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INNOVATION IN EDUCATIONAL MEDIA AND CAPACITY BUILDING FOR CADRES AND ADOLESCENT GIRLS IN STUNTING PREVENTION: CASE STUDY INEYS PROGRAM IN EAST LOMBOK

Yudha Anggit Jiwantoro[1]*, Maruni Wiwin Diarti[2], Ni Putu Karunia Ekayani[3], AASP. Chandradewi[4], Mutiara Rachmawati Suseno[5], Joyeti Darni[6], Moh. Arip[7], Mardiatun[8], Yuni Widyastuti[9], Zulfatedy Pratama[10]

[1,7,8]Department of Nursing, Ministry of Health Polytechnic of Mataram, NTB, Indonesia.
[2]Department of TLM, Ministry of Health Polytechnic of Mataram, NTB, Indonesia.
[3,5,9]Department of Midwifery, Ministry of Health Polytechnic of Mataram, NTB, Indonesia.
[4,6,10]Department of Nutrition, Ministry of Health Polytechnic of Mataram, NTB, Indonesia.

***** Corresponding email: *yudhaanggitj@gmail.com*

ABSTRACT

Background: Stunting remains a major public health challenge worldwide, with more than 148 million children under five affected globally, particularly in low- and middle-income countries. In Indonesia, despite progress in reducing prevalence, East Lombok, NTB, continues to face a high burden. Addressing stunting requires strengthening community-based programs, accurate anthropometric measurements, and improving adolescent girls' nutritional literacy to break the intergenerational cycle of malnutrition. Objective: to evaluate the effectiveness of educational media innovations and capacity building for cadres and adolescent girls in stunting prevention through the INEYS program in East Lombok. Methods: A cross-sectional design with educational interventions was implemented in Pringgajurang Utara Village. Participants included 66 female students, 67 adolescent girls, and 21 pregnant women selected through total sampling. Interventions involved cadre training using simulation and anthropometry pocket books, adolescent and maternal education using comics, animation films, and flipcharts, as well as Hb testing, joint iron tablet (TTD) consumption, and quizzes. Data collection used pre–post knowledge tests, anthropometry skill observations, and Hb measurements. The data were analyzed descriptively and using paired t-test and Wilcoxon. Results: Cadre knowledge scores increased significantly from a mean of 64.06 (pre) to 83.65 (post), and skills improved from 61.38 to 84.74 ($p < 0.001$). Pregnant women's knowledge rose

from 55.05 to 82.05 ($p < 0.001$). Among adolescent girls, 91% had normal Hb levels, and 83% committed to routine TTD consumption, although 17% remained hesitant.

Keywords: *stunting prevention, educational media, cadre training, adolescent girls, INEYS program*

INTRODUCTION

Stunting remains the world's most challenging under-five nutrition issue. The State of Food Security and Nutrition in the World (SOFI) 2023 report estimates that approximately 148 million children under five (≈22% of the global under-five population) are stunted, with the greatest burden in low- and middle-income countries (UNICEF & WHO, 2025). These figures emphasize that accelerating nutritional improvement requires a cross-sectoral approach that addresses food vulnerability, basic health services, and infant and young child feeding (IYCF) practices.

In Indonesia, the government reported a reduction in the national stunting prevalence to 19.8% by 2024 (Indonesian Health Survey/SKI 2024). This achievement demonstrates progress, but still requires program consolidation focusing on the first 1,000 days of life (HPK), quality services at the community health center (Puskesmas) and integrated health post (Posyandu) levels, and interventions for adolescent girls (anemia and adherence to iron supplement consumption) as a pipeline for healthy mothers (Hasneli N et al., 2023; SKI, 2023).

At the regional level, West Nusa Tenggara (NTB) has been categorized as a province with a high stunting burden for the past few years; the 2022 SSGI release, for example, places NTB at over 30% (SKI, 2023). On the policy side, the NTB Provincial Government issued Governor's Regulation No. 8 of 2024 concerning the acceleration of stunting reduction as a means of strengthening governance and cross-sectoral convergence (Governor's Regulation, 2024). At the micro level, internal data from the Montong Betok Community Health Center (East Lombok) we assisted (2025) recorded that 648 of 3,920 toddlers (16.5%) were categorized as stunted, illustrating the need for continuous improvement in service quality and community involvement (Lotim Health Office, 2025).

The impacts of stunting extend from impaired physical and cognitive growth and development, reduced learning readiness and educational attainment, to reduced productivity in adulthood, which in turn erodes human capital and economic growth (Public Health, 2018; Sutarto et al., 2018). Therefore, investment in stunting prevention (nutrition, health, water and sanitation, and social protection) is considered the most cost-effective human

development strategy, especially if it targets vulnerable groups from pre-pregnancy to age two (Dewi & Sari, 2020; Ministry of Health, 2023).

The root causes of stunting are multicausal, ranging from inadequate nutritional intake (especially animal protein and micronutrients), incorrect PMBA practices, recurrent infectious morbidity, to limited access to health services and less hygienic environments (Rohmi et al., 2025). The government responded through a series of policies and cross-sectoral convergence actions, including strengthening primary services, a program for supplementing iron tablets for adolescent girls, and specific nutrition-sensitive interventions in villages/sub-districts (Nisa, 2018).

As a form of innovation, the INEYS (Indonesia End Stunting) mentoring program presents a new approach through interactive educational media. This innovation includes training cadres using anthropometric simulation methods to improve measurement accuracy, educating adolescents using animated films and comic books to prevent stunting to attract the interest of the younger generation, and involving cross-sectoral groups such as the Family Welfare Movement (PKK), the Health Office, Community Health Centers (Puskesmas), and the Education Office in each program. This approach demonstrates novelty because it focuses not only on formal education but also on building collaborative networks and creating creative media that are close to the target audience (Mastina & Mitra, 2023; Syamsuadi et al., 2023).

Given the persistently high stunting rate and the gap between programs and field practices, research is needed that not only assesses achievement but also tests the effectiveness of innovative educational media, cadre training, and cross-sector collaboration as a comprehensive strategy for stunting prevention. Based on this background, this study aims to evaluate the effectiveness of innovative educational media and cadre training in supporting efforts to accelerate stunting reduction. The research focuses on increasing the capacity of integrated health post (Posyandu) cadres, improving the understanding of adolescent girls and pregnant women regarding nutrition and iron supplement consumption, and strengthening cross-sector collaboration in implementing stunting prevention programs in the NTB region.

METHODS

This study used a cross-sectional design with educational interventions, implemented in Pringgajurang Utara Village, East Lombok Regency. The study population included 66 integrated health service post (Posyandu) cadres, 67 adolescent girls (rematri) in MA NW Pringgajurang Utara, and 21 pregnant women registered as Posyandu participants. The sampling technique used was total sampling, so that the entire population that met the criteria were included as respondents.

The research interventions included several activities, namely: (1) Training of integrated health post (posyandu) cadres using anthropometric practice simulation methods and providing anthropometric pocket books as standard guides; (2) Education for adolescents and pregnant women using innovative media in the form of stunting prevention comics, animated films, and immunization flipcharts; (3) Hemoglobin (Hb) level checks, joint TTD consumption, and evaluation quizzes to measure participant knowledge and involvement; and (4) Cross-sector coordination involving the Montong Betok Community Health Center, the Health Office, the Education Office, and the village government.

The research instruments used included: a knowledge questionnaire (pre-post test) for adolescent girls, pregnant women, and cadres; an observation sheet for cadres' skills in anthropometric measurements (child position, use of tools, reading results, recording); Hb examination using POCT hemoglobin; and a feedback sheet with a likert scale to assess participant understanding and satisfaction. Intervention evaluation was conducted through several approaches, including pre- and post-test knowledge, observation of cadre skills during anthropometric measurements, and participant feedback. Data analysis was conducted using univariate descriptive analysis to describe respondent characteristics and activity outcomes. Statistical tests (paired t-test and Wilcoxon test) were used to measure differences in pre-post results.

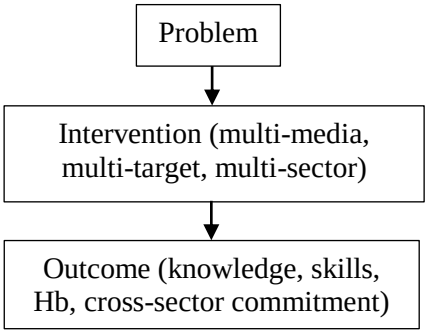

Figure 1. Intervention flow

RESULTS AND DISCUSSION

Table 1. Anthropometric Knowledge and Skills (Pre and Post) Cadre Training

Knowledge	Mean	Median	Standard deviation	p-value
Pre	64.06	66	10.93	0.001
Post	83.65	84	5.09	
Skills	**Mean**	**Median**	**Standard deviation**	**p-value**
Pre	61.38	61	8.57	0.001
Post	84.74	85	2.87	

In terms of knowledge, the mean score increased from 64.06 in the pretest to 83.65 in the posttest. The median score also increased from 66 to 84, with the standard deviation decreasing from 10.93 to 5.09. This indicates that in addition to an increase in overall knowledge scores, the variation among respondents also decreased, indicating that cadres' understanding became more evenly distributed after the training. In terms of skills, improvements were significantly higher. The average skill score rose from 61.38 to 84.74, with the median increasing from 61 to 85. The standard deviation decreased from 8.57 to 2.87, indicating that nearly all cadres achieved relatively uniform skill levels after training.

The results of the study showed a significant increase in the knowledge and skills of cadres after receiving anthropometry training. The average cadre knowledge score increased from 64.06 to 83.65, while the skill score increased from 61.38 to 84.74. The decrease in standard deviation in both aspects indicates that the cadres' understanding has become more evenly distributed. This proves that the training method with practical simulations and the provision of anthropometry pocket books is effective in improving measurement accuracy. These findings align with research (Priyono, 2020) which confirms that practice-based training is more effective in improving competence than just theory.

Study Rahmadi et al., (2023) The training significantly increased participants' knowledge of anthropometry, growth monitoring, and toddler nutrition by 40.4%. Practice, demonstration, and mentoring improved participants' skills in measuring length and height by an average of 46.5% and 34.6%. The increased capacity and skills of integrated health post (Posyandu) cadres can be a key factor in stunting prevention efforts, particularly by helping identify stunted children and providing guidance and knowledge to parents on family nutrition management, including making better decisions about healthy food for children.

Table 2. Pregnant women's knowledge about ANC and the importance of taking TTD

Knowledge	Mean	Median	Standard deviation	p-value
Pre	55.05	55.00	8.08	0.001
Post	82.05	82.00	5.22	

The average knowledge score increased from 55.05 in the pretest to 82.05 in the posttest. The median knowledge score also significantly increased from 55 to 82, indicating that the majority of pregnant women achieved a better understanding after the intervention. Furthermore, the standard deviation decreased from 8.08 to 5.22, indicating that the variation in knowledge among pregnant women decreased, resulting in a more equitable understanding.

In addition to cadres, this study also found an increase in pregnant women's knowledge about ANC and iron supplement consumption. The average score increased from 55.05 to 82.05 after the educational intervention with comics, booklets, and discussions. These results align with the Health Belief Model theory, which states that providing engaging, relevant, and easy-to-understand information can influence risk perception and increase adherence to health behaviors.(Green et al., 2020). Visual media-based education has been proven to simplify complex health concepts, making them easier for pregnant women to understand (Primary, 2023).

Table 3.HB Level Status in Adolescent Girls and Commitment to Taking Iron Tablets

Hb Status	Amount	Commitment to drinking TTD (%)
Normal	61	83% Yes and 17% Uncertain
Low	6	

The results showed that of the 67 adolescent girls examined, the majority had normal Hb levels (61), while 6 were identified as having low Hb levels. Interestingly, in terms of commitment to iron supplement consumption, the majority of adolescents stated their readiness to take iron supplement regularly (83% said "Yes"), although 17% remained uncertain.

In the group of adolescent girls, hemoglobin tests showed that the majority had normal Hb levels (91%), with 83% expressing a commitment to regularly taking iron tablets. However, 17% remained unsure and 6 students had low Hb. This indicates the need for a long-term support strategy to ensure adherence to iron tablet consumption. Research from Dwistika et al., (2023) supports these findings by showing that digital media-based educational interventions can improve adolescent compliance in iron supplement consumption. There was a significant difference in compliance with iron supplement consumption ($p=0.000$) and hemoglobin levels ($p=0.000$) in the experimental group with animated videos. In the control group with leaflets, there was an increase in compliance ($p=0.000$), but no significant difference in hemoglobin levels ($p=0.112$). The media innovation used in the INEYS Program has its own advantages because it involves various educational media, such as research by (Sartika & Purnanti, 2021) that health education using audiovisual media and booklets is effective in improving the skills of cadres in conducting screening. To determine the effectiveness of providing educational media booklets, a test was conducted. The probability value (p) <0.001 was obtained, which means that video educational media is effective in improving cadre skills in early detection of stunting.

In addition to the media aspect, this study emphasizes the importance of cross-sector collaboration. The involvement of the Health Office, Community Health Centers (Puskesmas), schools, and village governments strengthens

program implementation. This approach aligns with UNICEF's nutrition intervention convergence theory, which emphasizes the integration of nutrition-specific (education, supplementation) and nutrition-sensitive (education, sanitation, and social protection) programs to accelerate stunting reduction (UNICEF, 2020). Thus, this research presents good practices of collaboration that can be replicated in other regions.

The INEYS program in East Lombok has successfully introduced an innovative approach to stunting prevention. The combination of practice-based cadre training, creative educational media for adolescents and pregnant women, and cross-sector coordination demonstrated significant improvements in participants' knowledge, skills, and commitment. This program can serve as a model for developing community-based stunting interventions in other areas, particularly those with a high stunting burden.

CONCLUSION

The study results showed that innovative educational media and strengthening the capacity of cadres through training and mentoring significantly improved cadres' knowledge and skills in anthropometric measurements, as well as pregnant women's knowledge regarding ANC and iron tablet consumption. Furthermore, education based on comics, animated films, and interactive activities successfully increased adolescent girls' awareness of the importance of anemia prevention. Most adolescent girls had normal hemoglobin levels, with 83% expressing a commitment to regularly consuming iron tablet, although a small number remained hesitant.

These findings confirm that an innovative approach combining creative education, capacity building for cadres, and cross-sector collaboration can be an effective strategy for preventing stunting at the community level. The INEYS program in East Lombok demonstrated that actively engaging cadres, adolescents, and pregnant women through engaging educational media can strengthen early prevention behaviors and provide a model for implementation that can be replicated in other areas with similar conditions.

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