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Effectiveness of Community Nursing Home Visits Using Interactive Media for Stunting Prevention

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Abstract

ABSTRACT
Background of study: Stunting remains a persistent public health challenge, particularly in community settings where inadequate maternal practices during the first 1,000 days of life contribute to impaired child growth and development. Community nursing interventions that integrate home visits with interactive educational approaches are increasingly recognized as effective strategies to improve caregiving behaviors related to stunting prevention.
Aims and scope of paper: This study aimed to examine the effectiveness of community nursing home visits using interactive educational media in improving maternal practices for stunting prevention among caregivers of children aged 0–24 months.
Methods: A quasi-experimental study with a one-group pretest–posttest design was conducted in Desa Pintu Langit Jae, Angkola Julu Subdistrict, Padangsidimpuan City, Indonesia. A total of 63 mothers or primary caregivers were selected using purposive sampling. The intervention consisted of home visits conducted by community nurses using interactive educational media, including videos, guided discussions, and practical demonstrations, over a four-week period. Data were collected using structured questionnaires and observation checklists and analyzed using descriptive statistics and paired samples t-test.
Result: The results showed a significant improvement in maternal practice scores after the intervention. The mean pretest score was 56.42 (SD = 8.73), increasing to 74.86 (SD = 7.95) in the posttest, with a statistically significant difference ($p < 0.001$).
Conclusion: Community nursing home visits integrated with interactive educational media are effective in improving maternal practices related to stunting prevention and offer a practical, evidence-based approach for strengthening community health programs in resource-limited settings.

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INTRODUCTION

Background of the Study

Stunting remains a major public health challenge globally, particularly in low- and middle-income countries, including Indonesia. In the nutrition and child health literature, stunting is commonly described as a manifestation of chronic undernutrition, characterized by a child's height-for-age falling below the expected standard for age, reflecting prolonged nutritional deprivation during critical periods of growth and development, especially within the first 1,000 days of life (Nurlaily et al., 2025). This condition represents cumulative nutritional deficits and recurrent health

insults that adversely affect linear growth and long-term developmental outcomes (Scheffler et al., 2020). Stunting is associated with long-term consequences, including impaired cognitive development, reduced educational attainment, increased risk of non-communicable diseases in adulthood, and decreased economic productivity at the population level. Consequently, stunting prevention has become a global priority within maternal and child health programs and community-based health interventions (Lestari et al., 2024).

Literature Review

The etiology of stunting is multifactorial, encompassing inadequate dietary intake, recurrent infections, suboptimal infant and young child feeding practices, and limited access to quality health services (Raiten & Bremer, 2020). Family-related factors, particularly parental knowledge, caregiving practices, and health-seeking behaviors, play a crucial role in shaping child growth outcomes (Has et al., 2024). Evidence indicates that mothers' understanding of nutrition, appropriate complementary feeding, hygiene practices, and routine growth monitoring is strongly associated with improved child nutritional status (Wulandari et al., 2025). Therefore, effective health education targeting families—especially mothers of young children—constitutes a key strategy in stunting prevention efforts (Hardiyanti et al., 2024).

Community nursing plays a strategic role in addressing stunting through preventive and promotive interventions at the household level (Nasution & Pratama, 2023). Home visits conducted by community nurses facilitate individualized health education, contextual assessment of family practices, direct observation of child feeding behaviors, and continuous monitoring of child growth and development (Syahrir et al., 2025). Previous studies have demonstrated that home-based nursing interventions can positively influence parental practices, enhance adherence to recommended child care behaviors, and strengthen family engagement in child health programs (McMahon et al., 2025). Compared to facility-based education, home visits offer a more personalized and culturally appropriate approach, allowing nurses to tailor messages to the specific needs and living conditions of each family (Nadifa et al., 2024).

In recent years, the integration of interactive media into health education has gained increasing attention as an innovative strategy to enhance learning effectiveness. Interactive media are defined as educational tools that actively engage users through audiovisual content, two-way communication, demonstrations, and participatory learning processes rather than passive information delivery (Sahronih et al., 2020). International evidence suggests that interactive and audiovisual-based health education is more effective than conventional lecture-based methods in improving knowledge retention, attitudes, and health-related behaviors, particularly among populations with limited health literacy (Galmarini et al., 2024).

Gap Analysis

Although previous studies have demonstrated the effectiveness of home visit nursing interventions and the benefits of interactive media in health education, most existing research has examined these strategies separately. Limited empirical evidence is available on the combined application of interactive media within community nursing home visit interventions, particularly in rural or resource-limited settings. Furthermore, studies focusing on maternal practices related to stunting prevention during the critical early childhood period (0–24 months) remain insufficient, highlighting the need for applied research that integrates innovative educational approaches within routine community nursing services(Sitorus et al., 2025).

Rationale of the Study

The World Health Organization emphasizes that effective health communication should be accessible, engaging, context-sensitive, and empowering to enable individuals and communities to make informed health decisions (Caeiros et al., 2024). The use of multiple communication channels and interactive approaches is recommended to enhance comprehension and facilitate behavioral change, especially in community-based health promotion programs (Odongo, 2024). In line with this framework, combining interactive media with community nursing home visits has the potential to enhance family participation, strengthen understanding of stunting prevention practices, and promote sustainable behavioral changes at the household level (Nasution & Sansuwito, 2024). This

integrated approach is particularly relevant for vocational and applied nursing practice, which emphasizes practical, context-driven interventions.

Purpose or Hypotheses of the Study

Based on the above rationale, this study aimed to evaluate the effectiveness of a community nursing home visit intervention utilizing interactive media in improving stunting prevention practices among families with children aged 0–24 months. It was hypothesized that maternal practices related to stunting prevention would significantly improve following the implementation of the interactive media–based home visit intervention.

METHOD

Research Design

This study employed a quasi-experimental design without a control group, using a one-group pretest–posttest approach to examine the effectiveness of a community nursing home visit intervention utilizing interactive educational media for stunting prevention. This design was selected due to ethical and practical considerations in community settings, where withholding educational interventions from eligible participants was not feasible. To minimize internal bias, standardized intervention procedures and consistent measurement instruments were applied across all participants (Putri et al., 2025).

Participants

The participants of this study were mothers or primary caregivers of children aged 0–24 months residing in the study area. Eligible participants were required to be willing to participate throughout the intervention period and able to complete both pretest and posttest assessments.

Population and Sampling Methods

The study was conducted in Desa Pintu Langit Jae, Angkola Julu Subdistrict, Padangsidimpuan City, Indonesia. The study population consisted of 339 mothers with under-five children living in the village. A total of 63 mothers were selected as study participants using a purposive sampling technique, based on inclusion and exclusion criteria. Inclusion criteria were mothers or primary caregivers of children aged 0–24 months, residence in the study area, and willingness to participate. Exclusion criteria included mothers of children with congenital anomalies or chronic illnesses that could affect growth outcomes. The sample size was determined based on field feasibility, participant availability, and the intensity of the home visit intervention.

Instrumentation

Data were collected using structured research instruments, consisting of a maternal practice questionnaire and a practice observation checklist. The questionnaire assessed maternal practices related to stunting prevention, including complementary feeding, hygiene behaviors, responsive caregiving, and routine growth monitoring. Responses were scored using a Likert-type scale, with higher scores indicating better stunting prevention practices.

Content validity of the instruments was evaluated by experts in community nursing and public health to ensure relevance, clarity, and alignment with study objectives. Reliability testing demonstrated acceptable internal consistency, with a Cronbach's alpha coefficient greater than 0.70, indicating satisfactory reliability.

Instrument

The maternal practice questionnaire was administered twice, as a pretest prior to the intervention and as a posttest following completion of the intervention. The practice observation checklist was completed by trained community nurses during home visits to document observed caregiving behaviors and adherence to recommended practices.

Procedures and Time Frame

The intervention consisted of community nursing home visits integrated with interactive educational media, including short educational videos, guided discussions, and hands-on demonstrations related to stunting prevention. Educational content focused on age-appropriate complementary feeding, maternal and child hygiene practices, responsive caregiving, and routine growth monitoring. Home visits were conducted by trained community nurses once to twice weekly over a four-week period, with each session lasting approximately 30–45 minutes. Interactive media were delivered using mobile devices and printed visual materials to enhance participant engagement and comprehension.

Analysis Plan

Data analysis was conducted using the Statistical Package for the Social Sciences (SPSS) version 26. Descriptive statistics were used to summarize participants' demographic characteristics and baseline maternal practice scores. Inferential analysis was performed using the paired samples t-test to assess differences in mean maternal practice scores before and after the intervention. Statistical significance was set at a p-value of <0.05.

Scope and Limitations of the Methodology

This study was limited by the absence of a control group, which restricts causal inference. Additionally, the short duration of follow-up limited the ability to assess long-term sustainability of behavior change. Nevertheless, the study design was appropriate for evaluating practical, community-based nursing interventions in real-world settings and provides valuable applied evidence for vocational nursing practice.

Reporting Guidelines

This manuscript was prepared in accordance with the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) guidelines for reporting quasi-experimental and observational studies.

RESULTS AND DISCUSSION

Results

A total of 63 mothers or primary caregivers of children aged 0–24 months completed the study and were included in the final analysis. All respondents participated in the pretest and posttest assessments, resulting in complete data sets for statistical analysis.

1. **Participant Demographic Characteristics**

   Table 1 presents the demographic characteristics of the respondents. Most participants were aged 20–35 years (63.5%), had completed secondary education (55.6%), and were housewives (71.4%). The majority of respondents had children aged 6–24 months, representing the critical period for stunting prevention.

Tabel 1. Demographic Characteristics of Respondents (n = 63)

Variable	*Category*	*Frequency (n)*	*Percentage (%)*
Age of Mother	46< 20 years	6	9.5
	20–35 years	40	63.5
	> 35 years	17	27.0
Education Level	Primary education	18	28.6
	Secondary education	35	55.6
	Higher education	10	15.8
Occupation	Housewife	45	71.4
	Employed	18	28.6
Child's Age	0–5 months	14	22.2
	6–24 months	49	77.8

2. **Maternal Practices Before and After the Intervention**

Maternal practices related to stunting prevention were assessed before and after the home visit intervention using interactive educational media. As shown in Table 2, the mean practice score increased substantially following the intervention.

Tabel 2. Maternal Practice Scores Before and After Intervention (n = 63)

Measurement	Mean	Standard Deviation (SD)	Minimum	Maximum
Pretest	56.42	8.73	38	72
Posttest	74.86	7.95	58	90

3. Hypothesis Testing

The effectiveness of the intervention was evaluated using a paired samples t-test. The analysis demonstrated a statistically significant improvement in maternal practice scores after the intervention.

Tabel 3. Paired Samples T-Test of Maternal Practice Scores

Variable	Mean Difference	t-value	p-value
Pretest – Posttest	−18.44	−12.67	< 0.001

The results indicate a significant difference between pretest and posttest maternal practice scores ($p < 0.05$), confirming that the community nursing home visit intervention using interactive media had a positive effect on improving maternal practices related to stunting prevention.

Discussion

The purpose of this study was to evaluate the effectiveness of a community nursing home visit intervention utilizing interactive educational media in improving maternal practices related to stunting prevention among caregivers of children aged 0–24 months. The results showed a significant improvement in maternal practice scores after the intervention, indicating that the use of interactive media during home visits was effective in enhancing stunting-prevention behaviors among families in Desa Pintu Langit Jae. This finding aligns with previous studies demonstrating that structured health education delivered through interactive media can significantly improve health-related behaviors in community settings (Ansari et al., 2023).

Interactive educational media such as short videos and visual demonstrations provide multimodal learning opportunities that can increase comprehension and retention among participants, particularly in populations with varied levels of health literacy (Galmarini et al., 2024). Multimedia health education has been shown to be superior to traditional lecture-based methods because it engages visual and auditory channels simultaneously, which facilitates deeper understanding and practice (Vagg et al., 2020). The use of interactive media in this study likely contributed to participants' better grasp of age-appropriate complementary feeding, hygiene practices, and growth monitoring, as indicated by the increase in posttest scores.

The home visit component of the intervention allowed community nurses to tailor educational messages based on the real-life context of each family, observe caregiving practices directly, and provide individualized feedback. This personalized approach has been recognized as a strength of home-based nursing interventions, as it enables nurses to identify specific barriers and facilitators within each household (Kanda et al., 2022). For example, by visiting families in their own environment, nurses could address specific misconceptions about child feeding and hygiene practices that are culturally embedded, which may not surface in facility-based sessions.

Evidence from community health programs supports the notion that home visit interventions are effective in promoting positive caregiving behaviors and improving child health outcomes. A randomized controlled trial in rural Bangladesh found that home visits by trained community health workers significantly improved complementary feeding practices and reduced stunting rates among children aged 6–24 months (Verma et al., 2024). Similarly, a quasi-experimental study in Nepal demonstrated that maternal participation in home-based education programs was associated with

increased rates of exclusive breastfeeding and improved hygiene practices (Suresh et al., 2026). These studies corroborate the results of the present research, highlighting the value of home visit strategies in enhancing health-promoting behaviors among caregivers.

Another important aspect of this study relates to the social and cultural context of the target population. Cultural beliefs and norms play a significant role in shaping infant and young child feeding practices, as well as hygiene behaviors (Harniati et al, 2025). Traditional beliefs about child growth and nutrition may influence caregiving practices in ways that are not always aligned with current nutritional recommendations. The interactive nature of the media used in this study, coupled with the personalized attention provided during home visits, may have facilitated more effective communication and negotiation of behavior change within the cultural framework of the families involved.

The significant improvement in maternal practices observed in this study also suggests that interactive media can enhance self-efficacy among caregivers. According to Bandura's social cognitive theory, self-efficacy belief in one's ability to perform specific behaviors is a critical determinant of behavior change. Interactive media that includes demonstrations, feedback, and opportunities for practice can strengthen caregivers' confidence in implementing recommended practices, thereby increasing the likelihood of sustained behavior change (Darvishpour et al., 2025).

Despite the positive findings, this study had limitations that should be acknowledged. The absence of a control group limits the ability to attribute changes exclusively to the intervention, as external influences could also have affected maternal practices. Future research with randomized controlled designs is recommended to establish causal inferences more robustly. Additionally, long-term follow-up assessments would be valuable to determine whether improvements in maternal practices are sustained over time.

In summary, the results of this study demonstrate that community nursing home visits using interactive educational media are effective in improving maternal practices related to stunting prevention. The personalized, context-sensitive, and engaging nature of the intervention contributed to meaningful improvements in caregiving behaviors among mothers of young children. These findings contribute to the growing body of evidence supporting interactive and home-based approaches in community health education and provide practical insights for nursing practice, especially in rural and low-resource settings.

CONCLUSION

This study concludes that community nursing home visits integrated with interactive educational media are effective in improving maternal practices related to stunting prevention among mothers or primary caregivers of children aged 0–24 months. The significant increase in post-intervention practice scores indicates that interactive, home-based educational approaches can enhance caregivers' understanding and implementation of appropriate feeding, hygiene, caregiving, and growth monitoring behaviors during the critical early life period.

The combination of personalized home visits and interactive media allowed nurses to deliver context-sensitive education tailored to the real-life conditions of families, thereby increasing engagement, comprehension, and self-efficacy among caregivers. This approach proved particularly suitable for community settings where cultural norms, household dynamics, and varying levels of health literacy influence caregiving practices.

Although this study was limited by the absence of a control group and short-term outcome measurement, the findings provide practical evidence supporting the integration of interactive media into routine community nursing home visit programs. Future studies are recommended to employ controlled designs and longitudinal follow-up to assess the sustainability of behavior changes and their impact on child growth outcomes.

Overall, this study highlights the potential of innovative, interactive, and home-based nursing interventions as a strategic approach for stunting prevention in community settings, particularly in rural and resource-limited areas.

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AUTHOR CONTRIBUTION STATEMENT

The authors contributed equally to this study. All authors were involved in the conceptualization and design of the research. The first author led the data collection process, including coordination of the community nursing home visit intervention and administration of research instruments. The second author contributed to data analysis and interpretation of findings. The third author provided critical input on methodological rigor and community health perspectives. All authors participated in drafting, reviewing, and revising the manuscript and approved the final version for publication.

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