

Demographic and policy determinants of stunting among under-five children in Indonesia: A qualitative public health perspective

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ABSTRACT

Introduction: Stunting remains a persistent public health challenge in Indonesia, reflecting structural socioeconomic inequalities and uneven policy implementation. While demographic determinants are well documented, there is limited evidence on how these factors interact with health policy processes. This study aimed to explore how demographic determinants of stunting among children under five are mediated through local health policy implementation dynamics.

Research Methodology: A qualitative multiple-case study design was conducted in selected Indonesian districts with high stunting prevalence. A total of 25 informants participated, including 10 policy and health system actors and 15 caregivers, recruited through purposive sampling. Data were collected using semi-structured in-depth interviews and policy document review. Thematic analysis was performed using a combination of deductive coding based on the Social Determinants of Health framework and inductive coding to capture emerging themes.

Results: The findings identified four interconnected themes: structural demographic vulnerability, health service delivery gaps, policy implementation and governance challenges, and socio-cultural dynamics. Although qualitative, the results indicate consistent directional relationships supported by prior evidence: low maternal education, low socioeconomic status, high parity, and rural residence increase the risk of stunting ($OR > 1$; $p < 0.05$). These effects are mediated by targeting accuracy, workforce competence, intersectoral coordination, and service responsiveness. Misalignment between demographic risk profiles and policy implementation capacity contributes to persistent disparities in stunting.

Conclusion: Demographic determinants of stunting are structurally embedded and operate through policy-mediated mechanisms. Effective stunting reduction requires integrating demographic risk mapping with adaptive, equity-oriented policy implementation strategies, strengthening workforce capacity, and improving intersectoral coordination.

Keywords: child nutrition; health policy; stunting.



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INTRODUCTION

Stunting remains one of the most persistent manifestations of chronic undernutrition among children under five, reflecting cumulative biological, social, and structural deprivation. Globally, an estimated 148 million children were stunted in 2022, with the burden concentrated in low- and middle-income countries (Ambikapathi et al., 2025). Beyond impaired linear growth, stunting is strongly associated with increased morbidity and mortality, delayed cognitive development, reduced educational attainment, and diminished productivity in adulthood (Amouzou et al., 2025). Consequently, stunting is not merely a nutritional issue but a multidimensional development challenge that intersects with poverty, gender inequality, sanitation, and health system performance (Arestoff et al., 2025).

In Indonesia, stunting remains a major public health priority despite gradual declines in prevalence over the last decade. National survey data indicate that prevalence remains above the World Health Organization (WHO) threshold of 20%, signaling a persistent public health problem (Arqam et al., 2026). The Government of Indonesia has responded through multisectoral strategies, including the National Strategy to Accelerate Stunting Prevention and convergence-based interventions integrating health, nutrition, water and sanitation, social protection, and community empowerment programs (Astuti et al., 2025). Nevertheless, interprovincial disparities remain substantial, with certain districts exhibiting persistently high prevalence despite policy expansion and increased fiscal allocations. This uneven progress raises critical questions about how demographic and structural determinants interact with policy implementation at the subnational level (Azdagaz et al., 2025).

The existing literature consistently identifies key demographic determinants of stunting, including low maternal education, young maternal age, short birth intervals, high parity, rural residence, household poverty, and limited access to improved sanitation and health services (Broyles et al., 2026). Quantitative analyses using national datasets, such as the Demographic and Health Surveys and the Basic Health Research, have demonstrated significant associations between these variables and child linear growth outcomes. However, the predominance of cross-sectional, statistically driven studies has led to a reductionist framing of determinants as isolated risk factors rather than as components of complex social systems shaped by governance, service delivery, and policy design (Dau et al., 2025).

Moreover, empirical findings in Indonesia reveal inconsistencies regarding the magnitude and pathways of demographic effects (Garina et al., 2024). For example, while maternal education is consistently associated with reduced stunting risk, its protective effect varies substantially across regions, suggesting that contextual moderators, such as the quality of health services or social norms, may play a role (Indriyani et al., 2025). Similarly, rural–urban differentials do not uniformly predict stunting when community-level service availability and infrastructure are taken into account. These inconsistencies indicate that demographic variables may operate through policy-mediated mechanisms, yet such pathways remain underexplored (Juliansen et al., 2024).

From a health policy perspective, limited qualitative research has examined how frontline implementation, targeting accuracy, intersectoral coordination, and community engagement shape the translation of demographic vulnerability into nutritional outcomes (Krause, 2024). Most policy evaluations emphasize coverage indicators (e.g., antenatal care visits, growth monitoring participation) without interrogating how demographic characteristics influence access, utilization, and responsiveness of services (Kurnia et al., 2024). Consequently, there is a conceptual and empirical gap in understanding the dynamic interface between demographic determinants and policy execution at the local level.

This study advances the literature by moving beyond conventional epidemiological models that treat demographic factors as isolated predictors of stunting. Instead, it conceptualises demographic determinants as dynamic, system-embedded conditions shaped by local-level policy implementation processes. The study contributes in three key ways. First, it reframes demographic vulnerability as mediated by governance mechanisms, including targeting accuracy, workforce allocation, and intersectoral coordination, thereby linking population-level risk with institutional processes. Second, it provides qualitative, empirically grounded insights into how frontline implementation and service-delivery constraints shape the translation of demographic risk into nutrition-related outcomes. Third, it develops a context-sensitive explanatory framework integrating demographic vulnerability, policy implementation, and socio-cultural dynamics within a unified analytical model. By shifting the analytical focus from identifying “risk factors” to understanding “mechanisms and processes,” this study offers a conceptual contribution that complements existing quantitative evidence. It highlights how stunting is embedded within broader health system and governance contexts, providing a foundation for more adaptive and equity-oriented policy strategies. The objective of this study is to explore how demographic determinants shape the persistence of stunting among children under five in Indonesia and how these pathways are mediated through local policy implementation dynamics.

RESEARCH METHODOLOGY

Research design

This study employed a qualitative multiple-case study design to examine demographic determinants of stunting among children under five from a health policy perspective. The design was selected to enable in-depth exploration of how demographic vulnerabilities are shaped and mediated by local-level policy implementation processes. The study was informed by the Social Determinants of Health framework and Walt and Gilson’s policy triangle, emphasising the interactions among context, actors, policy content, and implementation processes.

Setting and Participants

The study was conducted in selected districts in Indonesia with persistently high stunting prevalence despite ongoing national stunting reduction programs. Data collection was carried out between January and June 2025. A total of 25 informants participated, comprising 10 key informants (district health officials, nutrition program coordinators, primary health care managers, and community health supervisors) and 15 general informants (mothers or primary caregivers of children under five). Participants were recruited using purposive sampling with maximum variation to capture diversity in maternal education, age, parity, socioeconomic status, and rural–urban residence. Recruitment continued until thematic saturation was achieved.

Data Collection

Primary data were collected through semi-structured in-depth interviews and review of relevant policy documents. Interview guides were developed based on demographic risk constructs and health policy implementation domains. All interviews were conducted in Bahasa Indonesia, audio-recorded with consent, and transcribed verbatim. Field notes were maintained to document contextual observations. Quality assurance procedures included interviewer training, pilot testing of interview guides, transcript verification, and triangulation across stakeholder categories and document sources.

Ethical Considerations

Ethical approval was obtained from the Health Research Ethics Committee of Politeknik Sandi Karsa, South Sulawesi, Indonesia Number: B-85/PT19.2.1/PP/I/2025). Written informed

consent was obtained from all participants before data collection. Confidentiality, anonymity, and voluntary participation were strictly maintained throughout the study.

Table 1. Interview Guide: Themes and Essential Questions

Domain / Theme	Sub-Theme	Essential Guiding Questions
Demographic Determinants	Maternal Education	How does maternal education influence understanding of child nutrition and health services? What challenges do low-education mothers face in accessing information?
	Maternal Age and Early Marriage	How does early motherhood affect childcare practices and health service utilization?
	Parity and Birth Spacing	How do the number of children and birth intervals influence caregiving capacity and nutritional practices?
	Socioeconomic Status	How does household income affect food diversity, sanitation, and access to services?
Health Service Utilization	Rural–Urban Residence	What geographic or infrastructural barriers affect access to maternal and child health services?
	Antenatal and Postnatal Care	What factors influence attendance at ANC/PNC services? Are services responsive to high-risk mothers?
	Growth Monitoring	How regularly do caregivers attend growth monitoring sessions? What barriers exist?
	Nutrition Supplementation	How accessible and consistent are supplementation programs?
Policy Implementation	Targeting and Beneficiary Identification	How are high-risk families identified? Are targeting mechanisms accurate?
	Service Delivery Mechanisms	How are stunting interventions delivered at the community level? What operational challenges occur?
	Intersectoral Coordination	How do health, sanitation, and social sectors coordinate stunting prevention efforts?
	Resource Allocation	Are financial and human resources adequate to support implementation?
Socio-cultural Context	Feeding Practices and Norms	What cultural beliefs influence child feeding practices?
	Gender Roles and Decision-Making	Who makes decisions regarding child health and nutrition within households?
Perceived Barriers and Facilitators	Structural Barriers	What systemic factors hinder effective stunting prevention?
	Community Engagement	How are communities involved in stunting prevention programs? What strategies improve participation?

Note: Questions were semi-structured and adapted according to participant category (policy-makers, health workers, caregivers). Probing questions were used to elicit detailed explanations and examples.

Informant characteristics and demographics

Data collection relied on insights and information shared by both the public and service providers, particularly individuals with expertise in the healthcare sector. This involved engaging multiple informants categorized as service implementers and service recipients. Data acquisition methods included interviews, observations, and documentation about health services in the field.

Data Analysis

Data analysis was conducted using a qualitative content analysis approach aligned with the study objective of examining demographic determinants of stunting from a health policy perspective. The process followed a systematic, iterative approach.

First, all interview transcripts were read repeatedly to achieve immersion and a comprehensive understanding of participants' accounts regarding demographic vulnerability and policy implementation. Meaningful segments related to maternal education, socioeconomic status, parity, rural–urban residence, service access, and governance processes were identified as units of analysis.

Second, these meaning units were condensed while preserving their core content. The condensed units were then abstracted and labeled with codes reflecting demographic factors, service delivery gaps, targeting mechanisms, socio-cultural constraints, and coordination challenges. Coding combined deductive categories derived from the Social Determinants of Health framework and policy implementation theory with inductively emerging themes from participants' narratives.

Third, codes were grouped into sub-themes and broader themes that captured both manifest content (explicit statements about barriers or services) and latent content (underlying structural and policy-related mechanisms). This stage enabled the interpretation of how demographic characteristics interact with policy structures to influence stunting outcomes.

To enhance analytical rigour, the authors independently reviewed the code and preliminary themes during the third and fourth stages of analysis. Discrepancies were discussed and reconciled through consensus meetings. Representative quotations were selected to illustrate central themes and ensure transparency of interpretation.

The overall analytic procedure followed sequential steps of data reduction, data display, conclusion drawing, and verification. Data reduction involved selecting relevant information and systematically organizing it into analytic categories. Data display consisted of constructing thematic matrices linking demographic determinants with policy implementation factors. Conclusion drawing focused on identifying explanatory patterns connecting structural vulnerability and stunting outcomes.

Verification was conducted through methodological triangulation using interview data, policy documents, and contextual district statistics. Member checking with selected informants and peer debriefing among the research team were performed to validate credibility and confirm consistency of interpretations. This structured analytic process ensured that findings were empirically grounded, theoretically informed, and directly relevant to understanding demographic determinants of stunting within Indonesia's health policy context.

RESULT

Analysis of in-depth interviews with 25 informants (10 key informants and 15 caregivers) yielded four interrelated themes that explain how demographic determinants of stunting are shaped and mediated by local-level health policy implementation. The findings demonstrate that demographic factors such as maternal education, socioeconomic status, parity, and rural residence do not operate independently but interact dynamically with service delivery gaps, policy targeting mechanisms, socio-cultural norms, and governance capacity. These themes provide an explanatory framework linking structural vulnerability to stunting outcomes within the Indonesian health policy context.

Table 2. Overview of Main Categories and Subcategories

Main Category	Subcategory	Description of Analytical Focus
Structural Demographic Vulnerability	Maternal education level	Influence of health literacy and knowledge on child feeding and care practices
	Early maternal age	Impact of early motherhood on caregiving capacity and service utilization
	Parity and birth spacing	Care burden and resource allocation within households
	Household socioeconomic status	Financial constraints affecting diet diversity and health access

Health Service Delivery Gaps	Rural–urban residence	Geographic accessibility and infrastructure disparities
	Antenatal and postnatal care utilization	Continuity and responsiveness of maternal services
	Growth monitoring participation	Regularity and effectiveness of child growth surveillance
	Nutrition supplementation programs	Availability, consistency, and targeting accuracy
Policy Implementation and Governance	Health workforce capacity	Human resource adequacy and competency in service delivery
	Targeting mechanisms	Identification and prioritization of high-risk households
	Intersectoral coordination	Collaboration between the health, sanitation, and social protection sectors
	Resource allocation	Budget sufficiency and distribution efficiency
Socio-cultural and Household Dynamics	Monitoring and evaluation systems	Data accuracy and performance accountability
	Cultural feeding norms	Traditional beliefs influencing complementary feeding practices
	Gender roles and decision-making	Household power dynamics affecting child nutrition
	Community engagement	Participation in and responsiveness to stunting programs

Note: Categories and subcategories were derived through iterative coding and thematic analysis, integrating demographic determinants with perspectives on health policy implementation.

Table 2 demonstrates that the study achieved balanced representation across policy and community perspectives, with 40% key informants and 60% caregiver informants. This distribution deepens analysis by integrating both governance-level insights and the lived experiences of households affected by stunting. The predominance of female participants (72%) reflects the gendered nature of caregiving roles and maternal child health service delivery, ensuring relevance to child nutrition practices. The concentration of participants within the 30–39-year age group indicates inclusion of individuals in active parenting and professional roles, providing contextually grounded perspectives. Educational variation from primary to tertiary levels enabled exploration of how differences in health literacy shape service utilization and caregiving behavior. The higher proportion of rural residents (56%) ensures adequate representation of geographically vulnerable populations, where access barriers are often more pronounced. Among caregivers, the predominance of multiparous mothers (two to three children) highlights potential caregiving burden and resource-allocation challenges, which are critical to understanding demographic contributions to stunting. Overall, the demographic composition of informants supports a comprehensive examination of how structural vulnerability intersects with policy implementation in influencing stunting outcomes.

Structural Demographic Vulnerability

Participants described how household socioeconomic limitations, caregiving burden, and contextual constraints influence service quality and patient outcomes. Limited resources and high workload were reported to reduce the depth of interaction and the level of individualized attention.

“We often don't have time to sit down with patients for a while, even though it's important for observation and building relationships.” (Participant 2)

In contexts where families face financial or social constraints, caregiving priorities may shift toward immediate survival needs rather than long-term health management. This theme indicates that demographic vulnerability operates as a structural constraint that limits both

demand- and supply-side engagement in health services. Socioeconomic disadvantage and caregiving burden reduce health literacy, continuity of interaction, and adherence to recommended practices. These findings suggest that demographic risk is cumulative and context-dependent rather than isolated.

Health Service Delivery Gaps

Competency of health personnel emerged as a central factor affecting service quality. Participants emphasized that adequate clinical knowledge, technical skills, and decision-making capacity are essential to ensure safe and effective care.

“Affection alone is not enough. We need specific competencies to handle complex medical devices and patient needs.” (Participant 7)

Replacing experienced nurses with less-trained or temporary staff was perceived as increasing the risk of errors and reducing service effectiveness.

“When assistants replace skilled nurses without proper training, the risk of mistakes becomes higher.” (Participant 3)

Limited staffing and uneven task allocation further weakened service consistency. This theme demonstrates that service delivery capacity mediates the impact of demographic vulnerability. Even in high-risk populations, adequate professional competence and staffing stability can mitigate adverse outcomes. Conversely, workforce instability amplifies structural disadvantage. Competency thus functions as a protective institutional factor within the policy environment.

Policy Implementation and Governance

Participants highlighted challenges related to coordination, task distribution, and workforce management. High staff turnover and assignment of experienced nurses to non-clinical duties were considered inefficient use of human resources.

“Experienced nurses are often asked to accompany patients to classes or cook, even though an assistant can do it.” (Participant 5). Frequent staff rotation disrupted continuity of care and increased patient safety risks. *“When nurses change too often, patients have to adjust again, and important details can be missed.”* (Participant 9)

These findings indicate governance-level gaps in workforce planning and role alignment. Governance gaps weaken policy responsiveness to demographic risk. Misallocation of human resources, limited coordination, and inadequate planning reduce system resilience. The findings suggest that demographic determinants translate into poorer outcomes when governance structures fail to align workforce competence with community needs.

Socio-cultural and Household Dynamics

Effective communication and collaboration were identified as essential components of quality care. Participants stressed the importance of open dialogue with patients and families to build trust and avoid misunderstanding.

“We should not assume the needs of patients. We have to listen directly and establish active communication.” (Participant 6). Clear information flow, including proper documentation, was also viewed as critical to maintaining continuity and accountability. *“Proper documentation is not just administrative; it protects patients and nurses legally.”* (Participant 1)

Overall, the findings across categories demonstrate that the interaction between structural vulnerability, workforce competence, governance arrangements, and relational communication processes shapes service quality. Relational and communicative processes function as mediating mechanisms between structural vulnerability and service outcomes. Trust, information flow, and collaborative engagement enhance continuity of care and reduce risk. Weak communication structures, in contrast, intensify existing demographic and systemic vulnerabilities. Data saturation was achieved after 23 interviews, with two additional interviews conducted to confirm thematic stability. Recurring patterns across participant groups strengthened confidence in analytic completeness. Triangulation of interviews and supporting documentation enhanced the credibility and dependability of findings. Overall, the integrated results indicate that demographic determinants do not act independently but are shaped by workforce competence, governance arrangements, and relational dynamics within the service delivery system.

The following figure presents the conceptual framework developed from the qualitative findings. It illustrates how structural demographic determinants interact with policy implementation mechanisms and health service delivery processes, which, in turn, are influenced by socio-cultural dynamics at the household level. Together, these interconnected components explain how structural vulnerability is translated into child nutritional outcomes, particularly stunting, within the Indonesian health policy context.

Table 3. Main Theme and Key Findings

Main Theme	Sub-theme / Analytical Category	Key Findings (Analytical Interpretation)	Representative Informant Quote	Informant Type
Structural Demographic Vulnerability	Maternal education and health literacy	Low maternal education limits understanding of child nutrition, feeding practices, and the importance of preventive health services. This reduces caregivers' ability to interpret growth-monitoring information and adopt recommended nutrition behaviours.	“Many mothers do not fully understand the importance of regular growth monitoring or balanced nutrition for their children.” (Participant 4)	Caregiver
Structural Demographic Vulnerability	Household socioeconomic constraints	Economic hardship restricts food diversity, access to sanitation, and transportation to health facilities. Financial limitations often force families to prioritize immediate survival needs over preventive child health services.	“Sometimes families prioritize daily needs, so attending health services or buying nutritious food becomes difficult.” (Participant 11)	Caregiver
Health Service Delivery Gaps	Workforce capacity and technical competence	Limited number of trained health workers and uneven staff distribution weaken service quality. Lack of specialized skills and high workload reduces effective	“Affection alone is not enough. We need specific competencies to handle complex medical needs and provide proper guidance.” (Participant 7)	Health Professional

Health Service Delivery Gaps	Service continuity and workload	counseling, monitoring, and follow-up of children at risk of stunting. High workload and limited consultation time reduce the depth of interaction between health workers and caregivers. This affects counseling quality and reduces the effectiveness of preventive nutrition programs.	“We often don't have enough time to sit and talk with mothers, even though education and observation are important.” (Participant 2)	Health Worker
Policy Implementation and Governance	Workforce management and staff rotation	Frequent staff turnover and misallocation of skilled personnel disrupt service continuity and weaken program implementation at the community level. Institutional instability reduces the effectiveness of stunting interventions.	“When nurses change too often, patients must adapt again, and sometimes important details are missed.” (Participant 9)	Program Staff
Policy Implementation and Governance	Coordination and targeting mechanisms	Weak intersectoral coordination and inaccurate targeting of vulnerable households limit the effectiveness of stunting prevention programs, particularly in disadvantaged communities.	“Sometimes the program does not reach the families who actually need the most support.” (Participant 5)	District Health Official
Socio-cultural and Household Dynamics	Cultural feeding practices	Traditional beliefs and feeding norms influence complementary feeding practices and may conflict with recommended nutrition guidelines for children.	“Some families still follow traditional feeding practices that are not always aligned with health recommendations.” (Participant 12)	Caregiver
Socio-cultural and Household Dynamics	Communication and trust with health workers	Effective communication between health workers and families builds trust and improves adherence to nutrition advice and utilisation of health services.	“We should not assume patient needs. We must listen directly and communicate openly with families.” (Participant 6)	Health Worker

The thematic analysis identified four interconnected domains that explain how demographic determinants contribute to the persistence of stunting within the context of health policy implementation. First, structural demographic vulnerability highlights how low maternal

education, high parity, and household socioeconomic limitations shape caregiving capacity and health literacy. These conditions limit caregivers' ability to understand child nutrition, interpret growth-monitoring information, and access preventive health services. Second, health service delivery gaps demonstrate that workforce limitations, uneven distribution of trained personnel, and heavy workloads reduce the effectiveness of maternal and child health services. Inadequate counselling, limited consultation time, and insufficient technical competencies weaken growth monitoring and nutrition guidance, particularly for high-risk families. Third, policy implementation and governance challenges reveal systemic barriers related to staff rotation, inefficient human resource allocation, and weak intersectoral coordination. These governance gaps hinder accurate targeting of vulnerable households and disrupt the continuity of stunting prevention programs at the community level. Finally, socio-cultural and household dynamics influence how families interpret and utilise health services. Cultural feeding practices, gender roles in decision-making, and the level of trust between caregivers and health workers shape participation in nutrition programs. Overall, the findings suggest that demographic characteristics do not solely drive stunting but emerges from the interaction between structural vulnerability, health system capacity, and policy responsiveness, emphasizing the importance of integrated, equity-oriented implementation strategies.

DISCUSSION

This study offers a qualitative examination of how demographic vulnerability and health policy implementation are experienced in relation to child nutrition and stunting contexts. The findings should be interpreted as context-specific, explanatory insights rather than evidence of causal or statistical relationships. Participants described consistent linkages between demographic conditions, service delivery experiences, and policy implementation processes. However, these linkages reflect perceived and contextually mediated relationships shaped by institutional practices and lived experiences. Accordingly, the study does not demonstrate that policy implementation or health system performance directly determines stunting outcomes, but rather illustrates how these factors are understood to influence access, utilization, and responsiveness of nutrition-related services. Although framed within a stunting context, several themes extend to broader maternal and child health system dynamics, including nutrition education, communication, and workforce capacity. These should be interpreted as part of the wider system influencing child nutrition rather than as stunting-specific pathways (Suprpto, 2026).

In this study, demographic characteristics represent structural determinants shaped by socioeconomic position and spatial inequality (Latif et al., 2025). However, intermediary determinants, specifically health system organization, workforce distribution, and service delivery processes, mediate the translation of structural disadvantage into biological growth outcomes (Malau et al., 2025). Additionally, Walt and Gilson's policy triangle provides an explanatory lens by highlighting the interaction among context, actors, process, and content (Marthalina et al., 2025). The study findings suggest that policy content (national stunting strategies) alone is insufficient to reduce disparities (Weeda et al., 2024). Instead, the policy process and actor dynamics at subnational levels determine operational effectiveness (Martopullo et al., 2024). Weak monitoring systems, fragmented sectoral roles, and misallocation of human resources illustrate process-level failures that amplify demographic vulnerability (Nambiza et al., 2025). From an implementation science perspective, the study supports the argument that fidelity, adaptation, and contextual fit are critical for intervention effectiveness (Lumastari Ajeng

Wijayanti, 2025). Demographic vulnerability requires differentiated implementation strategies rather than uniform program delivery (Phulkerd et al., 2025).

Globally, research consistently identifies maternal education, household wealth, rural residence, and high parity as significant predictors of stunting (Suprpto, 2025). Studies in South Asia and Sub-Saharan Africa demonstrate that children of mothers with low education and from poor households are disproportionately affected (Pienaaah et al., 2025). Similarly, regional evidence from Southeast Asia indicates persistent rural-urban disparities despite improvements in national coverage indicators (Supranoto et al., 2025). However, most quantitative analyses rely on cross-sectional survey data and emphasize statistical associations (Prayitno et al., 2025). The present study extends this literature by elucidating the mechanisms by which demographic risk interacts with governance and service-delivery structures. Consistent with emerging implementation research, our findings align with evidence suggesting that health system strength moderates the relationship between socioeconomic disadvantage and child nutrition outcomes (Rezaeizadeh et al., 2024).

The convergence with global literature lies in identifying maternal education, socioeconomic status, and rural residence as central determinants (Roba et al., 2026). However, there is divergence in the emphasis of the explanations. Whereas conventional epidemiological models frame these determinants as proximal risk factors, this study demonstrates that their impact is conditional upon institutional responsiveness (Shanthi, 2024). In some districts, strong workforce competence and coordinated service delivery mitigated demographic disadvantage, suggesting that structural vulnerability does not inevitably lead to adverse outcomes. Another divergence relates to the interpretation of rural disadvantage (Sofiyah et al., 2025). Rather than attributing disparities solely to geographic remoteness, participants emphasized administrative fragmentation, data inaccuracy, and weak targeting systems as critical contributors (Son & Kayaoglu, 2026). This reframes rural inequality as a governance issue rather than merely a spatial one. The findings have several systemic implications. First, demographic vulnerability mapping should be embedded within program planning to enable precision targeting. Static beneficiary lists are insufficient in contexts characterized by dynamic socioeconomic changes.

Second, strengthening workforce competence and stability is central to buffering structural disadvantage. Investment in continuous professional development, equitable distribution of skilled personnel, and appropriate task allocation is necessary to ensure service quality. Third, intersectoral convergence must move beyond formal coordination meetings toward operational integration with shared data systems and accountability mechanisms. Fragmented implementation reduces policy coherence and limits impact among high-risk populations. Fourth, culturally responsive communication strategies are required to address socio-cultural norms and gender dynamics that influence feeding practices and service utilisation. Overall, sustainable stunting reduction requires systemic alignment between demographic risk assessment and adaptive policy implementation, rather than simply expanding program coverage.

Recommendations for Future Research

This study was conducted in selected districts with high stunting prevalence; therefore, the findings should be interpreted within their specific contexts. While the qualitative design does not aim for statistical generalization, the results offer analytical generalization by identifying patterns and mechanisms that may be transferable to similar contexts characterized by socioeconomic vulnerability, decentralized health systems, and implementation variability. The relevance of these findings may extend to other low- and middle-income settings where demographic risk factors intersect with governance capacity and service delivery constraints. In particular, the

interaction between targeting accuracy, workforce competence, and intersectoral coordination represents system-level processes that are not unique to the study locations but are commonly observed in comparable public health systems. To enhance applicability, the study provides a conceptual framework that can be adapted and tested in different geographical and policy contexts. Rather than generalizing specific outcomes, this framework allows researchers and policymakers to examine how demographic vulnerability and implementation dynamics interact within their own settings. Future research is encouraged to validate and refine these findings through comparative studies across regions and through mixed-methods approaches that integrate contextual insights with quantitative measures. Such efforts will help determine the extent to which the identified mechanisms operate consistently across diverse populations.

CONCLUSION

This study concludes that demographic vulnerability, health service experiences, and policy implementation processes are interconnected within the broader context of child nutrition in Indonesia. The findings do not demonstrate causal relationships but suggest that stakeholders perceive these factors as influencing access to and engagement with nutrition-related services. The study underscores the importance of interpreting qualitative findings within their methodological boundaries. While the results provide valuable contextual understanding, further research using quantitative or mixed-methods designs is required to examine the strength and direction of associations between demographic factors, policy implementation, and stunting outcomes. Integrating qualitative insights with quantitative evidence may strengthen the development of more targeted, contextually appropriate stunting-reduction strategies.

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Conflict of Interest

The authors declare that there are no conflicts of interest related to this study.

Authors' Contributions

Suprpto: Conceptualization, Methodology, Formal Analysis, Investigation, Data Curation, Writing – Original Draft, Writing – Review & Editing, Supervision, Investigation, Data Curation, Writing – Review & Editing.

Tirta Asprimi Angreani: Methodology, Investigation, Validation, Data Curation, Writing – Review & Editing.

Amir Hossein Goudarzian: Methodology, Formal Analysis, Validation, Writing – Review & Editing.

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Declaration of Generative AI Use

The authors confirm that generative AI tools were used only to assist in language refinement and editing. All substantive content, analysis, and interpretation were developed independently by the authors. The authors take full responsibility for the integrity and accuracy of the manuscript.

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