ORIGINAL ARTICLE

Development of the "*Pegasting*" Module and the Effectiveness of Module Utilization for Intensive Assistance for Mothers in Preventing Stunting

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ABSTRACT

OBJECTIVE: We aimed to develop the "*Pegasting*" Module and the Effectiveness of Module Utilization for Intensive Assistance for Mothers in Preventing Stunting.

METHODOLOGY: The Design was research and development using a quasi-experiment (one group pre-post test design). The location was 10 villages in the North Konawe Health Service Work Area. The total sample consisted of 90 participants. Determining the number of samples using the Slovin formula. The data was analyzed using a questionnaire based on data collected from the research instrument. The pre-test and post-test results were compared using the Wilcoxon signed-rank test. The analysis utilized the SPSS Statistics 22 application. Inclusion criteria were mothers with toddlers who were mentally healthy, had visited a health center, and were not illiterate.

RESULTS: The module validation stage was conducted by media experts, achieving a score of 68.48% in the feasible category and 97.33% from material experts in the very worthy category. The study indicates that providing training significantly enhances the knowledge and behavior of *pegasting* cadres, with p values of 0.001 and 0.012, respectively. The experimental group showed a significant difference in knowledge before and after the intervention compared to the control group, with p-values of 0.002 and 0.001, respectively.

CONCLUSION: The intervention significantly impacted the behavior of mothers in both experimental and control groups

KEYWORDS: *Pegasting* Module, Effectiveness of utilization, Intensive Assistance, Mother, Stunting

INTRODUCTION

Stunting, a significant public health issue, particularly in developing countries, is characterized by impaired growth and development in children due to chronic malnutrition. Globally, it is estimated that 149 million children under five years of age are stunted, with the highest prevalence observed in South Asia and sub-Saharan Africa [1]. The multifactorial nature of stunting necessitates a comprehensive understanding of its determinants, particularly focusing on maternal characteristics, nutritional knowledge, and health behaviors. Approximately 22% of children under five years old worldwide are stunted, with the highest prevalence found in regions such as Asia and Africa [2,3].

In Indonesia, the situation is alarming, as the country ranks third in Southeast Asia for stunting prevalence, with approximately 24% of children under five affected [4]. One chronic nutritional issue that poorer nations deal with is stunting [5]. Yogyakarta has the third lowest rate of stunting in Indonesia at 17.3%, followed by Jakarta and Bali at 17.3% and 10.9%. Indonesia seeks to minimize impaired growth and development by 14%[6]. With Yogyakarta having the third lowest stunting rate in Indonesia at 17.3%, following Jakarta and Bali at 17.3% and 10.9%, respectively, Indonesia seeks to minimize impaired growth and development by 14% [7].

Stunting is the term used to describe the inability to reach adulthood as predicted by genetic potential because of early-life linear growth retardation (length/height for age)[8,9]. Stunting can lead to adverse health outcomes such as decreased performance, difficulty in achieving optimal physical and cognitive development, and an increased risk of chronic non-communicable diseases [10]. To avoid long-term effects, it is critical to address stunting as soon as possible with appropriate diet and medical therapies. Stunting may also affect an adult's productivity and earnings capacity, which can have an economic impact [11].

The toddler years are particularly susceptible to disease and starvation. Undernourished newborns and kids can have detrimental effects on a person's physical, mental, and spiritual development in addition to producing low-quality human resources[12]. Toddlers' nutritional quality is crucial to their overall health because younger children are more susceptible [13]. Establishing a solid foundation for long-term health and well-being during the toddler years requires proper nutrition[14]. Parents and caregivers need to provide balanced meals that meet the nutritional needs of young children to support their growth and development [15].

Indonesia has long involved cadres in providing maternal and child health services [16]. Cadres are spearheads in the early detection of public health problems and are trusted by the community because cadres themselves are part of the community [17]. Referring to the 5th action of the eight convergence actions to accelerate stunting prevention, namely making certain that the cadres who support the village government in carrying out integrated nutrition interventions are available and operating at the village level, researchers consider it necessary to strengthen the role of cadres in preventing stunting. Researchers also hope that strengthening the Family Assistance Team can increase family knowledge and skills in avoiding stunting by presenting cadres to go directly to family homes.

We aimed to develop the "*Pegasting*" Module and determine the effectiveness of module utilization for intensive assistance to mothers in preventing stunting. The novelty of this study lies in the development of the module, which is specifically designed for intensive aid to mothers in efforts to prevent stunting. Hopefully, this module can expand moms' understanding and proficiency by providing proper nutrition for child growth and reducing stunting rates in the community.

METHODOLOGY

Design

The Design was research and development and using quasi-experiment. Development research was carried out in four stages: planning, writing, review and revision, finalization, and printing. The produced product was a printed module. To determine the feasibility of the module, the researcher conducted a validation/review by two experts, as well as face-to-face and field trials. After module development was completed, the research was continued using the Quasy experiment (one group pre-post test design) to see the effectiveness of the module that had been produced in providing intensive assistance to pregnant women up to 2 months postpartum. The resulting product consists of one module.

Sample

Determining the number of samples using the Slovin formula. The total sample consisted of 90 participants. In this study, 30 family support teams from 10 villages in the north Konawe health service work area will be given socialization and training for family support teams in preventing stunting. The respondents involved in this study were 30 cadres as family companions and 60 mothers (30 mothers as target family companions and 30 mothers as controls). Inclusion criteria were mothers with toddlers who were mentally healthy, had visited a health center, and were not illiterate. Exclusion criteria were being physically and mentally unhealthy, mentally ill, and illiterate.

Data collection

The preliminary investigation involved a review of the literature and field surveys. After a review of the literature, seven instructional resources were found to be appropriate for mothers to receive during the mentoring process. Causes of stunting, how to know if a child is stunted, the dangers of stunting, prevention and the role of the family in preventing stunting, parenting patterns for stunted children, and complementary foods for breast milk.

The study's findings were combined into a questionnaire with recommendations, the cadre agreement scale (strongly agree, agree, neutral, disagree, and strongly disagree), and stunting instructional materials. The questionnaire was then utilized in a field survey with two midwives to ascertain the supplies required to educate expectant mothers about stunting via the module. According to the field survey results, every respondent agreed with the ten education items, ranging from agree to agree strongly. Among the recommendations are (1) nutritional advice for expectant moms, (2) nutrition for expectant and nursing mothers, (3) challenges in implementing complementary feeding, and (4) menu changes for complementary feeding. At this point, the content was gathered for module design, which was utilized to assemble the product's first version as a concept for instructional materials that would be incorporated into the final product.

Subsequently, the researcher furnished a validation questionnaire sheet addressed to media experts, which had questions about the display's viability (seven things), user-friendliness (four items), and presentation visuals and consistency (eight items). The media specialist recommended that the product be used with some modifications, including changes to the application's font size, colour, and typeface choices.

The trial phase of module utilization was undertaken on 30 cadres from the Health Center in the operating region of the North Konawe District Health Office. Pregnant women participated in the module usage experiment by having cadres use the module to educate them about stunting. The ladies subsequently completed a questionnaire with statements on the application's viability. The 14 statement items on the trial questionnaire included questions about perceived usefulness, actual usage, attitude towards, behavioural intention,

perceived ease of use, and three statement items each on perceived usefulness and actual usage. The trial's outcomes from the feasibility test were used to revise the product.
This study consisted of three stages of implementation. The first stage was development and expert testing, followed by a limited trial of the family support team. The second stage was socialization in the form of Family Support Team training. Furthermore, training will be provided with materials consisting of stunting, the dangers of stunting, how to prevent stunting, the importance of assistance from pregnancy to the postpartum period or the first 1000 days of birth, and the technical intensive aid that will be carried out. In the final step of this stage, the family support team will measure their knowledge again. The third stage is implementation as a companion; each Family Support Team will assist two pregnant women for one month (two times) to educate material related to stunting, health services for pregnant women, nutrition for pregnant women, breastfeeding mothers, and toddlers and 2 months, after delivery (eight home visits). The Family Support Team will routinely visit families every week for 2 months to motivate mothers to provide breast milk independently and exclusively so that it becomes a habit for mothers to breastfeed.

Data analysis
The data will be analyzed based on data collected from research instruments in the form of questionnaires. Frequency distribution of the characteristics of the research participants (mothers and members of the Family Assistance Team) was used for the univariate analysis. The Wilcoxon signed rank test was employed in bivariate analysis to compare the pre-and post-test findings. The study utilized the SPSS Statistics 22 application.

Ethical permission: The research has been approved by the ethics commission of the Kendari Ministry of Health Polytechnic under the number DP.04.03/F.XXXVI.15/007/2024.

RESULTS

The product feasibility assessment results indicated that this media module on stunting education would likely work. Not many modifications were performed at this point. Adding displays in the form of materials and photos was one of the modifications performed to improve the product.

Table I: Validation Results of Media Experts and Material Experts

Variables	Media Expert Validation	Subject Matter Expert Validation	Test Results
Category	Worthy	Very Worthy	Very Worthy
Score Interval	61%<X<80%	81%<X<100%	81%<X<100%
Percentage Score	68.48	97.33	92.86
Total Score	65	58	2450

Table II showed that the average family companion was in the age category of 31-40 years. The number of respondents in this age group was 13 (43%). Based on the education category, the average family companion was a high school graduate, and there were 22 people (73.4%). Most family companion jobs were housewives (27 people, 90%). Other jobs were traders, entrepreneurs, and fishermen, each with one person (3%).
The characteristics of the mothers as the target of family companions from both groups were mainly in the age category of 20-30 years. When viewed from the last education and occupation, the target of family companions from both groups, on average, is education up to junior high school and high school, and most of the targets with occupations are housewives.

Table II: Respondent Characteristics

Category	Family Companion	Family (Mother)	
	N	N (Intervention)	N (Control)
Age			
20-30	12 (40%)	17 (57%)	23 (77%)
31-40	13 (43%)	13 (43%)	7 (23%)
>40	5 (16.7%)	0	0
Education			
Junior High School	8 (33%)	6 (20%)	8 (27%)
Senior High School	22 (73.4%)	21 (70%)	12 (40%)
University	0	3 (10%)	10 (33%)
Work			
Housewife	27 (90%)	28 (93.3%)	30 (100%)
Trader	1 (3%)	2 (6,7)	0
Self-employed	1 (3%)	0	0
Fisherman	1 (3%)	0	0

Table III showed an increase in the knowledge and attitudes of family companions after training with the module. The average initial knowledge score was 59.33, which increased to 90.70. The average value of the pre-test attitude was 78.30, rising to 91.23 in the post-test. The results for mothers (families) showed the same thing as family companions/cadres, namely, an increase in both the assisted group (intervention group) and those who were only given the module to study independently (control group). The Kolmogorov-Smirnov test was used to check the normality of each variable to choose the best analysis test. The normality test results showed that the knowledge variable for family companions and mothers was not normally distributed, whereas the attitude variable was normally distributed. Further details can be found in **Table III**.

Table III: Description of Research Variables

Variables	Mean	Min	Max	Normality Test
Family Companion				
Knowledge (Pre Test)	59.33	40	70	0,000
Knowledge (Post Test)	90.70	80	100	0,000
Attitude (Pre-Test)	78.30	55	95	0.2
Attitude (Post-Test)	91.23	78	100	0.072
Family/Mother (Intervention Group)				
Knowledge (Pre Test)	48	40	70	0,000
Knowledge (Post Test)	85	70	100	0,000
Attitude (Pre-Test)	71.42	55	93	0.137
Attitude (Post-Test)	91.95	78	100	0.165
Family/Mother (Control Group)				
Knowledge (Pre Test)	47.30	40	70	0,000
Knowledge (Post Test)	63.33	40	90	0.002
Attitude (Pre-Test)	71.02	55	93	0.055
Attitude (Post-Test)	76.70	60	93	0.2

The sig value of the Wilcoxon signed-rank test is 0.001, as seen in the preceding table. Additionally, it can be said that training impacts *pegasting* cadres' knowledge and that, with a sig value of 0.0012, there is a substantial change between their baseline attitudes and attitudes following a training intervention. A negative mean value indicated an increase in attitude values after the intervention. The average increase is 13.911.

Table IV: Analysis ResultsDifferences in knowledge and attitudes after intervention

Variables	Mean	P Value
Pre-Post Knowledge		0.001
Pre-Post Attitude	13,911	0.012

**Wilcoxon signed rank Test*

The experimental group's knowledge before and after the intervention differed significantly, as indicated by the statistical test findings, which had a sig value of 0.002. The control group's sig value was 0.001, indicating the same outcome. The mothers' attitudes in the experimental group differed significantly before and after the intervention, as the statistical test results showed, with a sig value of 0.012. The control group's sig value was 0.017, indicating the same outcome. The experimental group (17.700) experienced an average rise higher than the control group (11.467).

Table V: Analysis Results Differences in maternal knowledge in the control and intervention groups

Variables	Mean	P Value
Pre-Post-Knowledge (Experiment)		0.002
Pre-Post-Knowledge (Control)		0.001
Pre-Post Attitude (Experiment)	17,700	0.012
Pre-Post Attitude (Control)	11,467	0.017

**Wilcoxon signed rank Test*

DISCUSSION

According to **Table II,** the age of most family companions was over 30 years, and middle adulthood between 30-60 years is the age that plays the most crucial role and has dense activities and good cognitive abilities, which have a better influence on the level of knowledge. Adulthood is said to be productive and can allocate more time to community activities [18]. The more mature a person is, the better their ability to think and receive information [19].

Table II shows that most family companions have junior high and senior high school levels of education. Education is an increasingly important factor in everyday life because the level of education affects a person's perception of cognition; individuals with higher education also have higher reasoning [20]. Education involves increasing knowledge about stunting and how to behave towards the community or family [21]. A sufficient level of education is the basis for developing insight and means to make it easier for someone to accept new knowledge, attitudes, and behavior or motivation [22]. Most of the respondents were housewives. Women with dual roles as housewives and health cadres can solve family problems effectively.

The results of the Wilcoxon test analysis shown in **Table IV** for the effect of training on respondents' knowledge of stunting showed a p-value $<\alpha$. There was an effect of cadre training on increasing knowledge. The health education provided exposes respondents to specific information about stunting, including its definition, causes, dangers, and prevention and detection. Giving health education in the form of training for the community can effectively increase knowledge [23]. Health education is a source of information. Information obtained from health education will enter as input, be processed in the brain, and then come out as knowledge [24].

The study's results showed an increase in the knowledge of respondents/family companions after the intervention in the form of training. There was an increase in cadre knowledge scores after the cadre training intervention. The increased cadre knowledge relates to maternal health, childcare, and stunting related to the training provided. Knowledge of good family companions about stunting is expected to influence the information conveyed to the target families being assisted [25].

The increase in respondents' knowledge scores was influenced by the intensity of the intervention as many as four times. The more frequent the contact and interaction between the training provider and the respondents, the more knowledge the *pegasting* cadres/family companions will have because of the repetition of information. Knowledge retention increases due to repeated information. According to the bivariate analysis of the attitude variable, there was a change in the scores before and after the intervention. Scores significantly increased following the intervention, according to the study.

In the training process, respondents were asked to practice individually to provide education to mothers using modules that had been provided. After the training, it was continued and implemented to assist families with what had been agreed upon so cadres could provide education and assistance. Skill training is a key activity during the implementation phase of a health program [26]. Training will result in the community's acquisition of skills, including those related to health education, as long as it is implemented to foster and sustain behaviors crucial to the program's sustainability [27].

The results of the difference analysis showed a difference in the value of the mothers' knowledge before and after one month. The difference was seen in the experimental group that was given assistance and modules and the group that was only given modules to study independently. This study proves that increasing knowledge can be influenced by the information obtained, including providing modules and mentoring by cadres. Knowledge cannot be separated from the information obtained in one's life. Information and mass media

can give knowledge. Since someone's knowledge is a facilitating element (predisposition factor), it can trigger behaviour that serves as the foundation or reason for their actions because of socioeconomic status, education level, tradition, or beliefs. Parents informed about stunting will undoubtedly comprehend, decipher, and retain the information's message[28].

The risk factors for stunting in toddlers are very complex; therefore, prevention and control of stunting are highly dependent on the parenting patterns of mothers and families, so the conditions of the family and the environment that affect the family will impact the nutritional status of children [29]. Reducing the problem of nutritional status can be accomplished through various efforts to improve the condition and behavior of mothers and families [30]. The results of this study indicate that if every mother is assisted, her understanding of nutrition and health will increase. Mothers are the people closest to their children, and they must be given intervention so that there is a change in the mother's behavior and parenting patterns for the better. One way to intervene with mothers is through continuous provision of information and learning assistance for mothers of both toddlers and pregnant women [31].

Mothers' high nutrition knowledge can influence toddlers' eating patterns, which can, in turn, influence toddlers' nutritional status. If the mother's understanding is good, the mother can choose and provide food for toddlers in terms of quantity and quality that can meet the nutritional needs of toddlers until, finally, it can influence the nutritional status of the toddler [32]. Analysis of the mother's attitude variable shows differences in attitudes before and after one month. Differences occurred in the experimental group that was given the module and family assistance and the group that was only given the module to be studied independently.

Mothers of toddlers and Posyandu cadres who received nutritional education interventions saw an improvement in attitudes; the intervention group's mothers and cadres had higher average nutritional attitudes than the control group's. A shift in the affective domain, specifically the development of awareness and a rise in positive attitudes towards what is taught, is one of the benefits or effects of the learning process [33]. The significance of this study lies in the fact that giving mothers modules to prevent stunting can raise awareness and lead to positive changes in attitudes for the better.

Stunting can be prevented in part through both personal and professional support. Health cadres are one kind of professional help that they can offer [34]. Until now, health cadres have been in charge of several community health initiatives, including integrated health posts, toddler nutritional status monitoring, and senior health post-integration. Nevertheless, there hasn't been an organized or ideal way to use health cadres to avoid stunting. Information can be given in the form of counselling to help mothers become more knowledgeable and proficient. Health cadres are parts of society that play an essential role in the success of many promotive and preventive health programs, including preventing stunting through the Family Assistance Mement to reduce stunting [35]. Poseyandu health cadres can serve as role models and motivators to encourage the stop-stunting family assistance movement and prevent stunting.

Health cadres are residents selected and given skills training by local health service facilities or health centers. Health cadres are a form of community participation that become drivers or managers of primary health efforts [36]. Health cadres are elements of society that play an important role in the success of various promotive and preventive health programs, including stunting prevention [37].

Specific nutritional interventions with Nutrition Assistance in 30 mothers of toddlers can affect their maternal behavior and nutritional status [38]. Activities in the form of a family assistance movement to stop stunting provide support and services for families to prevent and overcome nutritional problems in their family members. Assistance is provided by providing attention, conveying messages, encouraging, inviting, providing ideas and solutions, providing services and assistance, providing advice, referring, mobilizing, and cooperating.

This activity aims to reduce stunting rates in the future through efforts to empower families and communities, especially at the stunting locus in the Sawa Health Center work area. Health education is an effort to promote healthy living, which can later change parents' behavior as parties play a role in children to create better health conditions. Changes in maternal behavior through family and community empowerment, where mothers with children with nutritional and health problems become the target community for activities provided with health education and awareness so that mothers can recognize nutritional and health problems in children and overcome these problems. Family and community empowerment is the proper intervention to be carried out to prevent and overcome family dietary problems, including stunting.

CONCLUSION

The development of educational media contains materials related to stunting, causes of stunting, how to know a child is stunted, the dangers of stunting, prevention and the role of families in preventing stunting, parenting patterns for stunted children, and complementary foods for breast milk). Media experts completed the module validation stage, scoring 68.48% in the feasible category and 97.33% in the extremely feasible category from material experts. Following training, there are variations in the attitudes and knowledge of the cadres, indicating that training impacts the rising knowledge of *pegasting* cadres. After a month, moms' attitudes and knowledge about preventing stunting varied between the two groups. After a month, there were variations in the two groups' knowledge and attitudes, indicating that family help impacted mothers' increased awareness of stunting prevention. Future interventions could include implementing more targeted and tailored training programs for *pegasting* cadres to improve their knowledge and attitudes further. Additionally, the ongoing monitoring and evaluation of the impact of family assistance programs on mothers' knowledge of preventing stunting could help inform future strategies and improvements.

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AUTHOR CONTRIBUTION

Yustiari YST:	Interpretation of data for the work, acquisition, analysis, Final approval, and Design of the research
Anwar KK:	Drafting the work, Revising the Manuscript
Syahrianti S:	Interpretation of data for the work
Hapitria P:	Acquisition, analysis, Final approval
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