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A Scoping Review *Open Access*

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Urban Rural Inequities in Breastfeeding Practices in Low- and Middle-Income Countries: A Scoping Review

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ABSTRACT

Introduction: Breastfeeding is a critical intervention for reducing infant morbidity and mortality and improving maternal health outcomes. Despite global recommendations supporting early initiation and exclusive breastfeeding, substantial disparities persist across low- and middle-income countries (LMICs), particularly between urban and rural populations. Urban–rural inequities reflect complex structural, socioeconomic, and cultural determinants that influence breastfeeding practices beyond maternal knowledge. This scoping review aimed to systematically map evidence on urban–rural differences in breastfeeding practices in LMICs and to identify key determinants contributing to these disparities.

Research Methodology: A scoping review was conducted following Arksey and O'Malley's framework and the Joanna Briggs Institute guidelines, with reporting aligned to PRISMA-ScR. Four databases (PubMed, Scopus, CINAHL, and ProQuest) were searched for studies published between 2015 and 2025. Eligible studies were original research conducted in LMICs that compared breastfeeding outcomes across urban and rural settings. Data were extracted, charted, and synthesised narratively.

Results: Seven cross-sectional studies from Ethiopia, Tanzania, Lao PDR, Indonesia, Nigeria, Niger, and Sierra Leone were included. Most studies demonstrated a higher prevalence of early initiation and exclusive breastfeeding in rural areas despite limited health service access. Urban residence, increasing infant age, caesarean delivery, maternal employment, and exposure to formula marketing were consistently associated with suboptimal breastfeeding.

Conclusion: Urban–rural disparities in LMICs are driven by structural and contextual inequities rather than maternal intention alone. Policies should prioritise breastfeeding-friendly workplace regulations, enforcement of the International Code of Marketing of Breast-milk Substitutes, and culturally responsive maternal support systems.

Keywords: Breastfeeding; Exclusive Breastfeeding; Health Equity; Rural Population; Urban Population.

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INTRODUCTION

Breastfeeding remains one of the most effective public health interventions, offering substantial benefits for infant survival, optimal growth, cognitive development, and long-term health, while also reducing maternal risk of breast and ovarian cancers (Chowdhury et al., 2015). Global meta-analyses and burden of disease estimates consistently highlight that improving breastfeeding coverage has the potential to prevent hundreds of thousands of child deaths annually (Victora et al., 2016). The World Health Organization (WHO) recommends exclusive breastfeeding (EBF) for the first six months of life, followed by nutritionally adequate complementary feeding alongside continued breastfeeding up to two years of age or beyond (World Health Organization, 2023). However, despite widespread policy advocacy, progress towards these targets has been uneven, particularly across low- and middle-income countries (LMICs) where structural and contextual barriers remain pronounced (Neves et al., 2021).

In LMICs, breastfeeding practices are not uniform but are shaped by stark geographical and socio-economic disparities (Wallenborn, Valera, et al., 2021). Urban–rural differences are among the most consistent patterns observed in population-based surveys (Moss et al., 2021). Large-scale analyses across Sub-Saharan Africa, South Asia, and Southeast Asia have documented higher rates of early initiation of breastfeeding (EIBF) and EBF in rural settings compared to urban areas, where the influence of modernisation, labour market participation, and aggressive marketing of breast-milk substitutes is more prevalent (Bhattacharjee et al., 2019). Conversely, urban mothers often have better access to health information, skilled birth attendants, and health facilities, yet these advantages do not always translate into improved breastfeeding practices due to systemic barriers, including caesarean delivery, shorter maternity leave, and workplace constraints (Syahri et al., 2024).

The determinants of these inequities in LMICs extend beyond maternal knowledge or intention (Abraham & Melendez-Torres, 2023). Socio-demographic factors such as maternal education, household wealth, and parity intersect with broader systemic influences, including national maternity protection policies, healthcare infrastructure, and the pervasiveness of commercial formula marketing (Adewuyi et al., 2017; World Health Organization & UNICEF, 2022). In rural areas, supportive cultural norms and extended family involvement often encourage longer breastfeeding duration, yet harmful practices such as prelacteal feeding, early cessation, and limited access to skilled neonatal care remain significant risks (Hitachi et al., 2019). This duality underscores the complexity of interpreting urban–rural gaps in LMICs, where rural "advantages" in prevalence may coexist with health vulnerabilities (Le et al., 2018).

Commercial promotion of breast-milk substitutes represents a particularly entrenched structural barrier in LMIC urban contexts (Hadihardjono et al., 2019). Violations of the International Code of Marketing of Breast-milk Substitutes remain widespread, exposing urban mothers to targeted advertising, free samples, and provider influence that undermine breastfeeding (Lisi et al., 2022). The inequities are further reinforced by labour market structures in LMICs, where informal employment and limited enforcement of maternity leave legislation disproportionately affect women's ability to sustain exclusive breastfeeding (UNICEF, 2019). These challenges are particularly acute for working mothers in metropolitan areas, who often resume employment shortly after birth with minimal institutional breastfeeding support (Vilar-Compte et al., 2021).

Evidence from LMICs such as Indonesia, Nigeria, Ethiopia, and Lao PDR highlights these disparities in practice and determinants (Gayatri, 2021). For instance, while rural mothers may adhere more closely to WHO recommendations, urban mothers often discontinue

breastfeeding earlier due to caesarean delivery, lack of workplace support, and greater exposure to formula marketing (Girma & Abita, 2024). Such findings illustrate that breastfeeding inequities in LMICs are embedded within broader socio-economic and structural determinants, rather than being purely behavioural (Wallenborn, Valera, et al., 2021).

Given the multidimensional and context-specific nature of urban–rural inequities in LMICs, a scoping review offers an appropriate methodological framework for synthesising available evidence, mapping determinants, and identifying research gaps (Arksey & O'Malley, 2005). Unlike systematic reviews, which focus on causal synthesis, scoping reviews enable comprehensive mapping of complex evidence across diverse contexts. This scoping review, therefore, aims to systematically chart urban–rural disparities in breastfeeding practices across LMICs, delineating the magnitude and direction of inequities, identifying structural and cultural determinants, and informing future research and policy strategies tailored to the needs of diverse maternal populations.

RESEARCH METHODOLOGY

Study Design and Justification

This study employed a scoping review design to comprehensively map existing evidence on urban–rural inequities in breastfeeding practices in low- and middle-income countries (LMICs). A scoping review was selected because the objective was to explore the breadth, patterns, and determinants of disparities rather than to quantify pooled effect sizes or determine causality. The methodological framework was guided by Arksey and O'Malley's five-stage approach and further aligned with the Joanna Briggs Institute (JBI) Manual for Evidence Synthesis. Reporting followed the PRISMA Extension for Scoping Reviews (PRISMA-ScR) to ensure transparency and reproducibility.

Eligibility Criteria

Eligibility criteria were structured using the Population–Concept–Context (PCC) framework: Population: Breastfeeding mothers and infants aged 0–24 months. Concept: Breastfeeding practices and indicators, including early initiation of breastfeeding (≤1 hour after birth), exclusive breastfeeding (0–6 months), continued breastfeeding up to 24 months, breastfeeding duration, and prelacteal feeding. Context: Urban and rural settings within low- and middle-income countries as defined by the World Bank classification. Inclusion criteria were: (1) primary empirical studies (quantitative, qualitative, or mixed methods); (2) studies reporting breastfeeding outcomes stratified or compared by urban–rural residence; (3) peer-reviewed articles published in English between January 2015 and July 2025. Exclusion criteria included systematic reviews, meta-analyses, commentaries, editorials, conference abstracts, grey literature, and studies without disaggregated geographical analysis.

Search Strategy

A comprehensive literature search was conducted across four electronic databases: PubMed, Scopus, CINAHL, and ProQuest. Controlled vocabulary (e.g., MeSH terms) and free-text keywords were combined using Boolean operators (AND, OR). Core search terms included "breastfeeding," "exclusive breastfeeding," "early initiation," "urban," "rural," "inequity," and "low- and middle-income countries." Search limits were applied to publication year and language. Reference lists of included studies were manually screened to identify additional relevant articles.

Study Selection

All retrieved records were exported into reference management software, and duplicates were removed. Study selection proceeded in three stages: (1) title screening, (2) abstract screening, and (3) full-text review. Screening was conducted independently by two reviewers. Discrepancies were resolved through discussion and consensus. A PRISMA flow diagram was used to document the identification, screening, eligibility, and inclusion processes.

Data Extraction

A standardized data-charting form was developed to extract key information, including author, year, country, study design, sample characteristics, breastfeeding indicators, urban–rural comparisons, determinants examined, statistical methods, and principal findings. Data extraction was performed by one reviewer and independently verified by a second reviewer to ensure accuracy and consistency.

Quality Appraisal

Although quality assessment is not mandatory in scoping reviews, methodological appraisal was conducted to enhance interpretive rigor. The Joanna Briggs Institute (JBI) Critical Appraisal Checklist for Analytical Cross-Sectional Studies was applied to assess the clarity of inclusion criteria, the validity and reliability of exposure and outcome measurement, the identification of confounders, and the appropriateness of the statistical analysis. Studies were categorized as moderate or high quality based on overall methodological robustness.

Data Synthesis

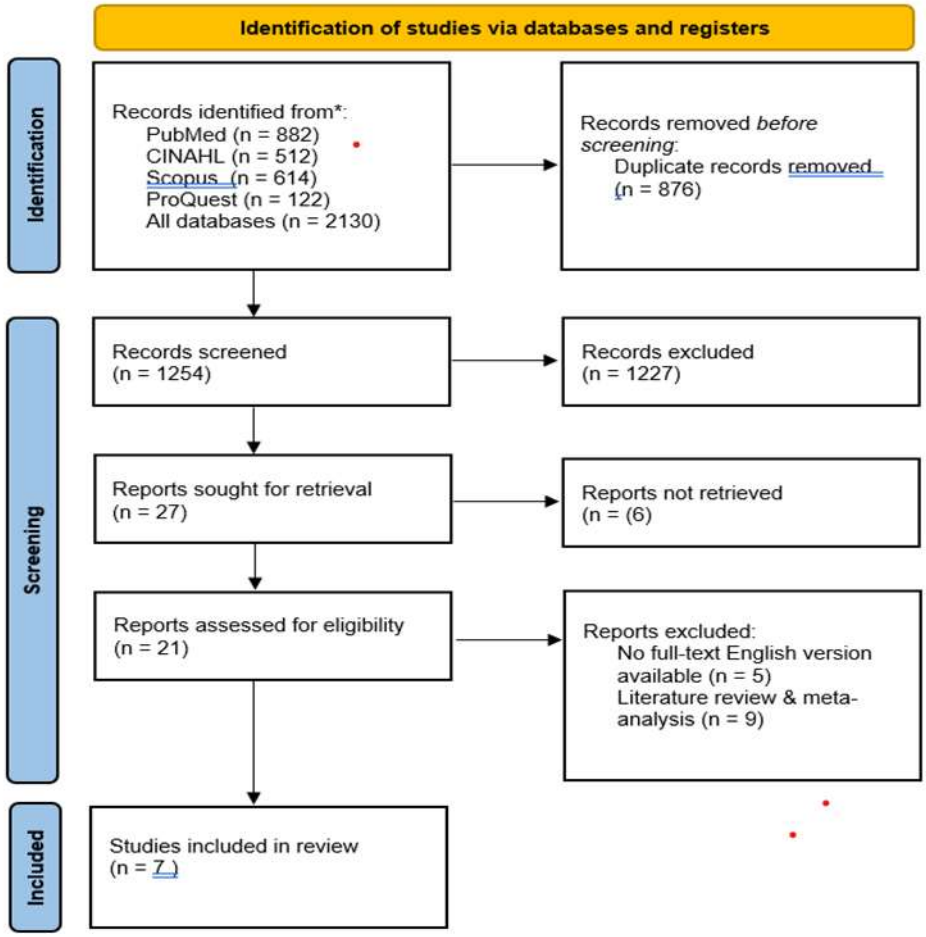
Data were synthesized using a narrative approach supported by tabular presentation. The synthesis focused on mapping: (1) the magnitude and direction of urban–rural differences in breastfeeding practices; (2) recurring individual, socio-demographic, and structural determinants; and (3) contextual patterns across LMIC regions. Due to heterogeneity in study design, measurement, and analytical approaches, meta-analysis was not conducted.

Ethical Considerations

This study utilized secondary data derived from publicly available peer-reviewed publications. No primary data were collected, and no identifiable individual-level information was accessed. Therefore, formal ethical approval was not required. The review adhered to principles of transparency, accurate citation, and responsible reporting.

RESULT

A total of 2,130 records were retrieved from four electronic databases, comprising PubMed (n = 882), CINAHL (n = 512), Scopus (n = 614), and ProQuest (n = 122). Following the removal of 876 duplicates, 1,254 records remained for title and abstract screening. Of these, 1,227 records did not meet the eligibility criteria and were excluded. The full texts of 27 reports were sought, with six reports not retrievable. Subsequently, 21 reports were assessed in detail for eligibility. Fourteen reports were excluded at this stage, primarily due to the absence of a full-text English version (n = 5) or because they constituted literature reviews or meta-analyses (n = 9). Ultimately, seven studies fulfilled the inclusion criteria and were synthesised in this review. The flow of study identification, screening, and selection is illustrated in Figure 1.



Study Characteristics

The seven included studies were published between 2017 and 2025 and conducted across diverse low- and middle-income countries, namely Ethiopia, Tanzania, Lao People's Democratic Republic, Indonesia, Nigeria, Niger, and Sierra Leone. All studies employed a cross-sectional design and explored various dimensions of breastfeeding practices in relation to urban–rural disparities. The outcomes measured included indicators such as early initiation of breastfeeding, exclusive breastfeeding prevalence and duration, compliance with WHO recommendations, maternal knowledge and attitudes, and factors influencing breastfeeding continuation or cessation. Sample populations generally consisted of mothers with infants aged 0–24 months, while determinants assessed spanned sociodemographic, maternal, infant, and health service utilisation variables. Despite contextual differences, the majority of studies consistently demonstrated higher exclusive breastfeeding rates and more favourable practices in rural settings than in urban areas. However, urban areas often had better access to health services and antenatal care. Collectively, these findings provide a nuanced understanding of breastfeeding inequities across LMICs, shaped by both structural and individual-level determinants. The key characteristics and major findings of each study are summarised in Table 1.

Table 1. Study Characteristics and Key Findings on Urban–Rural Breastfeeding Disparities

No	Author(s) / Year	Country	Study Design	Outcomes Measured	Key Findings
1.	(Girma et al., 2024)	Ethiopia	*Cross-sectional study*	Early initiation of breastfeeding (EIBF): breastfeeding initiated within one hour after birth)	EIBF prevalence was slightly higher in urban (77.9%) than rural areas (71.8%). Rural determinants included younger maternal age, non-employment, larger infant size, and health facility delivery, while urban determinants were birth order, skin-to-skin contact, and ANC visits; vaginal delivery and maternal healthcare decision-making were common facilitators.
2.	(Jahanpour, Okango, et al., 2023)	Tanzania	*Cross-sectional study*	Exclusive breastfeeding prevalence and trends, and determinants based on maternal and infant characteristics	Exclusive breastfeeding rose from around 32% in 1999 to nearly 59% in 2015/16. Rural and socioeconomically disadvantaged mothers consistently reported higher rates than their urban and wealthier counterparts, while urban mothers experienced a steeper decline in practice as infants aged
3.	(Wallenborn, Levine, et al., 2021)	Lao People's Democratic Republic	*Cross-sectional study*	Compliance with WHO breastfeeding guidelines on exclusive (0–6 months) and complementary (6–23 months) feeding	Urban mothers, particularly in large cities, were significantly less likely to comply with WHO recommendations on exclusive and complementary breastfeeding compared to rural mothers, with disparities persisting even after adjusting for education and household wealth.
4.	(Gayatri, 2021)	Indonesia	*Cross-sectional study*	Exclusive breastfeeding up to 6 months, non-exclusive status, and associations with maternal sociodemographic and health service use	Rural mothers showed higher odds of exclusive breastfeeding compared to urban mothers, particularly among those with adequate antenatal visits, early initiation, and vaginal delivery. In comparison, urban mothers faced lower odds due to higher caesarean rates and employment-related constraints.
5.	(Balogun et al., 2017)	Nigeria	*Cross-sectional study*	Knowledge, attitudes, and practices of breastfeeding compared between urban and rural mothers	Despite similar levels of knowledge and moderately positive attitudes in both settings, breastfeeding practices were significantly stronger in rural areas, where mothers were more likely to initiate breastfeeding immediately after birth, maintain breastfeeding up to 24 months, and adhere to exclusive breastfeeding. In contrast, urban mothers showed lower practice levels largely due to early work resumption.
6.	(Hitachi et al., 2019)	Niger	*Cross-sectional study*	Prevalence and cessation timing of exclusive breastfeeding in rural and urban areas with maternal, infant, and delivery-related correlates	Exclusive breastfeeding was markedly higher in rural areas (54%) than in urban areas (16%). In rural communities, EBF was linked to lower socioeconomic status, early initiation, and traditional birth assistance. At the same time, in urban areas, it was more common among younger infants and those delivered through complicated births. Prelacteal feeding contributed to early cessation across both settings.
7.	(Tommy et al., 2025)	Sierra Leone	*Cross-sectional study*	Exclusive breastfeeding among infants 0–5 months based on 24-hour recall, analysed by individual, community, and urban–rural factors	Rural infants had significantly higher odds of exclusive breastfeeding compared to urban counterparts, while urban residence and increasing infant age emerged as key risk factors for non-exclusive breastfeeding.

Quality Appraisal

The quality of the included studies was assessed using the Joanna Briggs Institute (JBI) Critical Appraisal Checklist for Cross-Sectional Studies. All studies clearly reported their inclusion criteria, provided adequate descriptions of the setting and participants, and applied valid and reliable measures for both exposures and outcomes. Statistical analyses were generally appropriate; however, most studies only partially addressed potential confounders, particularly those related to socioeconomic and contextual factors. Based on the JBI scoring (range 0–8), the overall methodological quality of the studies was rated moderate to high, with most studies meeting 6-8 criteria, as summarised in Table 2.

Tabel 2. Quality Appraisal of Included Studies Using JBI Checklist

Author(s)/ Year	Clear inclusion criteria	Detailed description of setting & participants	Valid & reliable measurement of exposure	Standard outcome measurement (valid/reliable)	Identified & addressed confounding factors	Appropriate statistical analysis	Overall appraisal
(Girma et al., 2024)	Yes	Yes	Yes	Yes	Partial	Yes	Moderate–High
(Jahanpour, Okango, et al., 2023)	Yes	Yes	Yes	Yes	Partial	Yes	Moderate–High
(Wallenborn, Levine, et al., 2021)	Yes	Yes	Yes	Yes	Yes	Yes	High
(Gayatri & Dasvarma, 2020)	Yes	Yes	Yes	Yes	Partial	Yes	Moderate–High
(Balogun et al., 2017)	Yes	Yes	Yes	Yes	Partial	Yes	Moderate
(Hitachi et al., 2019)	Yes	Yes	Yes	Yes	Partial	Yes	Moderate–High
(Tommy et al., 2025)	Yes	Yes	Yes	Yes	Partial	Yes multilevel egression)	Moderate–High

DISCUSSION

A comparative synthesis of the seven studies demonstrates consistent evidence that breastfeeding practices, including both early initiation of breastfeeding (EIBF) and exclusive breastfeeding (EBF), are shaped by interrelated individual, socio-demographic, and contextual determinants, with LMIC disparities, particularly the urban–rural divide, emerging as a critical influence (Girma & Abita, 2024). The reliance on cross-sectional designs and outcome measures aligned with WHO indicators facilitated comparability across settings, yet the limited adjustment for structural confounders in several analyses constrained causal interpretation (Jahanpour, Todd, et al., 2023; Wallenborn, Valera, et al., 2021).

The Ethiopian study demonstrated that determinants of EIBF differ between rural and urban areas (Terefe et al., 2024). In rural settings, younger maternal age, non-employment, and health facility delivery were central facilitators, whereas in urban areas, antenatal care utilisation and skin-to-skin contact played greater roles (Girma & Abita, 2024). Vaginal delivery consistently emerged as a strong predictor across contexts, underscoring the importance of tailored interventions that acknowledge both contextual specificity and universal enablers (Senanayake et al., 2019).

Findings from Tanzania and Sierra Leone further highlighted the rural advantage in EBF. In Tanzania, prevalence rose from 32% to 59% between 1999 and 2016, yet regional disparities persisted, with rural and poorer women showing higher adherence (Jahanpour, Todd, et al., 2023). In Sierra Leone, rural residence increased the odds of EBF, while, paradoxically, delivery by skilled attendants and advancing infant age were associated with a lower likelihood of EBF (Tommy et al., 2025). These results suggest that clinical contact, though vital, may inadvertently

disrupt breastfeeding if not complemented by culturally responsive counselling (Kimani-Murage et al., 2017).

Comparable patterns were observed in Indonesia and the Lao PDR. In Indonesia, adequate antenatal care, vaginal delivery, and EIBF supported adherence to EBF, whereas maternal employment and caesarean birth undermined it (Gayatri & Dasvarma, 2020). In Lao PDR, urban mothers, despite higher education and wealth, were less likely to comply with WHO recommendations, suggesting that metropolitan environments foster structural and cultural obstacles that persist even after adjustment for socioeconomic factors (Wallenborn, Valera, et al., 2021).

Studies in Nigeria and Niger expanded these insights by focusing on maternal knowledge, attitudes, and practices. In Nigeria, although knowledge of breastfeeding was high and attitudes were moderately positive, rural women reported better practices, while urban women often faced constraints from economic pressures and limited maternity leave, leading to an early return to work (Balogun et al., 2017). In Niger, rural mothers from lower socioeconomic backgrounds had higher EBF prevalence, yet harmful practices such as prelacteal feeding and early cessation undermined breastfeeding continuity (Hitachi et al., 2019).

Methodological appraisal showed moderate-to-high quality across most studies, particularly those employing standardised indicators and advanced analyses such as multilevel modelling (Tommy et al., 2025). Nevertheless, inadequate adjustment for broader structural determinants, including weak health system support, aggressive promotion of breastmilk substitutes, and insufficient maternity protection policies, limited explanatory depth (Neves & Armenta-Paulino, 2022). The Lao PDR study, with more rigorous adjustment, confirmed the persistence of urban disadvantage, strengthening the evidence base for policy intervention.

Overall, the evidence affirms that LMIC disparities in breastfeeding are deeply rooted in structural, cultural, and economic inequities. Urban mothers face barriers tied to medicalised childbirth, insufficient maternity leave, and pervasive formula marketing. In contrast, rural mothers, despite higher EBF prevalence, remain vulnerable to unsafe practices and limited access to skilled neonatal care. These findings highlight the urgent need for policy action in LMICs, including the enforcement of breastfeeding-friendly workplace regulations, restrictions on formula promotion, and investment in maternal and neonatal health systems. A dual policy strategy that strengthens breastfeeding support in urban environments while enhancing culturally appropriate services in rural settings is crucial to narrowing disparities and advancing global nutrition goals (UNICEF, 2021; WHO, 2023).

Limitation of The Study

This scoping review has several limitations. All included studies were cross-sectional, restricting causal inference between determinants and breastfeeding outcomes. Although WHO indicators were commonly used, heterogeneity in measurement and incomplete adjustment for structural confounders (e.g., employment policies, cultural norms, and maternity protection) limit comparability and validity. Reliance on self-reported practices, often via 24-hour recall, may also have introduced recall and social desirability bias. Moreover, as most studies were conducted in LMICs, findings may not be generalisable to high-income settings. Despite these limitations, this scoping review provides one of the few comparative mappings of urban–rural disparities in breastfeeding across LMICs, offering critical insights for policy and future research.

CONCLUSION

This scoping review directly addressed the objective of mapping urban–rural inequities in breastfeeding practices across low- and middle-income countries (LMICs). The evidence consistently demonstrates that rural mothers generally exhibit higher rates of exclusive and continued breastfeeding compared to their urban counterparts. However, this rural advantage coexists with structural vulnerabilities, including harmful traditional practices and limited access to skilled neonatal care. In contrast, urban mothers, despite greater educational attainment and healthcare access, face systemic barriers such as employment constraints, medicalised childbirth, and aggressive marketing of breast-milk substitutes, which collectively undermine optimal breastfeeding practices.

These findings indicate that breastfeeding inequities in LMICs are driven more by structural and policy environments than by maternal knowledge alone. Evidence-based policy responses should therefore prioritise strengthening maternity protection legislation, enforcing regulation of breast-milk substitute marketing, and creating breastfeeding-friendly workplace environments in urban settings. Simultaneously, rural health systems should enhance service quality while preserving supportive cultural norms. Equity-oriented, context-specific interventions are essential to narrowing breastfeeding disparities and advancing maternal–child health outcomes.

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Conflict of Interest

The authors declare that there are no conflicts of interest regarding the publication of this study.

Authors' Contributions

Herlianty conceived and designed the study, developed the review protocol, conducted the literature search and screening, performed data extraction and synthesis, and drafted the manuscript. Jusrawati contributed to study design refinement, assisted in study selection and quality appraisal, and critically revised the manuscript for important intellectual content. Evi Sri Dahrianti contributed to data extraction, data verification, and interpretation of findings. Brenda Mpazo contributed to methodological supervision, interpretation of results, and substantial revision of the manuscript. All authors read and approved the final version of the manuscript and agree to be accountable for all aspects of the work.

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