Original Article

Maternal Knowledge of Stunting in Toddlers: A Cross-Sectional Study in Indonesia

Rosmiati[1], Eka Wulansari[2], Marhumi[1]

[1] Department of Midwifery, Faculty of Health Sciences, Puangrimaggalatung University, South Sulawesi Province, Indonesia
[2] Department of Health Administration, Faculty of Health Sciences, Puangrimaggalatung University, South Sulawesi Province, Indonesia

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Correspondence
Rosmiati; Department of Midwifery, Faculty of Health Sciences, Puangrimaggalatung University, South Sulawesi Province, Indonesia.

Email:
rosmiatihsan@gmail.com

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ABSTRACT

Background: Stunting remains a major public health issue in Indonesia, where maternal knowledge is a critical factor for prevention. However, limited evidence exists regarding the specific knowledge gaps of mothers in semi-urban communities in Indonesia, which hampers targeted interventions. This study aimed to analyze maternal knowledge levels regarding stunting and its associated factors.
Methods: This research utilized a descriptive cross-sectional design (reported according to STROBE guidelines) with 265 mothers of toddlers selected via stratified random sampling. Sample size justification and detailed inclusion/exclusion criteria were included. A validated and reliable questionnaire (Cronbach's α=0.87) was used. Data were analyzed using the Chi-Square test.
Results: Most respondents (71.7%) had a good knowledge level. However, a statistically significant knowledge deficit was found concerning the specific causes of stunting ($\chi 2=49.900;p<0.001$). Factors such as education and employment status were significantly associated with knowledge levels.
Conclusion: While general awareness of stunting is high, a critical gap exists in mothers' understanding of its complex causes. Educational interventions must become more focused. Future studies should employ longitudinal or interventional designs to assess the causal pathways between maternal knowledge and stunting prevention behaviors (Harmonized with Practical Implications).

Keywords: Stunting; Maternal Knowledge; Preschool Child; Health Education.

Implications for Practice:

- Health education materials for mothers should be revised to focus specifically on the multifactorial causes of stunting, not just its definition.
- During counseling sessions, midwives and community health workers (cadres) should be trained to explain the link between sanitation, recurrent infections, and nutrition.
- Public health centers can use these findings to develop targeted, evidence-based stunting prevention programs that address specific local knowledge gaps.

Introduction

Stunting is a critical global health problem that impairs child development and has long-term consequences for human capital. In Indonesia, the prevalence of stunting remains a national priority, with significant regional disparities. Maternal knowledge is a cornerstone of prevention, as it directly influences feeding practices and healthcare-seeking behaviors, making it highly relevant to nursing and public health.

Previous studies in Indonesia have confirmed a link between maternal education and stunting prevention practices (Dewi & Aminah, 2016). However, a significant research gap exists in understanding the specific domains of knowledge that are lacking, particularly in semi-urban settings (Kamariyah et al., 2024; Mulyaningsih et al., 2021; Mustakim et al., 2022). Much of the earlier research focused on general awareness rather than the nuanced understanding of stunting's multifactorial causes, a limitation this study addresses.

This study is guided by the Knowledge, Attitude, and Practice (KAP) framework. The KAP framework was used to structure the research questions and questionnaire design, ensuring all items assessed the fundamental knowledge required for appropriate stunting prevention behaviors (e.g., correct feeding and hygiene practices) (Hiew & Low, 2024; Sallam et al., 2023; Sojitra et al., 2024). The link between knowledge, attitude, and practice, and the maternal role in each variable, was analyzed within this framework, which posits that comprehensive knowledge is a prerequisite for positive health behaviors (Adane et al., 2017; Choufani & Barakat, 2023; Seneadza et al., 2022). The study variables, including demographic factors and knowledge levels, are analyzed within this framework to understand how knowledge influences potential practices in stunting prevention.

The findings of this study are expected to contribute significantly to nursing and health practice by providing evidence for developing more effective health education strategies. The results can guide nurses, midwives, and public health practitioners in designing targeted interventions that address the identified knowledge deficits, thereby improving maternal competencies and child health outcomes. The aim of this study was to analyze the level of maternal knowledge about stunting and its associated factors.

Methods

Study Design

This study utilized a descriptive cross-sectional design to assess maternal knowledge at a single point in time. cross-sectional design (reported according to STROBE guideline) (Ghaferi et al., 2021).

Participants

Using a stratified random sampling strategy, a sample of 265 mothers was recruited from the working area of Lempa Public Health Center, Wajo Regency, Indonesia. The inclusion criteria were mothers of children aged 6–59 months who were permanent residents. The sample size was determined using a standard formula for prevalence studies, with a confidence level of 95% and a margin of error of 5%, ensuring adequate statistical power. No participants dropped out. The participant selection process, including the target population, eligibility assessment, sampling method, and final number of participants included in the analysis, is summarized in Figure 1 according to the STROBE guidelines. Briefly, out of a total target population of 300 mothers assessed for eligibility, 265 participants were recruited and provided informed consent for the study, with no reported exclusions or missing data

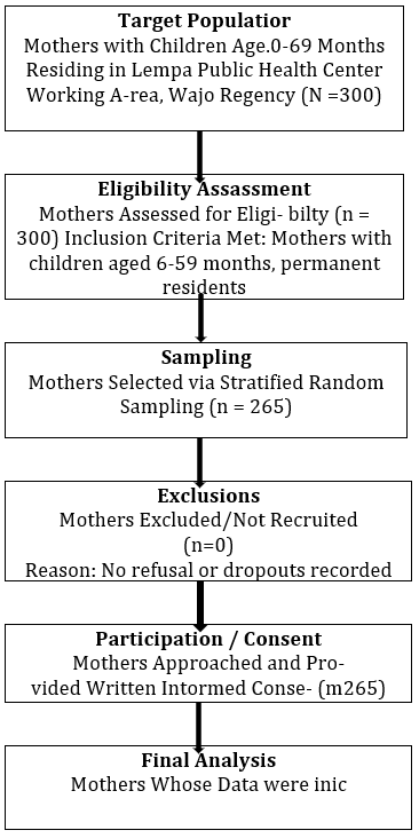

Figure 1. STROBE Flow Diagram of Participant Selection

Instruments

The research instrument was a structured questionnaire adapted from a previous study by Rizki Sri Wahyuni (2022). Permission for use and adaptation was obtained. The instrument's content validity was confirmed by a panel of three maternal and child health experts. Its reliability was established through a pilot test on 30 respondents, yielding a Cronbach's alpha of 0.87, which is within the "good" range. The questionnaire is a self-report instrument with demographic questions and 10 items assessing knowledge, with "Yes/No" response options. 10 items assessing knowledge. Knowledge levels were categorized into 'Good' (score ≥70%) and 'Poor' (score <70%), ensuring consistency with the Results section.

Data Collection

Data were collected between April and May 2025 by the primary researcher and two trained enumerators. Respondents were approached at local integrated health posts (Posyandu) after obtaining informed consent. Efforts to address potential sources of bias, particularly social desirability bias, included rigorous training of enumerators to ensure confidentiality and emphasize that the questionnaire was not an evaluation, thereby encouraging respondents to answer truthfully.

Data Analysis

Data were analyzed using SPSS version 26. Descriptive statistics were used to summarize sample characteristics and knowledge levels. The Chi-Square test was used to analyze the distribution of knowledge categories. The Chi-Square test was used to analyze the distribution of knowledge categories. No missing data were recorded. For consistency with the final analysis, the knowledge score was dichotomized: A score of 7-10 was categorized as 'Good Knowledge' and a score of 0-6 as 'Poor Knowledge'. 10 items assessing knowledge. Knowledge levels were categorized into 'Good' (score ≥70%) and 'Poor' (score <70%), ensuring consistency with the Results section. The indicator of the instrument used to measure the variable is reported in Appendix A.

Ethical Considerations

This study received ethical approval from the Health Research Ethics Committee of Puangrimaggalatung University (No.032/K.2-1/FIKES-UNIPRIMA/I/2025). Written informed consent was obtained from all participants before data collection.

Results

Table 1 illustrates that Maternal Knowledge Level was illustrated in Table 1. The results indicated that a majority of mothers (71.7%) had a good level of knowledge. Further Chi-Square analysis revealed that education level and employment status had a statistically significan association with maternal knowledge levels (p<0.05).

Table 1. Crosstabulation of Maternal Knowledge Levels by Respondent Characteristics (n=265)

Characteristics	Good Knowledge n (%)	Poor Knowledge n (%)	Total n (%)	p value
Age (years)				**0.001**
18–25	40 (58.8)	28 (41.2)	68 (25.7)	
26–35	115 (79.3)	30 (20.7)	145 (54.7)	
36–45	35 (67.3)	17 (32.7)	52 (19.6)	
Highest Education Level				**0.001**
Junior High School	40 (50.6)	39 (49.4)	79 (29.8)	
Senior High School	95 (74.8)	32 (25.2)	127 (47.9)	
College/University	55 (93.2)	4 (6.8)	59 (22.3)	
Employment Status				**0.001**
Housewife/Unemployed	130 (66.7)	65 (33.3)	195 (73.6)	
Employed	60 (85.7)	10 (14.3)	70 (26.4)	

Discussion

The main finding of this study—that general knowledge of stunting is high—aligns with previous Indonesian research, likely reflecting the success of national health campaigns (Dewi & Aminah, 2016). However, the critical insight is the significant knowledge deficit regarding the specific and multifactorial causes of stunting. international reports from WHO and UNICEF, which suggest that public health messaging often succeeds in building awareness of a term but fails to convey the complex causal pathways involving nutrition, sanitation, and recurrent infections (Bagamian et al., 2023; Gat-Yablonski & Phillip, 2015; Sahoo et al., 2025). The significant association found between higher maternal education and better knowledge levels (p<0.05) explains why education enhances knowledge. Mothers with higher education are generally better able to access, comprehend, and process complex health information (such as the role of sanitation, infection, and nutrition). This highlights that formal education and consistent information exposure are key mechanisms that enhance a mother's capacity. Furthermore, extending the discussion to other Indonesian studies shows that specifically dissects the *what vs. why* gap, providing a novel contribution to the literature (Celestino et al., 2023; Fauziah & Sukmawati, 2023).

This study adds to the existing literature by identifying a specific "what vs. why" knowledge gap within the KAP framework. Mothers may know. This suggested that formal education and greater exposure to social environments, as often found in employment or health-related activities, served as powerful external information sources, strengthening the knowledge component of the KAP model. Specifically, mothers with higher education were more likely to have "Good Knowledge" because they were better able to access, comprehend, and process complex health information related to multifactorial causes (Alzghoul & Abdullah, 2015; Kang & Bagaoisan, 2024; Zarei et al., 2024). *what* stunting is but not fully grasp *why* certain practices are critical for prevention, which

can hinder sustained behavior change. This challenges the assumption that general awareness automatically translates to comprehensive understanding (Freer et al., 2023; Hajri et al., 2021; Mustakim et al., 2022) Furthermore, comparison with recent Indonesian research is vital. Varying knowledge levels in another region, our study uniquely demonstrates that the deficit lies specifically in the 'why'—the causal pathways. This finding highlights a substantial knowledge gap regarding the specific causes, which is a significant barrier to effective stunting prevention behavior.

Implications and limitations

The scientific implication of this study is its contribution to the KAP theory, highlighting that the "Knowledge" component must be disaggregated into different domains (e.g., definitional vs. causal) for health interventions to be effective. Future research should use qualitative methods to explore the reasons behind these knowledge gaps. The study's limitations include its cross-sectional design, which prevents causal inference, and its single-site setting, which limits generalizability. The use of a self-report questionnaire may also be subject to social desirability bias.

Relevance to for Practice

These findings have direct applications for practitioners. Midwives and nurses should shift their counseling approach from simply defining stunting to explaining its causes. For instance, they can use visual aids to illustrate how frequent diarrhea can impede nutrient absorption. Health institutions should revise their educational materials to include clear explanations of the links between hygiene, diet, and growth. Policymakers can use this evidence to mandate more in-depth training for community health workers on the root causes of stunting.

Conclusion

The key takeaway is that while maternal awareness of stunting is widespread, there is a critical and specific knowledge gap regarding its causes. To effectively combat stunting, health education strategies must evolve from promoting general awareness to providing a deep, practical understanding of its multifactorial origins. Future studies should employ longitudinal or interventional designs to assess causal pathways between maternal knowledge and stunting prevention behaviors.

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CrediT Authorship Contributions Statement

Rosmiati : Conceptualization, Methodology, Investigation, Writing - Original

Eka Wulansari : Project Administration, Resources, Validation

Marhumi : Supervision, Data Curation, Writing - Review & Editing

Conflicts of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Supplementary Materials

Supplementary File S1: Questionnaire contains the full questionnaire used for data collection.

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