 hybrid implementation-effectiveness study with 4 phases  Consolidated Framework for Implementation Research	Implementation monitoring and evaluation phase using RE-AIM	HEARTS technical package of essential non-communicable disease (PEN)	Primary Care	Design, implement and evaluate an evidence-based intervention guided by the HEARTS technical package and implementation guide to address barriers and facilitators of integrating early detection and management of hypertension, diabetes mellitus and cardiovascular diseases in primary healthcare settings	Patients $\geq 40$ years of age
Petersen/2021(38)	South Africa	Onsite, iterative observational implementation science design.	In both stages, population-level effects are assessed by using the RE-AIM and the Consolidated Framework for Implementation Research (CFIR) with mixed-methods data collection  With four phases of intervention scale-up established by Barker et al	Program for Improving Mental Health Care (PRIME) in South Africa (PRIME-SA)  promote the scale-up of an evidence-based task-sharing collaborative care model, the Mental Health Integration (MhINT) program	Primary Care	Refine intervention components and implementation strategies to enable scale-up of the MhINT model for depression in South Africa	People with comorbid depression and chronic disease
Paniagua/2020 (39)	Guatemala	Hybrid type 2 effectiveness implementation,	Implementation evaluation	Hypertensive Control multicomponent program	Primary Health Care	To test if a multilevel and multicomponent	Men and women $\geq 40$ years with

		cluster randomized controlled trial	context-enhanced RE-AIM/Practical Robust Implementation and Sustainability Model (PRISM) framework	The program components are protocol-based hypertension treatment using a standardized algorithm; team-based collaborative care; health provider education; health coaching sessions; home blood pressure monitoring; blood pressure audit; and feedback		intervention program improves hypertension control among Guatemalan hypertensive patients over an 18-month period compared to usual care. 2. To evaluate the acceptability, adoption, feasibility, fidelity, adaptation, reach, and sustainability of implementing the intervention in the primary care setting.	uncontrolled hypertension
Lauria/2019 (40)	Togo	Pragmatic type II hybrid effectiveness implementation	Summative mixed-methods evaluation using a modified REAIM	the Integrated Community-Based Health Systems Strengthening (ICBHSS) initiative	Selective	To evaluate the effect and implementation strategy of the ICBHSS initiative over 48 months in the catchment areas of 21 public sector health facilities.	Children under five, women of reproductive age and HIV patients

**Table 4.** Completed implementation science studies.

Last name first author/year	Country	Study type	Evaluation	Intervention	PHC model	Results	Target population of the intervention	StaRI Checklist
Lall/ 2020 (30)	India	Experimental case study design	Implementation evaluation  Qualitative methods  2 theories: the Consolidated	Package of tailored interventions to reorganize care: a redesign of the workflow at primary care	Primary Health Care	Only one of the primary health centers implemented all components of the intervention	General adult population	Complete

			Framework for Implementation Research (CFIR) and the Model for Understanding Success in Quality (MUSIQ)	clinics, a redistribution of tasks, the introduction of patient information records and the involvement of community health workers in the follow-up of patients		by the end of 9 months  Prevailing hierarchical relationships in primary care teams in India are a major barrier to team-based care and redistribution of clinical, organizational and managerial tasks at PHC level.		
Puchalski/2020 (31)	Malawi	Pragmatic cluster randomized controlled trial with mixed methods study	Process evaluation	Outpatient TB care by lay health workers	Selective	No significant effect of the intervention on TB treatment outcomes with high variability in implementation quality, highlighting important challenges to both scale-up and sustainability.  Demonstrated the feasibility and acceptability of the intervention and implementation strategy employed.	Patients con TB y HIV	Complete
Garcia/2020 (32)	Colombia	Quantitative cross-	Evaluation of implementation	Integrated Management of Childhood	Selective	Implementation remains incomplete	Children under 5	Not evaluable

		sectional study	n-related factors	Illnesses (IMCI)  165 consultations carried out by nurses, general practitioners, and pediatricians		because it does not present the basic minimums for the adequate IMCI's implementation in the country  Poor adherence by trained professionals in this strategy  Low rates of integrated care management, reflecting the lack of monitoring of the strategy in strict control by the regulatory agencies.  The fracture of the system is evidenced in the achievement of integrated care in the second level of care and rural areas		
Yip/2018 (33)	Ruanda	Mixed methods study	Process evaluation framework using the Medical Research Council process evaluation framework	Primary Eye Care Programme (PEC)	Primary Care	Surveyed 574 attendees at the 50 PEC clinics, 49.3% (95%CI = 45.1–53.5%) reported high levels of	Attendees	Complete

						<p>satisfaction with the service.</p> <p>Has trained 2707 nurses and integration into the nursing curriculum will likely provide a sustainable workforce though further consideration to the structure and processes of the ophthalmic clinical officer supervision is required</p>		
Morgan/2018 (34)	India	Qualitative study	Process evaluation	<p>AMANAT (Hindi for ‘emergency obstetric and neonatal readiness’)</p> <p>mobile nurse mentoring program</p> <p>implementation of simulation-enhanced mentorship in primary care facilities</p>	Selective	<p>Barriers: human resource shortages, nurse-nurse hierarchy, distance between labor and training rooms, cultural norms, and low skill level and resistance to change among mentees.</p> <p>Violence against providers posed barriers to</p>	Women and newborns	Not applicable to this type of study

						<p>care provision alone.</p> <p>Facilitators: Improved skills and confidence among providers, inclusion of doctors in training, increased training frequency, establishment of strong mentor-mentee relationships, administrative support, and nursing supervision and feedback.</p>		
Khan/2018 (35)	Pakistan	Mixed-methods study	Process evaluation	The integrated hypertension care intervention, with both treatment and lifestyle modification components	Primary Care	<p>Intervention at private clinics effective in reducing the mean systolic blood pressure (&lt;140 mmHg).</p> <p>The delivery of integrated hypertension care, as per programme protocols, is feasible for private clinic staff and patients in poor urban settings.</p>	Hypertension patients	Complete
Labonté/2014 (36)	International Project	Analysis of a set of	Revitalizing Health for All international	Unable to establish	Comprehensive	Evidence of comprehensiveness was	Unable to establish	Not applicable

	15 countries	process evaluations to explore the strengths and weaknesses of comprehensive primary health care initiatives at their local or national levels.	research program			found in many of the cases.		to this type of study
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**Table 5.** Completed studies using RE-AIM framework.

Last name first author/ year	Country	Study type	Evaluation	Intervention	PCH model	Results	Target population of the intervention	StaRI Checklist
Arrossi /2022 (41)	Argentina	Hybrid type I cluster randomized effectiveness implementation trial	A mixed-methods approach involving quantitative and qualitative evaluations of the implementation using RE-AIM framework	The ATICA study (Application of Information and Communication Technologies to HPV Self-collection) an mHealth multi-component intervention	Primary Health Care	Was effective in increasing the % of HPV-positive women who had triage Pap, allowing for many more women at risk of cervical cancer to receive timely follow-up	Women $\geq 30$ years of age	Complete
Ansbro /2021(42)	Jordania	Mixed-methods study	Retrospective mixed methods study with RE-AIM	Médecins sans Frontières (MSF)	Selective	The programme was largely acceptable to patients, staff and stakeholders, achieving good clinical	Syrian refugees	Complete

						<p>outcomes, but for a limited number of patients and at relatively high cost. Acceptable</p> <p>Blood pressure and glycaemic control improved as the programme matured and by 6.6 mmHg and 1.12 mmol/l respectively within 6 months of patient enrolment.</p>		
Kikuchi/2021 (43)	Ghana	<p>A cluster-randomized controlled trial based on an effectiveness-implementation hybrid design</p> <p>Mixed-methods study</p>	<p>Implementation evaluation with RE-AIM</p> <p>conducted baseline and end line questionnaire surveys for women who gave birth and lived in the study site.</p> <p>The key informant interviews of health workers and intervention monitoring were conducted at the health facilities in</p>	The Ghana Ensure Mothers and Babies Regular Access to Care (EMBRACE) unique intervention program	Selective	<p>the EMBRACE intervention program was considered effective</p> <p>The completion rate of the continuum of care increased from 7.5% to 47.1%.</p> <p>Newborns who had danger signs immediately after birth decreased after the intervention (relative risk = 0.82, 95% confidence interval = 0.68-0.99)</p>	<p>Women and newborns</p> <p>1480 and 1490 women participated in the baseline and end line questionnaire survey, respectively</p>	Complete

			the intervention area.			(effectiveness)		
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***PHC Model of the intervention/program to be evaluated and the relationship with the health system***

Across the interventions analyzed, the selective primary care model was the most frequently adopted approach. This model prioritizes a defined package of services with a strong potential impact on health outcomes, often guided by considerations of cost-effectiveness or the targeting of highly vulnerable populations (4). Interventions aligned with this model included maternal and child health programs that incorporated Community Health Workers (CHWs) and Conditional Cash Transfers (CCTs) in Tanzania (28), Performance-Based Financing (PBF) initiatives in Burkina Faso (29), the Integrated Management of Childhood Illness (IMCI) strategy in Colombia (32), the AMANAT initiative in India (34), the ICBHSS program in Togo (40), and the EMBRACE project in Ghana (43). Additional applications of this model addressed tuberculosis and HIV care in Malawi (31), the health needs of highly vulnerable populations such as refugees in Jordan through Médecins Sans Frontières programs (42), and mental health interventions implemented under the mhGAP framework (26). Overall, the selective primary care model emerged as the predominant form of PHC among the interventions reviewed.

The predominance of selective primary care can be partly explained by the organizational characteristics of health systems in many LMICs. These systems frequently operate through insurance-based arrangements rather than universal coverage and tend to emphasize biomedical and curative services. As noted by Stange et al. (44), such configurations limit intersectoral collaboration and constrain the development of more comprehensive PHC approaches. In this context, the widespread reliance on selective primary care models appears to reflect structural constraints within existing health system designs, underscoring the need for broader and more inclusive PHC strategies.

This dynamic is illustrated by the study conducted by García Sierra et al. (32), which documents access barriers and fragmentation within the Colombian health system as key factors contributing to the incomplete implementation of the IMCI strategy. The authors describe marked disparities between rural and urban settings, as well as differences across levels of care, highlighting the challenges generated by weak coordination among clinical, institutional, and community components of the system.

Finally, across the reviewed programs and interventions, explicit and effective integration with sectors beyond health was rarely reported. Instead, most studies described the involvement of interprofessional or multidisciplinary teams composed primarily of health-related professionals and technical staff (30).

***Applied implementation science frameworks and designs***

Most evaluations included in the reviewed studies employed mixed-methods designs, which offer advantages over single-method approaches by allowing a more comprehensive understanding of implementation processes and outcomes. The diversity of methods used, together with the explicit application of implementation science frameworks, was a recurrent feature across studies. In particular, two studies applied the Consolidated Framework for Implementation Research (CFIR) (30,37), a framework originally developed in 2009 to examine contextual determinants that influence implementation (45). CFIR facilitates the assessment of both formative and summative outcomes, supporting the identification of factors associated with effective implementation in specific settings. Some studies also demonstrated progress in combining CFIR with complementary approaches, such as quality improvement frameworks. For example, Lall et al. integrated CFIR with the Model for Understanding Success in Quality (MUSIQ) to strengthen their evaluative approach (30).

Six studies explicitly reported conducting process evaluations, two of which applied the Medical Research Council (MRC) process evaluation framework (26,33). Process evaluation was consistently recognized as a key component in the study of complex interventions. The MRC framework places particular emphasis on implementation processes, underlying mechanisms of impact, and contextual influences, while also highlighting the role of theory by making explicit the causal assumptions that underpin an intervention. In addition, it offers a structured approach for defining and addressing core process-related evaluation questions (46).

The RE-AIM framework was used in seven studies, particularly among those adopting hybrid designs that combined implementation and effectiveness evaluations (Table 5). Notably, the evaluation of a hypertension control program in Guatemala applied a modified version of RE-AIM, using the context-enhanced RE-AIM/PRISM framework (39). This adaptation enabled a broader analytical perspective by incorporating additional dimensions related to patients, health care providers, and the health system.

Among the completed evaluations, all 10 studies generally adhered to the Standards for Reporting Implementation Studies (StaRI) checklist, although the depth and clarity of reporting varied. While most studies described the scientific rationale for the interventions evaluated, some provided limited detail regarding prior evidence of effectiveness or the mechanisms through which the intervention was expected to produce its effects. In this respect, the implementation-effectiveness trials (31,35,43) demonstrated comparatively stronger methodological reporting based on the referenced criteria.

***Evaluation results of effectiveness of PHC interventions/programs***

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To assess the effectiveness of interventions targeting chronic noncommunicable diseases, like chronic arterial hypertension, the reviewed studies took into account both clinical indicators, such as a reduction of 6-10 mm Hg or more in mean arterial pressure, and aspects related to follow-up and adherence, including the number of follow-up visits and the description of the patient's experience (35).

The approach to the RE-AIM dimensions with mixed methodologies made it possible to determine that the EMBRACE (mother-child care) program implemented in Ghana (43) was effective in improving the continuum of care of the mother-child binomial. The evaluation considered the perspective of health workers and determined effectiveness based on indicators such as the completion rate of continuum of care and the presence of danger signs in newborns immediately after birth, among other factors.

The effectiveness of the m-health multicomponent intervention, as demonstrated in the ATICA study in Argentina (41), was assessed through various measures. These included the percentage of HPV-positive women in the intervention group undergoing triage 120 days after the HPV result, the percentage undergoing triage 60 days after the HPV result, and data on the care continuum (screening, diagnosis, and treatment) crucial for effective disease prevention. Indicators such as the percentage of HPV-positive women with abnormal triage who had colposcopy and biopsy, as well as the percentage of women with histologically diagnosed who received treatment, were considered.

In this case, the RE-AIM framework not only facilitated the measurement of effectiveness but also allowed for the estimation of other key implementation aspects. These included adoption metrics, such as the percentage of Community Health Workers (CHW) who visited at least one HPV-positive woman after receiving the SMS message; acceptability metrics, such as the percentage of CHWs who agreed with the programmatic incorporation of the mHealth intervention; and qualitative information about programmatic incorporation to assess the maintenance of the intervention. Maintenance is understood as the extent to which the intervention becomes institutionalized or integrated into routine organizational practices and policies.

#### ***Facilitators and challenges in the implementation of PHC interventions/programs***

Across the reviewed studies, several recurring elements were identified as influencing the achievement of program and intervention objectives. These factors acted both as facilitators and as challenges for PHC implementation and were mainly related to the composition of interprofessional and multidisciplinary teams, the dynamics of teamwork, and the level of training in community-oriented practice.

The study by Lall et al. (30) provides a clear example of the potential benefits of interprofessional collaboration. In this intervention, the PHC team included professionals from medicine, nursing, occupational therapy, physiotherapy, psychology, nutrition and dietetics, pharmacy, and social work. This broad team composition was associated with more favorable implementation outcomes, highlighting the relevance of interprofessional approaches in PHC. Such collaborative care models may be particularly advantageous for the management of chronic conditions, including hypertension, diabetes, and depression or anxiety, when compared with single-provider models of care.

Conversely, the study conducted by Puchalski et al. (31) illustrates the challenges that can emerge during program scale-up. In the outpatient tuberculosis care program evaluated, major limitations were linked to the training and education of community health workers. A substantial proportion of community team members did not participate in cascade training activities, which was associated with lower levels of outreach, uptake, and implementation across several intervention sites in Malawi.

Similar challenges were observed in the implementation of a team-based PHC intervention for non-communicable diseases in South India (30). In this context, difficulties in integrating community health workers into patient follow-up activities were reported. Hierarchical dynamics within care teams were identified as a key barrier, negatively affecting collaboration, teamwork, and the redistribution of clinical, organizational, and managerial tasks at the PHC level.

#### ***IV. DISCUSSION***

Recognizing the challenges inherent to implementing PHC strategies in LMICs, this review offers an opportunity to examine how different conceptual approaches and methodological tools from implementation research have been applied in practice. By analyzing how PHC-based interventions are planned, evaluated, and scaled up across diverse contexts, the review provides insights into the complexity of implementing effective health interventions in resource-constrained settings.

Given the heterogeneity of contexts, health conditions, study designs, and methodological approaches, a scoping review methodology was selected. This approach is particularly suitable for synthesizing evidence in emerging or conceptually

diverse fields, as it allows for the systematic identification and mapping of relevant studies through a transparent, rigorous, and reproducible process (47).

Although the scoping nature of the review precluded a formal assessment of study quality and risk of bias, the use of the Standards for Reporting Implementation Studies (StaRI) checklist (23) enabled the identification of good reporting practices among completed implementation studies. Overall, the findings suggest a gradual improvement in methodological rigor within this field. Efforts to standardize reporting contribute to stronger methodological consistency and transparency, thereby reinforcing the development of implementation research as a discipline (48). This trend appears particularly relevant in LMICs, where the number of implementation-focused studies has increased in response to context-specific health system challenges.

A notable characteristic of the studies included in this review was the use of clearly defined methodologies supported by formal guides or study protocols. Progress was observed in the application and refinement of implementation science frameworks. For example, the Consolidated Framework for Implementation Research (CFIR) has evolved with the introduction of the CFIR Outcomes Addendum, which enhances conceptual clarity by distinguishing anticipated and actual outcomes and aligning them with implementation and innovation determinants (49). Such iterative processes of refinement, informed by empirical use and feedback, contribute to the ongoing maturation of theoretical frameworks in implementation science (50).

Similarly, the UK Medical Research Council (MRC) framework for the evaluation of complex interventions has been updated through a structured, multi-stage process. This revision reflects a shift from a narrow focus on effectiveness toward a broader understanding of how interventions produce change and interact with contextual factors (51). These developments highlight the importance of scoping reviews that remain responsive to the evolving nature of implementation science frameworks.

Regarding the RE-AIM framework, this review identified its application in community-based and PHC settings across several completed studies. For example, studies by Arrossi et al. (41) and Ansbro et al. (42) applied RE-AIM in diverse contexts, including mHealth interventions and programs targeting vulnerable populations supported by Médecins Sans Frontières. These studies employed mixed-methods designs and addressed all five RE-AIM dimensions, aligning with findings from a prior review by Kwan et al. (52), which highlighted the framework's utility for both planning and evaluating clinical and community interventions.

In study protocols, RE-AIM was combined with CFIR in two cases (37,38), while another study applied an expanded version of RE-AIM (39). These adaptations reflect the framework's flexibility and underscore the importance of monitoring its use to identify opportunities for further refinement and contextual adaptation.

Across the reviewed literature, several components emerged as critical for successful PHC implementation, including the characteristics of interprofessional community health teams, their modes of operation, and training strategies that support implementation and scale-up. Evidence from high-income settings, such as Canada, shows that interdisciplinary primary care teams have been effectively implemented to address chronic disease management. A scoping review in this area reported consistent collaboration among nursing, medical, and other health professionals, supported by positive relationships between frontline teams and management (53). These findings are largely consistent with those observed in the present review. However, the presence of rigid hierarchies was reported as a barrier to teamwork in some Indian studies (30,34), negatively affecting collaboration and task redistribution.

Moving beyond interprofessional collaboration, intersectoral approaches reflect the principles of comprehensive primary care, which conceptualizes PHC as a set of coordinated actions involving not only the health sector but also other social actors, including communities. This perspective is particularly relevant for public health problems that require responses extending beyond the health system. Evidence from a review by Fiorati et al. (54) supports this view, demonstrating positive community-level outcomes in Latin American interventions that incorporated intersectorality and social participation, informed by the Social Determinants of Health framework and related theoretical constructs.

Another relevant dimension identified in this review, particularly for interventions in maternal and child health, was the use of the Continuum of Care (COC) framework for maternal health care. A review by Kitila et al. (55), especially in African settings, emphasized the importance of more comprehensive documentation of this indicator to better identify gaps between service delivery and postnatal care.

An innovative contribution of this review, compared with previous studies conducted in LMICs, lies in its comprehensive consideration of the full range of PHC conceptualizations. While some reviews focus exclusively on comprehensive PHC within limited timeframes, such as the review by Das et al. in India (56), others analyze PHC attributes over extended historical periods, from the Alma-Ata Declaration to more recent years (57). In contrast, the present review spans the continuum from selective to comprehensive PHC, situating interventions within their broader health system contexts. The

selected timeframe (2008-2022) enabled the inclusion of interventions aligned with renewed PHC principles (58), as reflected in the results.

From a meta-research and evidence-based medicine perspective, this review contributes conceptual and methodological clarity to a field characterized by heterogeneous definitions, inconsistent reporting, and limited theoretical integration (59-65). By mapping how PHC interventions in LMICs are operationalized, evaluated, and justified, the review identifies persistent epistemic gaps, including fragmentation between selective and comprehensive PHC models, underutilization of robust implementation frameworks, and variable alignment between intervention design, theory of change, and contextual determinants (60,63,65). Furthermore, by examining adherence to reporting standards and documenting the evolution of frameworks such as RE-AIM, CFIR, and MRC guidance, this work underscores the need for stronger methodological discipline and clearer pathways linking evidence generation to decision-making. Ultimately, the review advances the meta-research agenda by emphasizing reproducibility, external validity, and contextual transferability in PHC research, positioning implementation science as a critical bridge between global recommendations and the operational realities of health systems in LMICs (60,63,65).

This review also acknowledges several limitations and outlines directions for future research. Despite a comprehensive search strategy, some relevant studies may have been missed. Additionally, the inclusion of study protocols limits the interpretation of findings, as these publications do not report implementation outcomes. Nevertheless, by incorporating both completed studies and protocols, the review provides valuable insights into how PHC-based interventions are conceptually framed and methodologically evaluated, offering a foundation for future research in this area.

## **V. CONCLUSIONS**

The body of scientific evidence on the evaluation of PHC implementation in LMICs shows a gradual but consistent development, with an increasing number of studies addressing different PHC conceptualizations and a wide range of application areas, while taking contextual factors into account. Across the reviewed literature, intervention outcomes were generally aligned with the proposed study designs, and reporting practices were largely adequate. The progressive consolidation of implementation science as a field contributes to narrowing the persistent gap between evidence generation and practical application, particularly in complex and resource-constrained settings. Overall, the findings of this review highlight implementation science as a crucial methodological link connecting research evidence with real-world primary health care practice in LMICs.

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## **VII. DECLARATION OF CONFLICTING INTERESTS**

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## **VIII. AUTHORS' CONTRIBUTIONS**

ICJM: conception, design of the study and writing the manuscript. CVA: critical review of its intellectual content. MCGR: critical review of its intellectual content. All authors read and approved the final manuscript.

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## **REFERENCES**

1. United Nations. The 2030 Agenda and the Sustainable Development Goals: An opportunity for Latin America and the Caribbean [Internet]. Santiago: United Nations publication; 2018. Disponible en: <https://www.un.org/sustainabledevelopment/>
2. DiFabio JL, Pérez Perea L. Salud Universal: para todos en todas partes. *Rev Cuba Salud Pública* [Internet]. 2019;45(2):e1962. Disponible en: <https://revsaludpublica.sld.cu/index.php/spu/article/view/1962/1236>
3. Giovanella L, Magalhaes M, Buss P, Fleury S, Gadelha C, Galvao L, et al. From Alma-Ata to Astana. Primary health care and universal health systems: an inseparable commitment and a fundamental human right. *Cad Saúde Pública* [Internet]. 2019;35(3):e00012219. Disponible en: doi: 10.1590/0102-311X00012219
4. Elorza ME, Moscoso NS, Lago FP. Delimitación conceptual de la atención primaria de salud. *Rev Cuba Salud Pública* [Internet]. 2017;43(3):1–17. Disponible en: [http://scielo.sld.cu/scielo.php?script=sci\\_arttext&pid=S0864-34662017000300011](http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S0864-34662017000300011)
5. Panamerican Health Organization/World Health Organization (PAHO/WHO). Renewing Primary Health Care in the Americas. A Position Paper of the PAHO/WHO [Internet]. Washington DC; 2007. p. 1–48. Disponible en: <https://iris.paho.org/bitstream/handle/10665.2/31083/9275126984-eng.PDF?sequence=1&isAllowed=y>
6. Maeseneer M., Willems M., De Sutter A, Van de Geuchte I, Billings M. Primary health care as a strategy for achieving equitable care: a literature review commissioned by the Health Systems Knowledge Network [Internet]. 2007. p. 1–48. Disponible en: <https://pure.itg.be/files/2202299/2017phca0032.pdf>
7. Giovanella L, de Almeida PF. Comprehensive primary care and segmented health systems in South America. *Cad Saúde Pública* [Internet]. 2017;33(Sup 2):e00118816. Disponible en: 10.1590/0102-311X00118816
8. Acosta Ramírez N, Pollard Ruiz J, Vega Romero R, Labonté R. Comprehensive Primary Health Care in South America: contexts, achievements and policy implications. *Cad Saúde Pública* [Internet]. 2011;27(10):1875–90. Disponible en: <https://doi.org/10.1590/S0102-311X2011001000002>
9. Nilsen P. Making sense of implementation theories, models and frameworks. *Implement Sci* [Internet]. 2015;10(53):1–13. Disponible en: 10.1186/s13012-015-0242-0
10. University of Cape Town. PRIME Programme for Improving Mental Healthcare [Internet]. Disponible en: <http://www.prime.uct.ac.za/prime-home>
11. Centre for Global Mental Health. EMERALD: Emerging mental health systems in low- and middle-income countries [Internet]. Disponible en: <https://www.centreforglobalmentalhealth.org/emerald-emerging-mental-health-systems-in-low-and-middle-income-countries>
12. Centre for Global Mental Health. ImpleMentAll: Towards evidence-based tailored implementation strategies for eHealth. Disponible en: <https://www.centreforglobalmentalhealth.org/implementall-towards-evidence-based-tailored-implementation-strategies-for-ehealth>
13. Fairall L, Bachmann M, Lombard C, Timmerman V, Uebel K, Zwarenstein M, et al. Task shifting of antiretroviral treatment from doctors to primary care nurses in South Africa (STRETCH): a pragmatic, parallel, clusterrandomised trial. *Lancet* [Internet]. 2012;380(9845):889–98. Disponible en: [https://doi.org/10.1016%2FS0140-6736\(12\)60730-2](https://doi.org/10.1016%2FS0140-6736(12)60730-2)
14. Glasgow R, Vogt T, Boles S. Evaluating the public health impact of health promotion interventions: the RE-AIM framework. *Am J Public Heal*. 1999;89:1322–7.
15. Lee R, Galaviz K, Soltero E, Rosales Chavez J, Jauregui E, Lévesque L, et al. Aplicando el marco conceptual RE-AIM para la promoción de la actividad física en países de ingreso bajo y medio. *Rev Latino-Am Enferm* [Internet]. 2017;25:e2923. Disponible en: <https://doi.org/10.1590/1518-8345.1894.2923>
16. Almeida Araujo F, Almeida Brito F. Planificación y evaluación de programas de salud: contribuciones del Modelo RE-AIM a la Enfermería. *Rev Latino-Am Enferm*. 2014;22(4):527–35.
17. Glasgow RE, Harden S, Gaglio B, Rabin B, Lee Smith M, Porter G, et al. RE-AIM Planning and Evaluation Framework: Adapting to New Science and Practice with a 20 year review. *Front Public Heal* [Internet]. 2019;7(64). Disponible en: <https://doi.org/10.3389/fpubh.2019.00064>
18. Glasgow RE, Estabrooks P. Pragmatic Applications of RE-AIM for Health Care Initiatives in Community and Clinical Settings. *Prev Chronic Dis* [Internet]. 2018;15(E02):1–10. Disponible en: <https://doi.org/10.5888/pcd15.170271>.
19. Alonge O, Rodriguez DC, Brandes N, Geng E, Reveiz L, Peters D. How is implementation research applied to advance health in low-income and middle-income countries? *BMJ Glob Heal* [Internet]. 2019;4(2):e001257. Disponible en: <http://dx.doi.org/10.1136/bmjgh-2018-001257>
20. Goodyear-Smith F, Bazemore A, Coffman M, Fortier R, Howe A, Kidd M, et al. Research gaps in the organisation of primary healthcare in low-income and middle-income countries and ways to address them: a mixed-methods approach. *BMJ Glob Heal* [Internet]. 2019;4:e001482. Disponible en: doi:10.1136/%0Abmjgh-2019-001482
21. Arksey H, O'Malley L. Scoping studies: towards a methodological framework. *J Soc Res Methodol* [Internet]. 2005;8(1):19–32. Disponible en: <https://doi.org/10.1080/1364557032000119616>
22. Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. *Ann Intern Med* [Internet]. 2018;169(7):467–73. Disponible en: doi: 10.7326/M18-0850

23. Pinnock H, Barwick M, Carpenter C, Grandes G, Meissner P, Elizabeth M, et al. Standards for Reporting Implementation Studies (StaRI) Statement. *BMJ* [Internet]. 2017;365:i6795. Disponible en: <https://doi.org/10.1136/bmj.i6795>
24. Fereday J, Muir-Cochrane E. Demonstrating Rigor Using Thematic Analysis: A Hybrid Approach of Inductive and Deductive Coding and Theme Development. *Int J Qual Methods* [Internet]. 2006;5(1):80–92. Disponible en: <https://doi.org/10.1177/160940690600500107>
25. World Bank. Open Data from Income classification of the countries [Internet]. 2022. Disponible en: <https://datos.bancomundial.org/?locations=XT-XN-XM>
26. Eaton J, Akande Y, Onukogu U, Nwefoh E, Lateef T, Essien E, et al. Protocol for process evaluation of integration of mental health into primary healthcare in two states in Nigeria: the mhSUN programme. *BJPsych Open* [Internet]. 2021;7(e54):1–8. Disponible en: [10.1192/bjo.2021.7](https://doi.org/10.1192/bjo.2021.7).
27. Agarwal G, Angeles R, Dolovich L, Kaczorowsky J, Gaber J, Guenter D, et al. The Community Health Assessment Program in the Philippines (CHAP-P) diabetes health promotion program for low- to middle income countries: study protocol for a cluster randomized controlled trial. *BMC Public Health* [Internet]. 2019;19(682):1–12. Disponible en: <https://doi.org/10.1186/s12889-019-6974-z>
28. Sudfeld C, Bliznashka L, Ashery G, Yousafzai A, Masnaja H. Effect of a community health worker delivered health, nutrition and responsive stimulation package and conditional cash transfers on child development and growth in rural Tanzania: protocol for a cluster-randomized trial. *BMC Public Health* [Internet]. 2019;19(641). Disponible en: <https://doi.org/10.1186/s12889-019-7008-6>
29. Ridde V, Turcotte AM, Souares A, Lohmann J, Zombre D, Koulidiati J, et al. Protocol for the process evaluation of interventions combining performance-based financing with health equity in Burkina Faso. *Implement Sci* [Internet]. 2014;9(149):1–12. Disponible en: <http://www.implementationscience.com/content/9/1/149>
30. Lall D, Engel N, Devadasan N, Horstman K, Criel B. Team-based primary health care for non-communicable diseases: complexities in South India. *Health Policy Plan* [Internet]. 2020;35:ii22–34. Disponible en: <https://bmjopen.bmj.com/content/10/12/e040271>
31. Puchalski L, van Lettow M, Makwakwa A, Kip E, Straus S, Kawonga H, et al. Impact of a tuberculosis treatment adherence intervention versus usual care on treatment completion rates: results of a pragmatic cluster randomized controlled trial. *Implement Sci* [Internet]. 2020;15(107):1–15. Disponible en: <https://doi.org/10.1186/s13012-020-01067-y>
32. García Sierra AM, Ocampo Cañas JA. Integrated Management of Childhood Illnesses implementation-related factors at 18 Colombian cities. *BMC Public Health* [Internet]. 2020;1122:1–10. Disponible en: <https://doi.org/10.1186/s12889-020-09216-0>
33. Yip J, Bright T, Ford S, Mathenge W, Faal H, Rwanda Primary Eye Care Process evaluation group. Process evaluation of a National Primary Eye Care Programme in Rwanda. *BMC Health Serv Res* [Internet]. 2018;18(950). Disponible en: <https://doi.org/10.1186/s12913-018-3718-1>
34. Morgan M, Dyer J, Abril A, Christmas A, Mahapatra T, Aritra D, et al. Barriers and facilitators to the provision of optimal obstetric and neonatal emergency care and to the implementation of simulation-enhanced mentorship in primary care facilities in Bihar, India: a qualitative study. *BMC Pregnancy Childbirth* [Internet]. 2018;18:420. Disponible en: <https://doi.org/10.1186/s12884-018-2059-8>
35. Khan M, Walley J, Amar Khan M, King R, Sheikh F, Manzoor F, et al. Delivering integrated hypertension care at private health facilities in urban Pakistan: a process evaluation. *BJGP Open* [Internet]. 2018;1–12. Disponible en: [10.3399/bjgpopen18X101613](https://doi.org/10.3399/bjgpopen18X101613)
36. Labonté R, Sanders D, Packer C, Schaay N. Is the Alma Ata vision of comprehensive primary health care viable? Findings from an international project. *Glob Health Action* [Internet]. 2014;1654–9880. Disponible en: <https://doi.org/10.3402/gha.v7.24997>
37. Yifter H, Omer A, Gugsu S, Fekadu A, Kebede A, Gebremariam S, et al. Early detection and management of major non-communicable diseases in urban primary healthcare facilities in Ethiopia: a study protocol for a type-3 hybrid implementation-effectiveness design. *BMJ Open* [Internet]. 2021;11:e040564. Disponible en: <https://doi.org/10.1136/bmjopen-2020-040564>
38. Petersen I, Kemp C, Rao D, Wagenaar B, Sherr K, Grant M, et al. Implementation and Scale-Up of Integrated Depression Care in South Africa: An Observational Implementation Research Protocol. *Psychiatr Serv* [Internet]. 2021;72(1065–1075). Disponible en: [10.1176/appi.ps.202000014](https://doi.org/10.1176/appi.ps.202000014)
39. Paniagua-Avila A, Fort M, Glasgow R, Gulayin P, Hernández-Galdamez D, Masilla K, et al. Evaluating a multicomponent program to improve hypertension control in Guatemala: study protocol for an effectiveness-implementation cluster randomized trial. *Trials* [Internet]. 2020;21(509). Disponible en: <https://doi.org/10.1186/s13063-020-04345-8>
40. Lauria M, Fiori K, Jones H, Gbeleou S, Kenkou K, Agoro S, et al. Assessing the Integrated Community-Based Health Systems Strengthening initiative in northern Togo: a pragmatic effectiveness implementation study protocol. *Implement Sci* [Internet]. 2019;14(92):1–13. Disponible en: <https://doi.org/10.1186/s13012-019-0921-3>

41. Arrossi S, Paolino M, Sanchez Antelo V, Thouyaret L, Kohler RE, Cuberli M, et al. Effectiveness of an mHealth intervention to increase adherence to triage of HPV DNA positive women who have performed self-collection (the ATICA study): A hybrid type I cluster randomised effectiveness implementation trial. *Lancet Reg Heal - Am*. 2022;9:100199.
42. Ansbro É, Homan T, Qasem J, Bil K, Rasoul M, Roberts B, et al. MSF experiences of providing multidisciplinary primary level NCD care for Syrian refugees and the host population in Jordan: an implementation study guided by the RE-AIM framework. *BMC Health Serv Res* [Internet]. 2021;21(381):1–19. Disponible en: <https://doi.org/10.1186/s12913-021-06333-3>
43. Kikuchi K, Gyapong M, Shibnuma A, Ansah E, Okawa S, Addei S, et al. EMBRACE intervention to improve the continuum of care in maternal and newborn health in Ghana: The RE-AIM framework-based evaluation. *J Glob Health* [Internet]. 2021;1(11):11:04017. Disponible en: 10.7189/jogh.11.08002
44. Stange K, Miller WL, Etz R. The Role of Primary Care in Improving Population Health. *Milbank Q* [Internet]. 2023;10(s1):795–840. Disponible en: <https://doi.org/10.1111/1468-0009.12638>
45. Damschroder L, Aron D, Keith R, Kirsh S, Alexander J, Lowery J. Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science. *Implement Sci* [Internet]. 2009;4(50). Disponible en: <https://doi.org/10.1186/1748-5908-4-50>
46. Moore G, Audrey S, Barker M, Bond L, Bonell L, O’Cathain A, et al. Process evaluation of complex interventions: Medical Research Council guidance. *BMJ* [Internet]. 2015;350(h1258). Disponible en: <https://doi.org/10.1136%2Fbmj.h1258>
47. Chambergo-Michilot D, Diaz-Barrera ME, Benites-Zapata VA. Revisiones de alcance, revisiones paraguas y síntesis enfocada en revisión de mapas: aspectos metodológicos y aplicaciones. *Rev Peru Med Exp Salud Publica* [Internet]. 2021;38(1):136–42. Disponible en: <https://doi.org/10.17843/%0Arpmesp.2021.381.6501>
48. Geng EH, Peiris D, Kruk ME. Implementation science: Relevance in the real world without sacrificing rigor. *PLoS Med* [Internet]. 2017;14(4):e1002288. Disponible en: <https://doi.org/10.1371/journal.pmed.1002288>
49. Damschroder L, Reardon C, Widerquist O, Lowery J. Conceptualizing outcomes for use with the Consolidated Framework for Implementation Research (CFIR): the CFIR Outcomes Addendum. *Implement Sci* [Internet]. 2022;17(7). Disponible en: <https://doi.org/10.1186/s13012-021-01181-5>
50. Damschroder L, Reardon C, Opra Widerquist M, Lowery J. The updated Consolidated Framework for Implementation Research based on user feedback. *Implement Sci* [Internet]. 2022;17(75). Disponible en: <https://doi.org/10.1186/s13012-022-01245-0>
51. Skivington K, Simpson SA, Craig P, Blazeby J, Craig N, McIntosh E, et al. A new framework for developing and evaluating complex interventions: update of Medical Research Council guidance. *BMJ* [Internet]. 2021;374:n2061. Disponible en: <https://doi.org/10.1136/bmj.n2061>
52. Kwan BM, McGinnes HL, Ory MG, Estabrooks PA, Waxmonsky J, Glasgow R. RE-AIM in the Real World: Use of the RE-AIM Framework for Program Planning and Evaluation in Clinical and Community Settings. *Front Public Heal* [Internet]. 2019;7(345):1–10. Disponible en: doi: 10.3389/fpubh.2019.00345
53. Curnew D, Lukewish J. Nursing Within Primary Care Settings in Atlantic Canada: A Scoping Review. *SAGE Open* [Internet]. 2018;1–17. Disponible en: <https://doi.org/10.1177/2158244018774379>
54. Fiorati RC, Arcencio R, Segura del Pozo J, Ramasco-Gutierrez M, Serrano-Gallardo P. Intersectorality and social participation as coping policies for health inequities-worldwide. *Gac Sanit* [Internet]. 2018;32(3):30–314. Disponible en: <https://doi.org/10.1016/j.gaceta.2017.07.009>
55. Kitila SB, Feyssa G, Kebede A, Abera M. Maternal Healthcare in Low- and Middle-Income Countries: A Scoping Review. *Heal Serv Insights* [Internet]. 2022;15:11786329221100310. Disponible en: <https://doi.org/10.1177%2F11786329221100310>
56. Das N, Mistry C, Dongre AR. A Scoping Review of Research on Comprehensive Primary Health Care (CPHC) in India. *Online J Heal Allied Scs* [Internet]. 2022;21(4). Disponible en: <https://www.ojhas.org/issue84/2022-4-1.html>
57. Perveen S, Lassí Z, Afzal Mahmood M, Perry HB, Laurence C. Application of primary healthcare principles in national community health worker programmes in low-income and middle-income countries: a scoping review. *BMJ Open* [Internet]. 2022;12:e051940. Disponible en: doi:10.1136/%0Abmjopen-2021-051940
58. Panamerican Health Organization/World Health Organization (PAHO/WHO). Primary Health Care-Based Health systems: Strategies for the Development of Primary Health Care Team [Internet]. Washington DC: Renewing Primary Health Care in the Americas serie N°1; 2008. Disponible en: <https://iris.paho.org/handle/10665.2/31221>
59. Lozada-Martinez ID, Delgado Arias LM, Perea Rojas DM, Rojas Torres IL. Meta-Research in Neuroscience: An Urgent Call to Strengthen the Reliability and Translation of Knowledge into Evidence-Based Neurological Practice. *J Clin Med*. 2025 Dec 2;14(23):8552. doi: 10.3390/jcm14238552
60. Lozada-Martinez ID, Hernandez-Paez D, Zárate YEJ, Delgado P. Scientometrics and meta-research in medical research: approaches required to ensure scientific rigor in an era of massive low-quality research. *Rev Assoc Med Bras* (1992). 2025 Jun 6;71(4):e20241612. doi: 10.1590/1806-9282.20241612

61. Lozada-Martinez ID, Lozada-Martinez LM, Fiorillo-Moreno O. Leiden manifesto and evidence-based research: Are the appropriate standards being used for the correct evaluation of pluralism, gaps and relevance in medical research? *J R Coll Physicians Edinb.* 2024 Mar;54(1):4-6. doi: 10.1177/14782715241227991
62. Angarita-Pacheco Y, Urbano López AD, Hernandez-Paez DA, Fiorillo-Moreno O, Picón-Jaimes YA, Beltrán Venegas T, et al. Global Trends and Evidence Gaps in Medical Errors Research: A Mixed-Methods Scientometrics Study. *J Multidiscip Healthc.* 2025 May 3;18:2497-2508. doi: 10.2147/JMDH.S516383
63. Lozada-Martinez ID, Neira-Rodado D, Martinez-Guevara D, Cruz-Soto HS, Sanchez-Echeverry MP, Liscano Y. Why is it important to implement meta-research in universities and institutes with medical research activities? *Front Res Metr Anal.* 2025 Mar 19;10:1497280. doi: 10.3389/frma.2025.1497280
64. Lozada-Martinez ID, Hernandez-Paez DA, Palacios Velasco I, Martinez Guevara D, Liscano Y. Meta-Research in Geriatric Surgery: Improving the Quality of Surgical Evidence for Older Persons in a Multidimensional-Scale Research Field. *J Clin Med.* 2024 Sep 13;13(18):5441. doi: 10.3390/jcm13185441
65. Lozada-Martinez, I.D.; Hernandez-Paz, D.A.; Fiorillo-Moreno, O.; Picón-Jaimes, Y.A.; Bermúdez, V. Meta-Research in Biomedical Investigation: Gaps and Opportunities Based on Meta-Research Publications and Global Indicators in Health, Science, and Human Development. *Publications* 2025, 13, 7

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