


REVIEW

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# Policy implementation barriers and the effectiveness of maternal and child nutrition programs in low-resource settings

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## Abstract

**Background** Although national nutrition policies exist in many low- and middle-income countries (LMICs), maternal and child malnutrition remain persistent, illustrating large policy-to-implementation gaps. This narrative review synthesizes how policy-related implementation barriers affect the effectiveness of maternal and child nutrition (MCN) programs.

**Methods** A systematic literature search was conducted across Web of Science and Google Scholar to identify studies relevant to MCN policy design, implementation, and impact in LMICs. A standardized data extraction form was used to document study characteristics, document policy-related implementation barriers, outcomes in implementation, and recommended interventions. Following data extraction, the results were represented using a narrative synthesis approach.

**Results** Fifteen peer-reviewed articles published between 2010 and 2024 were found eligible for inclusion in this review. Findings reveal three major categories of policy-related implementation barriers: weak multi-sectoral coordination, weak sub-national policy translation, and weak monitoring and accountability structures. The system revealed both implementation challenges, including inconsistent funding, low technical capacity at the community level, and sociocultural barriers to adoption of MCN services. Studies found that these constraints severely curtailed program effectiveness, with sub-optimal improvements in key indicators like stunting, exclusive breastfeeding and maternal dietary diversity. Recommended interventions were decentralized governance, institutionalized community participation, enhanced workforce training, and embedded real-time monitoring systems.

**Conclusion** Critical disconnects between policy intentions and on-the-ground implementation are highlighted by this review in low- and middle-income Countries. Good nutrition governance requires coordinated, resourced and context-specific policy-based mechanisms. Adaptive policy models and innovations in implementation science should be evaluated, and further research done in order to sustainably improve MCN outcomes.



**Keywords** Maternal and child nutrition, Policy analysis, Implementation barriers, Multi-sectoral coordination, Public health policy

## 1 Introduction

### 1.1 Background

Nutrition is a key pillar of human health and development, especially at the critical early years, encompassing maternal health and the first 1000 days from conception to the child's second birthday. Adequate nutrition throughout this period is indispensable for the best physical and cognitive development as well as for providing a lifelong health trajectory [2, 29]. The implications of early nutrition extend well beyond childhood and determine an individual's health, education, and economic efficiency in adulthood [1]. By contrast, inadequate or suboptimal nutrition in these developmental years results in a series of undesired consequences such as higher vulnerability to diseases, diminished learning potential, lower productivity at work, and an increased likelihood of non-communicable diseases in later life. Beyond the suffering of individual victims, malnutrition imposes severe economic costs on health-care systems on the national level, drains human capital, and restricts overall socio-economic progress, which perpetuates cycles of poverty in communities and countries [9, 10]. Considering the enormous impact nutrition has on global health and sustainable development, the international community has committed a great deal to the eradication of all types of malnutrition. These commitments are enshrined in global frameworks such as the Sustainable Development Goals (SDGs), particularly SDG 2 (Zero Hunger) and SDG 3 (Good Health and Well-being), and specific targets set by the World Health Assembly on maternal, infant, and young child nutrition [32]. For these ambitious goals to be realized, there is a need for wide range and intensive national nutrition policies and strong programmatic interventions. Such policies are meant to create a guideline for intervention in different sectors, including health, food systems, social protection, and education, in a bid to create an enabling environment for mediating nutritional outcomes. They aim to ensure that evidence-based strategies such as promoting exclusive breastfeeding and appropriate complementary feeding, fortification of foods and micronutrient supplementation, are systematically implemented across populations [6]. Nonetheless, the malnutrition epidemic remains persistent, especially in low-resource settings. This lingering challenge underscores the complexities associated with translating policy into effective action.

### 1.2 Problem statement

Despite significant progress in health and development at a global scale over the last few decades, maternal and child malnutrition continue to be one of the single most pervasive and intractable public health problems that persists especially in LMICs. The magnitude of this problem is staggering, as it affects the health, well-being, and future capabilities of millions of women and children around the world, posing a serious limit to sustainable development goals [4]. The ongoing nature of these challenges demonstrates that despite advances in scientific cognition of nutrition, the application of this learning into successful, equitable, and sustainable programs remains complex. The most recent joint estimates by UNICEF, WHO and the World Bank Group find that roughly 148.1 million children below five years old were stunted in 2023, as they are too short for their age due

to chronic undernutrition [28]. Additionally, 45 million children under five were acutely malnourished (wasted) with a too thin for height index, which shows recent rapid weight loss or failure to gain weight (UNICEF, WHO and World Bank Group 2024). Although the global prevalence rates for stunting and wasting have exhibited gradual decline over time in these regions, the absolute numbers are still intolerably high with most of the burden in Sub-Saharan Africa and South Asia. In addition to undernutrition, overweight and obesity are also increasing around the world, leading to a complex “double burden of malnutrition” where 37 million children under 5 years of age were overweight in 2023 [28], presenting intricate issues for nutrition policy and programming.

Apart from child malnutrition, the nutritional status of women of reproductive age is equally important, with far-reaching intergenerational implications. A significant percentage of women suffer from anemia, often associated with poor nutrition and micronutrient deficiencies worldwide. According to the World Health Organization (WHO), about 30% of women aged 15–49 years, totaling half a billion women, suffer from anemia globally [33]. This prevalence is especially high in South Asia and Sub-Saharan Africa, leading to specific impacts in maternal health outcomes, with increased risk of adverse events during pregnancy and childbirth, contributing to poor birth outcomes and child development [9]. Conscious of the human and economic burden of malnutrition, national governments and international bodies have formulated integrated nutrition policies and strategies to address these challenges. However, despite the existence of such robust policy frameworks at the global level, high prevalence of different forms of malnutrition indicates a significant gap between policy and implementation. This gap is defined by the fundamental mismatch between desirable but poorly translated policies and their practical implementation as executable with appropriate resources and context-specific programs at the sub-national and community levels [27]. Understanding the nature and magnitude of implementation challenges is key toward supporting the efficiency of MCN interventions and ultimately nutrition outcomes in LMICs.

The review seeks to identify and synthesize policy-related implementation barriers to maternal and child nutrition programs in LMICs, assess how these barriers shape implementation bottlenecks and observed outcomes, and derive context-specific, evidence-informed policy recommendations.

We use ‘policy-related implementation barriers’ to denote governance, financing, regulatory, institutional, sociocultural, and capacity constraints that impede the translation of nutrition policies into effective program delivery. We distinguish ‘policy’ (rules, plans, and regulatory instruments) from ‘interventions’ (programmatic actions delivered through systems). ‘Nutrition-sensitive’ refers to actions addressing the underlying determinants of nutrition, such as social protection, food systems, WASH, and education that complement nutrition-specific interventions.

### 1.3 Research questions

1. What are the documented policy-related implementation barriers that affect maternal and child nutrition programs in low-resource settings?
2. How do these policy-related implementation barriers influence the processes and health outcomes associated with maternal and child nutrition interventions?
3. What policy strategies or frameworks have been proposed or implemented successfully to mitigate these barriers and enhance program effectiveness?

The conceptual framework guiding this review is presented in Fig. 1, which outlines the continuum from MCN policy formulation through governance and implementation processes to maternal and child nutrition outcomes. This framework also informed the development of our eligibility criteria and synthesis.

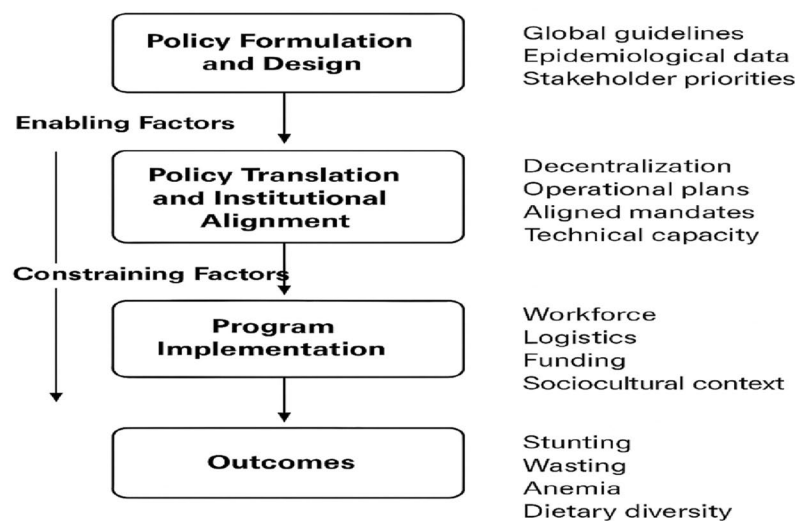
## 2 Methodology

### 2.1 Review type and scope

This is a narrative review with a systematic search and narrative synthesis. A narrative synthesis approach was selected because the available evidence on the implementation of maternal and child nutrition (MCN) policies is conceptually diverse and methodologically heterogeneous, comprising policy analyses, qualitative studies, mixed-methods studies and case studies. This evidence is not suitable for meta-analysis or formal effect size pooling. Our primary objective was to synthesise descriptions of and experiences of policy-related implementation barriers across contexts, rather than quantifying intervention efficacy. The PRISMA-style reporting is used solely to transparently summarize study identification and screening. No formal quality appraisal was conducted, consistent with narrative synthesis aims.

### 2.2 Eligibility criteria

We included policy analyses and empirical studies conducted in low- and middle-income countries (LMICs) or comparable low-resource settings, which examined implementation barriers or facilitators related to programmes and policies affecting maternal and child nutrition (MCN). Eligible studies focused on policies and interventions targeting pregnant and breastfeeding women, as well as children under five, including those relating to micronutrient supplementation, complementary feeding, food fortification, and nutrition-sensitive actions like food systems, social protection, health system strengthening, and WASH. Included were policy analyses, qualitative studies, implementation and process evaluations, situational analyses, mixed-methods studies, and program case studies that reported primary or secondary data from stakeholders involved in policy



**Fig. 1** Conceptual framework of the study: policy-to-implementation continuum

design, delivery, and management, or that systematically analyzed policy documents relevant to MCN implementation.

Studies were eligible if they were: (i) published in peer-reviewed journals, (ii) available in English, (iii) published between 1 January 2010 and 31 December 2024, and (iv) explicitly reporting barriers and/or facilitators related to the implementation of MCN policies or programs.

We excluded studies that: (i) focused solely on the clinical management of SAM/MAM or other MCN interventions without examining barriers to policy- or system-level implementation; (ii) were conducted exclusively in high-income countries and were not relevant to the implementation context of LMICs; and (iii) were editorials, commentaries, opinion pieces, conference abstracts, or other grey literature.

### 2.3 Search strategy

A systematic search in Web of Science and Google scholar was conducted using a set of keywords related to maternal and child nutrition, policy-related implementation barriers, program implementation, health policy and low- and middle-income countries (Table 1). Boolean operators (AND/OR) and database specific syntax were adapted to optimize the search in each platform. Studies between 2010 and 2024 and published in English Language only were searched. In addition, we conducted backward and forward citation tracking of a foundational paper [16] to identify further relevant studies.

### 2.4 Data extraction and synthesis

A standardized data extraction form was developed to specific information from studies including author(s), year, country, study design, data sources, policy focus, implementation barriers, key facilitators, and implementation outcomes. Data were extracted independently by two reviewers to enhance information accuracy and minimize bias. Once extracted, the data were analyzed and interpreted using a narrative synthesis approach. Policy-related implementation barriers were categorized according to themes. For each included study, the findings in Table 2 are concise author syntheses of implementation-relevant results.

## 3 Results

### 3.1 Study selection

A total of 760 records were identified from three different sources: 610 through systematic database searching, 141 through expert consultation and snowball sampling, and 9 from a foundational article by Kung'u et al. [16]. After deduplication, 499 unique records

**Table 1** Search String

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**Combination of keywords**

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("maternal nutrition" OR "child nutrition" OR "infant nutrition" OR "young child nutrition" OR "maternal and child nutrition")

AND

("policy challenges" OR "policy implementation" OR "nutrition policy" OR "policy barriers")

AND

("low-income countries" OR "developing countries" OR "resource-poor settings" OR "low- and middle-income countries" OR "global south")

AND

("program effectiveness" OR "program implementation" OR "intervention success" OR "nutrition outcomes" OR "program evaluation")

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**Table 2** Summary of included studies

Author and year	Country/setting	Study design/methods	Participants/data sources	Target group of intervention/policy	Key implementation barriers	Key facilitators/enablers	Implementation outcomes/findings
[18]	Zambia (national)	Prospective policy analysis; in-depth interviews + policy document review	Nutrition policy stakeholders; national policy docs	Adolescent-focused operations for double burden of malnutrition (DBM) reform	Limited evidence on adolescent burden/impacts; strong food-industry influence; low public demand; individual-responsibility framing	Existing institutional infrastructure; life-course programming opportunity; policy entrepreneurs	Legislative options viewed as infeasible without reframing and public support; barrier mapping across problem/policy/politics streams
[25]	Ghana—Jirapa (community)	Exploratory qualitative; KIs; framework analysis	Municipal nutrition officer; CHOs (11 CHPS zones)	Delivery of MCHN services in CHPS zones	Inadequate logistics/medicines; limited training; weak supervision/monitoring; low incentives; limited planning, home visits, commitment, community engagement	Provide logistics; frequent training & supervision; financial support; planning/home visits; community meetings	Systemic municipal/CHPS challenges mapped with actionable strategies
[36]	Mali (national)	Situational analysis; key informant interviews; review of 117 documents	IYCF key informants; national policies/training/program docs	Infant and young child nutrition (IYCN) policies and activities	Limited national coverage/impact data; capacity gaps; weak monitoring and evaluation	Established policy/program framework exists	EBF improving, but optimal IYCF remains low; need research and rigorous M&E to adapt/ scale programs
[8]	Nigeria-Taraba (sub-national)	Mixed qualitative: desk review; IDIs/FGDs (3 phases)	State/local ministries; NGOs; community leaders; health promoters; mothers	Maternal nutrition policy and programming gaps	Low prioritization/funding; poor coordination; facility-centric delivery vs access barriers (cost, distance, quality)	Advocacy to elevate nutrition; multi-sectoral/community strategies	System and community barriers identified; need delivery beyond facility platforms

**Table 2** (continued)

Author and year	Country/setting	Study design/methods	Participants/data sources	Target group of intervention/policy	Key implementation barriers	Key facilitators/enablers	Implementation outcomes/findings
[15]	Tanzania (sub-national/community)	Implementation case study; longitudinal interviews (~ 27); activity documentation	Regional/District Nutrition Officers; multisector actors (agriculture, health, education)	Translating multi-sectoral nutrition (MSN) policy into community practice	Heavy workloads; limited resources; variable supervisor buy-in; sector silos	MSN "action teams"; peer learning; leadership engagement	Teams bridged administration gaps; advanced collaboration, budgeting, community MSN activities
[23]	Bangladesh (national/sub-national)	Qualitative: 25 KIIs; 10 IDIs; 6 FGDs; thematic analysis	Program managers; policymakers; service providers; pregnant women	Programmatic constraints in delivering maternal-nutrition interventions	Demand: financial limits, low awareness, cultural barriers. Supply: low priority, workload, HR shortages, weak monitoring, stock-outs, incoordination	Recognition of maternal nutrition priority; scope to strengthen supervision, supply chains; community engagement	Both demand and supply constraints hamper delivery; actionable constraint map presented
[30]	Malawi (national survey 2015–2016)	Cross-sectional (DHS); adjusted models	Mothers and children 0–23 months (≈2,294)	Determinants of breastfeeding and complementary feeding; links with undernutrition	Suboptimal EBF and dietary diversity; undernutrition persists	Maternal education/support; media exposure associated with better practices	Maternal determinants associated with IYCF indicators and undernutrition risk
[14]	India-Odisha (state)	Qualitative; semi-structured interviews across levels; content analysis	State/district/block officials; frontline workers (ICDS/NRHM)	Inter-sectoral convergence for essential MCN interventions	Uneven participation; limited supervision; lack of coordination guidelines; heavy workload; inadequate resources; poor communication	Shared priorities; clear roles/leadership/accountability; strong FLW collaboration	State-level collaboration stronger than district/block; convergence needs clearer mechanisms
[17]	Iran (national)	Policy analysis; interviews; framework analysis; MaxQDA	Policy makers and experts; national policy docs	Prevention of child malnutrition (<5)	Fragmented coordination; absence of comprehensive national document; gaps in breastfeeding/fortification/supplementation implementation	Use regional resource advantages; strengthen political process; better inter-org coordination	Key policy actors/factors identified; nationwide comprehensive program prioritized

**Table 2** (continued)

Author and year	Country/setting	Study design/methods	Participants/data sources	Target group of intervention/policy	Key implementation barriers	Key facilitators/enablers	Implementation outcomes/findings
[22]	Vietnam (national)	Qualitative implementation study; 26 interviews (2017)	National/local policy stakeholders; health personnel; NGOs	Extended maternity leave; restrictions on marketing of breast-milk substitutes (BMS)	Insufficient funding; limited training/reporting; cumbersome reporting; misinformation; limited reach for informal workers	Policy precedence; strong government-NGO relationships; national agencies' involvement	Decree 100 reduced BMS advertising; mixed compatibility/reach of maternity protections
[26]	India (national)	Exploratory policy-space analysis; 27 KIs; policy review	Nutrition policy and food-supply actors; documents	Food-policy options for dual burden (undernutrition & diet-related NCDs)	Policy inertia; competing economic priorities	Target common problem foods (e.g., highly processed); scale fruits/vegetables initiatives	Context-appropriate options identified to strengthen policy coherence
[37]	Pakistan (provincial/national)	Comparative policy analysis, post-devolution	Provincial officials; policy documents (as reported)	Provincial opportunities/barriers for nutrition policy	Historic under-allocation; siloed sectors; weak coalitions; poverty; patriarchy; health/WASH gaps; inequitable power structures	Windows of opportunity; movement to horizontal coordination; funding upscaling	Provincial variation (leadership, governance, outreach); strategies must reflect sub-national constraints
[7]	Ghana (national/sub-national)	Qualitative stakeholder study; IDIs + FGDs	Government, CSOs, CBOs, international partners	Implementation of "1000 Days Plus" nutrition policy	Gaps across planning, engagement, guidance/accountability, culture, coverage	Merge and align stakeholder priorities within a single framework	Seven critical implementation domains identified to guide action
[12]	Rwanda (national → sub-national)	Mixed-methods; 90 interviews + 40 FGDs; policy review; thematic analysis	National, mid-level & community stakeholders; policy/program documents	Translation of national policy to sub-national implementation	Coordination and financing challenges; limited M&E capacity; district variation	Horizontal coordination platforms; stronger role for mid-level actors	Political/institutional commitment increased; translation feasible but uneven across districts
[20]	Nigeria (national)	Dual qualitative: literature review + policy analysis	IYCF & Labor Act policy docs; synthesized perspectives	Exclusive breastfeeding for working mothers	Work-related, maternal and social barriers limit EBF	Policy provisions addressing workplace/social constraints	Assessed how policies address EBF barriers; persistent gaps for working mothers

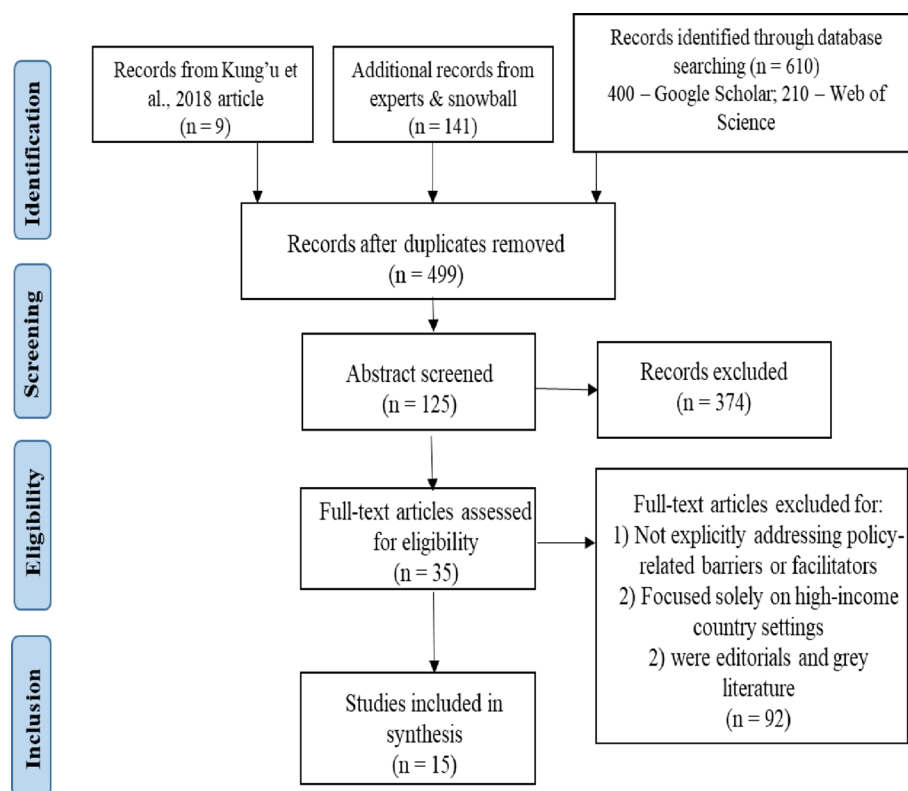
remained. The titles and abstracts of these records were screened and 374 articles that did not fit the review objectives were then excluded. After that, 125 full-text articles were accessed in detail for eligibility. Out of these, 92 studies were excluded because they (1) failed to focus on policy-related barriers or facilitators, (2) included studies carried out in high-income countries, or (3) were not peer-reviewed articles but editorials or grey literature. The final synthesis included 15 studies that met the inclusion criteria (Fig. 2).

### 3.2 Study characteristics

Across the 15 studies included, the majority were qualitative policy and implementation analyses, or stakeholder studies. One study used nationally representative survey data from the Malawi DHS (2015–2016) to conduct a cross-sectional analysis. The majority of the studies were conducted at the national level, with several sub-national and community-level analyses. Most studies drew on policy document reviews and interviews with national and sub-national officials, frontline workers, program managers, and community stakeholders, while the target groups of the policies and programs were pregnant and breastfeeding women, and children under five. Table 2 summarizes the study designs, data sources, policy foci and implementation findings.

### 3.3 Policy-related implementation barriers

A synthesis of the 15 studies identified seven recurrent barrier domains: (1) multi-sectoral coordination and policy coherence; (2) financing and supply/logistics; (3) workforce capacity, supervision, and workload; (4) monitoring, data, and accountability; (5) vertical translation and decentralization; (6) sociocultural norms, community demand,



**Fig. 2** PRISMA diagram describing the search process

and engagement; and (7) regulatory and workplace protections. These domains cut across contexts and delivery platforms, and are illustrated in Table 3, which shows representative studies for each theme. One overriding problem was the disjunction between the national policy frameworks mandated by international agreements and their application as workable, localized programs. The studies from Rwanda, Ethiopia, and Tanzania highlighted that while there are multi-sectoral nutrition policies in place, poor sector coordination and communication at the sub-national level have hindered them from being practical [12, 15]. Like Zambia and Pakistan, policy fragmentation and overlapping mandates of various government departments were observed as contributing to the inefficiency in addressing both undernutrition and the emerging non-communicable disease burden [18, 37]. Among other barriers identified are limited institutional capacity and finance constraints. For instance, in Bangladesh and Nepal, policy presence was undermined by weak M&E systems and insufficient training of frontline workers [23]. Entrenched socio-cultural barriers and weak political commitment in Nigeria and India were compounded by a weak policy environment lacking legislative backing and enforcement mechanisms that support breastfeeding and complementary feeding practices [8, 26]. Studies from Vietnam and Iran also identified the gap between policy intent and practice in regulation of commercial influences, like the regulation of the marketing of breast milk substitutes and where maternity protections fall short [17, 22].

### 3.4 Implementation bottlenecks and observed outcomes

Barrier domains manifested as bottlenecks in the coverage, quality and continuity of MCN actions. Inconsistent or weak coordination reduced the completeness of service packages delivered through existing platforms, particularly where data-sharing mechanisms and roles were unclear across sectors and levels (Rwanda, India-Odisha, and Pakistan). Chronic financing and supply constraints, together with transport challenges, limited the availability of commodities and outreach capacity, particularly for maternal nutrition services (Bangladesh, Ghana-Jirapa). Challenges faced by the frontline workforce, such as training, workload and supervision) and inconsistent guidance hindered consistent counselling and follow-up (India-Odisha, Bangladesh). The weak integration

**Table 3** Policy-related implementation barriers across reviewed studies

Barrier domain	Definition	Frequency
Multi-sectoral coordination and policy coherence	Gaps in cross-sector alignment, unclear roles, weak nutrition governance and policy coherence across health, food, social protection, and WASH	11/15
Financing and supply/logistics	Inadequate/unstable funding, weak PFM; commodity stock-outs; transport and last-mile bottlenecks affecting service continuity	9/15
Workforce capacity, supervision and workload	Shortages, limited training and supportive supervision; excessive workload; variable managerial buy-in	6/15
Monitoring, data and accountability	Weak routine M&E, limited data sharing, unclear feedback loops and accountability mechanisms	7/15
Vertical translation and decentralization	Misalignment across levels; uneven capacity, guidance and resources for local delivery	6/15
Sociocultural norms and community demand/engagement	Norms, awareness, preferences, and household constraints shaping uptake of IYCF and service utilization; community engagement gaps	9/15
Regulatory and workplace protections	Weak enforcement of BMS Code; limited maternity protections and lactation support; missing food-environment regulations	4/15

of nutrition indicators in routine information systems constrained the ability to solve problems and hold people accountable in a timely manner (Rwanda, Mali). Where sub-national capacities and horizontal platforms were strengthened, the translation of national intent improved, albeit with variability across districts (Rwanda; Tanzania). Sociocultural norms and workplace conditions continued to influence demand for optimal infant and young child feeding (IYCF) practices and their feasibility, highlighting the need for community strategies designed in collaboration with the community and stronger maternity protections (Nigeria, Vietnam). Together, these issues reduced the expected improvements in breastfeeding and complementary feeding practices, and ultimately hindered progress on undernutrition.

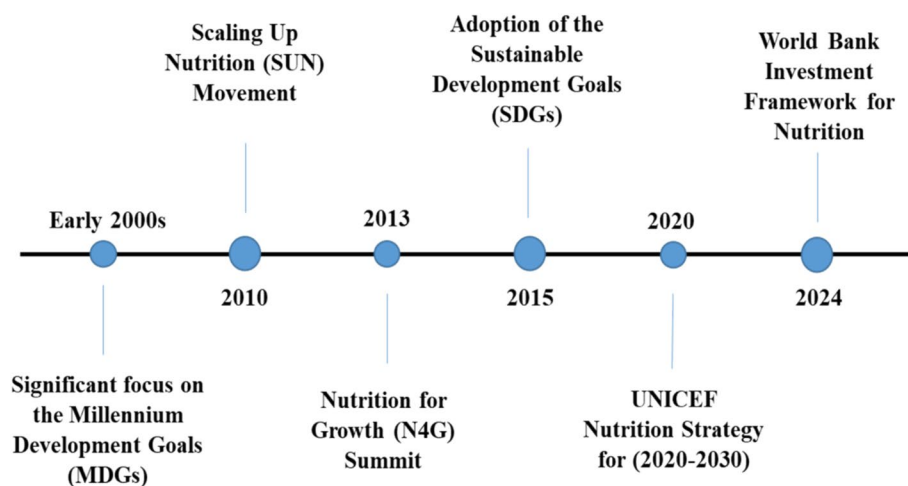
## 4 Discussion

### 4.1 Contribution to knowledge

This study significantly advances the understanding of maternal and child nutrition (MCN) policy implementation in low- and middle-income countries (LMICs) by synthesizing evidence from 17 diverse national contexts. By providing a comprehensive analysis of common policy-related implementation barriers and their practical implications, it is detailed, bridging the gap between policy formulation and ground execution. The study compares policy analysis, implementation challenges and program outcomes across Nigeria, India, Nepal, and Ghana, and finds that recurrent structural barriers to effective nutrition interventions include weak multi-sectoral coordination, inadequate funding mechanisms, and limited frontline capacity. In addition, insights from the study add to existing literature on the importance of decentralized governance and community participation in translating national nutrition policies into impactful local actions. Inclusion of detailed, context-specific recommendations improves the practical utility of the findings and provides policymakers and practitioners with applicable means to address the identified gaps.

### 4.2 Comparison with global evidence

Figure 3 provides a timeline of key international and regional policy milestones that have shaped maternal and child nutrition initiatives in LMICs, providing historical context



**Fig. 3** Timeline of MCN policy and intervention milestones

to the policy evolution discussed here. The results of this review, with its emphasis on policy implementation challenges in maternal and child nutrition (MCN) are primarily in line with a larger global evidence base. This consistency serves as evidence that the barriers identified in the included LMICs are not unique to these settings, but rather they reflect systemic weakness across contexts beyond LMICs, including HICs. The most prominent problem that emerged is weak multi-sectoral coordination. This is a persistent theme in global health literature because successful MCN interventions necessitate sectoral cohesions by integration of health, agriculture, education, and social welfare areas. Lack of this coordination results in fragmented services, duplication of efforts, and diluted impacts. Recent reviews highlight how, despite the calls for an integrated approach, the practical challenges to achieve effective multi-sectoral governance for nutrition are great in different country contexts thus preventing the translation of policy intent into concrete outcomes [27]. Even in settings where policies calling for multi-sectoral actions exist, their practical application is constrained by such barriers as bureaucracy silos, lack of clear channels of accountability, and inadequate means of joint planning and monitoring [31]. Financial constraints and poor resource allocation are also identified as some major barriers in the review and were echoed worldwide. Although the fiscal implications are greater in LMICs, high-income countries face similar challenges with dealing with the prioritization of MCN programs in the face of competing health and development interests. Recent studies indicated continued financing gaps towards achieving global nutrition targets, indicating that the current levels of investment are generally not adequate to support the scale of efforts required [11, 24]. In addition, the effectiveness of funding, is influenced not only by the amount of investment but also by how it is distributed and utilized. Evidence indicates that strategic evidence-based investments in high impact interventions are key in maximizing the return on investment in MCN no matter how poor or rich a country is [3]. Notably, the review's findings on limitations within the frontline workforce capacity and related service delivery challenges are equally documented in global literature.

The lack for appropriately trained practitioners in nutrition counseling and services delivery at the community level is a serious impediment to providing necessary MCN support. This problem has implications for both LMICs and HICs, although with varying specific manifestations. A recent scoping review reported the importance of community health workers, nurses and nutritionists in improving the outcomes of MCN, however, significant gaps are evident in availability, training, and support of community health workers among many settings [5]. In many countries, acute shortages of skilled birth attendants and nutrition counsellors persist [34], while in some HICs, challenges may include an ageing workforce or inequalities in access to specialized MCN support. In addition, problems in the area of monitoring and evaluation (M&E) are widespread. There is also a recognized need for robust M&E systems across the globe to gauge progress and see bottlenecks, which can inform policy adjustments. However, many countries, irrespective of their income level, have problems with reliable and disaggregated data collection, effective analysis and their utilization for decision-making [13]. Lack of both comprehensive and up-to-date M&E frameworks limits the capacity of policymakers and program administrators to ensure that the interventions' impact is measured and strategies adjusted promptly, as well as accountability for the achievement of nutrition goals [35]. Finally, sociocultural factors and community involvement's critical

importance are a constant theme globally. For MCN programs to be successful in the long run, they need to align with local culture, beliefs and norms. Failure to consider these factors can threaten program uptake and adherence [21]. At the same time, active involvement of communities in the design and implementation of programs is essential for creating ownership, trust and appropriateness of intervention to local needs. Recent reviews highlight the fact that community engagement makes the work of public health more relevant and effective, including improving nutrition outcomes [19].

#### 4.3 Implications for policy and practice

The findings of this study indicate critical implications for policy development and practical implementation of maternal and child nutrition (MCN) interventions in decentralized settings. The lack of multi-sectoral coordination remains fragmented, pointing to the need for a special institutional mechanism such as a nutrition coordination desk, in district health management teams (DHMT) with clear mandates, budgets, and accountability structures to harmonize the roles of health, agriculture, education and social protection sectors. These mechanisms can help to operationalize discipline in planning, as well as resource generations, and thus remedy the present lack of coherence in planning and resource allocation for private sector service delivery. Additionally, chronic underfunding of nutrition activities at the sub-national level requires nutrition indicators to be included in district development plans and performance-based budgeting frameworks. This would allow them to justify and sustain funding for critical nutrition-specific and sensitive interventions at the local government level. The study also shows the critical importance of investment in training, supervision and motivation of frontline workers. It is recommended that standardized, competency-based in-service training and supportive supervision systems be institutionalized, particularly for community health workers, to ensure high quality service delivery. Monitoring and evaluation should be a priority policy issue for program implementers across all levels of service delivery, including the establishment of integrated data systems that enable timely tracking of program inputs, outputs, and outcomes. Real-time dashboards and community feedback loops should be part of these systems to increase accountability and responsiveness. Finally, the socio-cultural barriers need to be addressed systematically through community engagement strategies that empower local influencers, such as the traditional leaders and religious authorities, to give a voice and be advocates for behavior change with regard to maternal nutrition and breastfeeding. Behavior change communication (BCC) packages that are co-designed with communities, tailored to community needs, and when applicable, culturally adapted can help bridge this gap between awareness and practice. These practice and policy recommendations (Table 4) provide a roadmap to increase decentralized nutrition governance and improve maternal and child health outcomes in other resource constrained settings.

#### 4.4 Limitations of the study

This review offers useful insights into the policy-related implementation barriers in maternal and child nutrition (MCN) in low- and middle-income countries, however there are also important limitations to this review. Firstly, only studies published in English language and accessible through specific academic databases were included, limiting the scope of included studies to those indexed within these databases and likely

**Table 4** Targeted policy and practice recommendations

Barrier addressed	Specific recommendation	Country example from included studies
Multi-sectoral coordination and policy coherence	Establish permanent multi-sector nutrition coordination platforms at district/municipal level with TORs, joint planning calendars, and co-signed annual work plans & budgets; adopt coherence scorecards across health, food, social protection, WASH and education; embed nutrition priorities in sector plans	Tanzania: district nutrition officers' participation catalyzed collaboration and joint budgeting [15]. India–Odisha: ICDS–NRHM convergence worked but needed clearer mechanisms [14]
Financing and supply/logistics	Create ring-fenced nutrition budget lines with expenditure tracking; integrate nutrition into performance-based budgeting; fund last-mile delivery, routine commodity security SOPs, and quarterly supply audits	Bangladesh: stock-outs, weak monitoring, HR shortages constrained delivery [23]. Ghana–Jirapa: logistics and transport were binding constraints [25]
Workforce capacity, supervision and workload	Institutionalize competency-based in-service training with annual refreshers; implement monthly supportive supervision; set caseload norms and task-sharing	India–Odisha: uneven participation, heavy workload, inadequate resources [14]. Bangladesh: workload, HR gaps, limited training and supervision [23]
Monitoring, data and accountability	Integrate nutrition indicators into national HMIS/DHIS2; institute quarterly data reviews with action trackers; publish district dashboards; formalize feedback loops from facility and community	Mali: weak M&E and limited linkage of evidence to programs [36]. Rwanda: improved translation where roles/data systems supported accountability [12]
Vertical translation and decentralization	Issue standard sub-national implementation guides with role matrices; provide capacity grants for district planning/M&E; set bidirectional referral & reporting between national–district–community	Rwanda: variable district performance and capacity for translation [12]. Pakistan: vertical integration evolved post-devolution but varied by province [37]
Sociocultural norms and community demand/engagement	Co-design context-specific SBC/BCC with women's groups, male partners and leaders; fund community outreach and home visits; integrate demand-side supports	NE Nigeria: cultural practices and access barriers constrained utilization [8]. Bangladesh: demand-side financial/cultural barriers prominent [23]
Regulatory and workplace protections	Strengthen BMS Code monitoring and penalties; expand maternity protections; adopt compliance audits and public reporting; advance food-environment regulations	Vietnam: gaps in enforcement and reach of maternity protections [22]. Nigeria: workplace barriers constrained EBF [20]

introducing language and publication bias, thereby excluding potentially relevant evidence from francophone, lusophone, or non-indexed sources. Most studies were qualitative or policy analysis papers and thus unable to quantitatively assess the strength of association between identified implementation barriers and nutritional outcomes. This narrative review did not apply a formal risk-of-bias tool. Barrier frequencies reflect author-coded synthesis of heterogeneous designs and reporting. Recommendations were not co-created or validated with stakeholders within this project. While aiming to extract detailed contextual data, reporting standards and policy environments across the countries limited comparability and synthesis. However, the consistency of themes across studies strengthens the credibility of the study conclusions and their relevance for informing multi-sectoral nutrition governance in such decentralized systems.

## 5 Conclusion

This study aimed to critically assess policy-related implementation barriers and suggest recommendations for improving maternal and child nutrition interventions in low- and middle-income countries. Results highlight misalignment between national frameworks and local capacities for delivery, deficiencies in inter-sectoral cooperation, and systemic constraints to monitoring and accountability. Altogether, these issues impeded service provision, as measured by indicators of nutritional outcomes like stunting reduction, exclusive breastfeeding rates, and maternal dietary diversity. The review also synthesized a variety of strategic policy recommendations, including the enhancement of local governance capacity, the provision of consistent funding streams, promoting inclusive policies, and institutionalizing the role of the community in decision-making. In addition to a broader body of policy implementation science literature, these insights provide stakeholder pathways to optimize MCN outcomes through systems-level reforms. Future research should employ mixed-methods and longitudinal approaches to precisely quantify the causal impact of policy changes on maternal and child nutrition indicators. Further studies should also look at ways to model adaptive governance and culturally tailored interventions, and study the effectiveness of real-time monitoring systems, which would help bridge the gap between policy formulation and population-level impact.

### Abbreviations

BCC	Behaviour change communication
CHWs	Community health workers
DHMT	District health management teams
HICs	High-income countries
IYCF	Infant and young child feeding
LMICs	Low- and middle-income countries
MCN	Maternal and child nutrition
M&E	Monitoring and evaluation

### Author contributions

C.O. and V.O. conceptualized the study and prepared the methodology. O.O. and T.O. extracted data from the included studies. H.I. and J.A. prepared Figs. 1, 2, 3. C.O. supervised the study. All authors collectively wrote the main manuscript and reviewed it before submission.

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### Data availability

No new datasets were generated or analyzed in the current study.

### Declarations

#### Ethics approval and consent to participate

Not applicable.

#### Consent for publication

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#### Competing interests

The authors declare no competing interests.

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