

RESEARCH STUDY

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Design of *Stunting* Prevention Education Media Package Based on Technology and Local Wisdom

Rancangan Paket Media Edukasi Pencegahan *Stunting* Berbasis Teknologi dan Kearifan Lokal

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ABSTRACT

Background: *Stunting* leads to increased morbidity and mortality among children. To accelerate *stunting* reduction, family assistance teams support at-risk families, requiring engaging and accessible educational resources. However, existing educational media materials are fragmented and lack a comprehensive approach, resulting in gaps during family assistance sessions. To improve accessibility and efficacy, a comprehensive, technology-based educational tool is necessary.

Objectives: To develop a *Stunting* Prevention Education Media Package (PaSti PenTing) based on technology and local wisdom.

Methods: This study used a Research and Development approach conducted in Cirebon City. The stages included the formulation of basic concepts, and in-depth interviews with experts, namely the Chairman of the Central Board of the Indonesian Midwives Association, the Head of the Cirebon City Health Office, the Head of the Cirebon City Women's Empowerment, Child Protection, Population Control and Family Planning Office and lecturers with S3 backgrounds. These interviews provided input related to the materials used for designing the PaSti PenTing. The research instrument uses in-depth interview guidance and data analysis was carried out using content analysis.

Results: Based on expert input, the PaSti PenTing design was developed. The main menu consists of an introduction and a menu for target groups (teenagers, brides-to-be, pregnant women, postpartum mothers, and toddlers). Each menu contains educational materials.

Conclusions: PaSti PenTing is a comprehensive media that can be used by the assistance team and families at risk of *stunting* to improve knowledge, attitudes, and behaviors in *stunting* prevention.

INTRODUCTION

Stunting contributes to an increase in child morbidity and mortality¹, forming part of the double burden of malnutrition and significantly impacting both health and economic productivity². According to the Presidential Regulation of the Republic of Indonesia number 72 of 2021, the target *stunting* prevalence in Indonesia is set at 14% by 2024³. However, as of 2022, the *stunting* prevalence stands at 21.6%. All districts and cities within West Java Province, including Cirebon City, have been designated as priority areas for *stunting* reduction in 2022⁵. The acceleration of *stunting* reduction is carried out through specific interventions, addressing direct causes and sensitive intervention, overcoming indirect causes which must be implemented in a convergent, holistic, integrative, and quality manner through multi-sector cooperation by intensifying assistance to families at risk of *stunting*.

At the village level, the *Stunting* Reduction Acceleration Team includes the Family Assistance Team, composed of midwives, empowerment and family welfare cadres, and family planning cadres who provide support through counseling to key groups such as prospective brides, pregnant women, breastfeeding mothers, and children aged 0-59 months. Midwives play a central role as professional partners of the government and an extension of the state in implementing *stunting* prevention². The collaboration of midwives and cadres can be a catalyst for accelerating *stunting* reduction. Interprofessional Collaboration with other health workers, especially nutritionists, is very necessary. To assist, appropriate, interesting, and easy-to-understand educational media are needed. Various studies prove the effectiveness of the application of video media in improving knowledge, attitudes, and behaviors related to sensitive and specific interventions. The Edu Anemia

application can increase the knowledge and compliance of adolescents in taking Fe tablets⁶. Education using videos increases the knowledge of pregnant women about the consumption of Fe tablets⁷. M-Health Android-based Smartphone Media (Mama ASIX) application is more effective in increasing the knowledge and attitude of pregnant women about exclusive breastfeeding⁸. In addition, Cirebon's local shrimp powder-a high-protein, calcium-rich food source at an affordable price-can be used to prepare supplementary foods for toddlers^{9,10}. Education using videos can improve the practice of complementary feeding based on local wisdom¹¹. Android-based KIE is effective against parents' knowledge of basic immunizations¹². Educational methods can improve the knowledge and skills of cadres in monitoring the growth and development of toddlers¹³. Decision-making tools for family planning applications have been proven to make it easier for midwives to conduct family planning counseling¹⁴ as well as improve client knowledge and contraceptive use¹⁵.

Despite various studies on educational media, existing resources remain fragmented and lack integration into a single, comprehensive tool for specific and sensitive interventions. Based on a preliminary study on the family assistance team in Cirebon, in assisting, some materials have not been delivered to each target group, thereby comprehensive and technology-based educational media is needed for more attractive and easy use. Therefore, this study aims to develop a *Stunting* Prevention Education Media Package (PaSti PenTing) based on technology and local wisdom which is a comprehensive educational media for families at risk of *stunting*. The urgency of this study is high, as PaSti

PenTing will support accelerated *stunting* reduction, create a multiplier effect on maternal and child health improvement, and contribute to achieving sustainable development goals by reducing maternal and infant mortality rates.

METHODS

This study used a Research and Development approach to develop PaSti PenTing (android application and web base) containing educational videos and explanations for at-risk families. This study was carried out in Cirebon City from April to September 2024 because the prevalence of *stunting* is still high. The informants were four experts from practitioners, professional organizations, and academics related to the *stunting* reduction acceleration program, namely the Head of the Cirebon City Health Office, the Head of the Cirebon City Women's Empowerment, Child Protection, Population Control and Family Planning Office, the Chairman of the Central Board of the Indonesian Midwives Association, and a lecturer with a S3 background in the Reproductive Health. In-depth interviews were conducted to explore the informants' opinions about the importance of developing educational media and to explore the substance of the material that will be included in the PaSti PenTing educational media at each information workplace for about two hours. The instrument uses in-depth interview guidance with input question topics for the material in each menu in the application. Data analysis was carried out using content analysis. Research Permit Issued by the National and Political Unity Agency with number 176/2024.

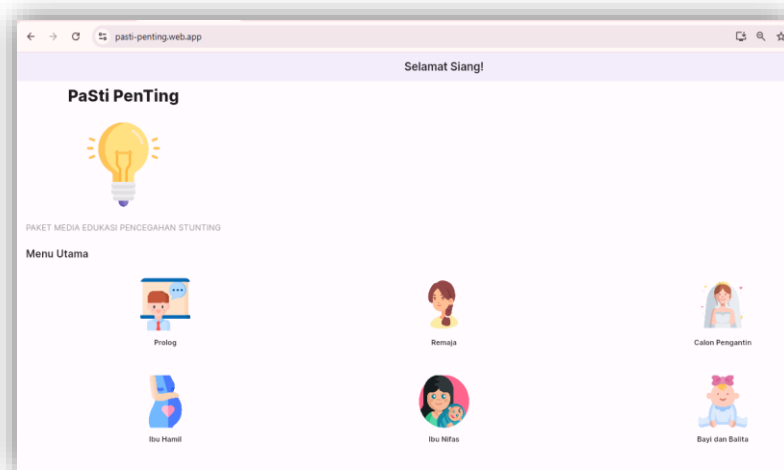


Figure 1. PaSti PenTing in web base

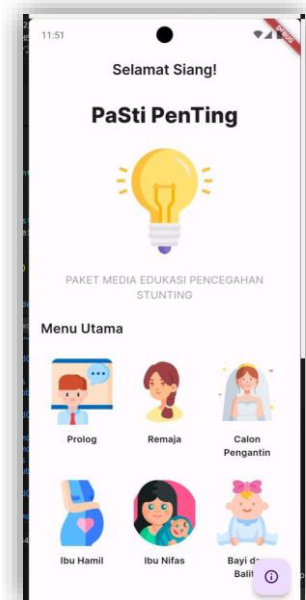


Figure 2. PaSti PenTing in Android Application

RESULTS AND DISCUSSIONS

The main menu in PasTi PenTing was formulated according to the details obtained in line with the study objectives, using target groups arranged based on categories of families at risk of *stunting*. The main menu at PasTi Penting consists of an introduction to the definition, causes, and impacts of *stunting*, and then there is a menu for target groups (adolescents, cats, pregnant women, postpartum mothers, clowns, and toddlers), thereby users can choose the menu they need. In each menu, there are educational materials for each target. Adolescent material includes the importance of Fe tablet consumption, reproductive health, and postponing the age of marriage. Educational materials for brides-to-be include the importance of checking weight, height, upper arm circumference, and blood hemoglobin levels in the 3 months before the wedding, reproductive health, and good and balanced nutritional needs. Educational materials for pregnant women include the importance of Antenatal Care (ANC) services, the importance of consuming Fe tablets, pregnancy care, postpartum birth control education, nutritional needs, and how to make additional food for chronic lack of energy pregnant women based on local wisdom. Materials for postpartum mothers are postpartum birth control education, Early Breastfeeding Initiation, postpartum care, and exclusive breastfeeding. The material for clown mothers and toddlers is the importance of complete basic immunization, making complementary feeding and supplementary foods based on local wisdom, monitoring growth and development, and prevention of infectious diseases. Based on input from the Chairman of the Central The Board of the Indonesian Midwives Association recommends using the Family Assistance Guidebook for Accelerating *Stunting* Reduction at the Village Level as a key reference for developing the application. In addition, KIA books and pocketbooks on the Kescatin application can also be used as a reference. There was input regarding the addition of material on Early Breastfeeding Initiation (IMD) to the baby menu and marriage eligibility screening three months before marriage for brides-to-be, anemia screening in adolescents, and adolescent psychology. Education for adolescents should begin at age 10. For the menu targeted at pregnant women, content on antenatal care (ANC) services should be integrated with strategies for preventing and managing infectious and non-communicable diseases, including anemia and chronic energy deficiency (CED). Additionally, information on supplemental foods made from local ingredients for pregnant women with CED should be provided, along with guidance on triple elimination of disease transmission (HIV, syphilis, and hepatitis) and support for psychological well-being and mental health during pregnancy. This requires collaboration across various professional fields. In the postpartum mother's menu, nutrition is added during the postpartum period. This opinion can be seen from the following statement:

"Well, maybe because this is a family assistance team program, this team is also a population control service, women's empowerment, child protection program" family assistance guide to accelerate stunting at the

Village/Village level compiled by the Ministry of Home Affairs Team, Ministry of Health."

"Population control service, women's empowerment, child protection program, is it true that from it can also be a reference, then this eum is from the Health Office? Forum Maternal and Neonatal Nutrition."

"For exclusive Breastfeeding that's what is the inclusion in newborns, and babies, right? IMD."

"Now try pregnant women, now ANC antenatal is sometimes ANC is not only six times during pregnancy, but integrated ANC. Yes, it is an integrated ANC, how when we collaborate with all professions."

"But how the examination is no longer done, oh if there is a new problem to be examined, not so anymore now, but the antenatal care which is called ANC integrated into the, if I always say that, midwives must collaborate, well, heum the recipe for additional food for chronic lack of energy pregnant women is correct."

Based on input from the Head of the Cirebon City Health Office, in the youth menu, the importance of Fe tablets needs to be emphasized in its implementation, as well as information about diseases that cause infections, if the largest case in Cirebon City is a case of tuberculosis. The menu for pregnant women includes additional information on triple elimination (HIV, syphilis, and hepatitis), management of tuberculosis (TB) during pregnancy, as well as guidance on ketosis and diabetes mellitus in pregnancy and the postpartum period. The toddler menu includes additional content on infectious diseases and Clean and Healthy Living Behaviors (PHBS). For supplementary feeding, it is recommended to use local foods such as fresh reborn and catfish. The menu for toddlers also includes guidelines on measuring anthropometry, particularly for cadres, and explains how to properly introduce complementary feeding to infants and toddlers. This approach is supported by the following statement:

"The importance of Fe tablets may need to be emphasized in management because our teenagers already know the theory, they have often been given tablets, but in fact, the Fe tablets are stored and not taken."

"He added triple elimination, pregnant women usually have three HIV tests, then the sexual transmission infection, syphilis one is HBSAg, hepatitis."

"Yes, pregnancy poisoning, later there will be hypertension then added about BB TB please, gestational diabetes is necessary because it returns to the definition that stunting is malnutrition which is a growth and development disorder due to chronic malnutrition and excessive infection."

"Several infectious diseases will affect one with growth and development."

"Alhamdulillah, for the competence of Cirebon, everything in every posyandu already exists, but sometimes children are crying about how to weigh it."

"Feeding indeed is complementary food has become all kinds of creations, but how to give it, yes, so that the complementary feeding enters the baby."

Based on the results of an in-depth interview with the Head of the Cirebon City Population Control Service, women's empowerment, and child protection program, a conclusion was reached. The menu contained in the PaSti Penting design was complete, the reference that will be used for the bride-to-be's menu was added to the material in the elsimil. The toddler baby menu can be added from the Mobile Child Flower Card Application developed by BKKBN, as well as the great parent program contained in the <https://www.orangtuahebat.id/> website. The results of in-depth interviews with lecturers on women's health and family planning courses complement previous opinions, the menu contained in the PaSti Penting design is complete, the references used can be from mother and child health book, and the addition of a flow for the bride-to-be if they are going to get married.

Various studies have proven the effectiveness of the application of video media in increasing knowledge, attitudes, and behaviors related to specific and sensitive interventions. The Edu Anemia application can increase adolescents' knowledge and compliance in consuming Fe tablets⁶. There is an influence of video media on knowledge and compliance with Fe Tablet consumption in adolescent girls at SMPN 65 North Jakarta¹⁶. Pesantren Darussalam Bergas¹⁷. Pilodaa Gorontalo Health Center area¹⁸ and teenagers in Bengkulu City¹⁹. There is an educational effect on Fe tablet consumption and Hb levels in pregnant women²⁰ education using videos which can increase pregnant women's knowledge about the consumption of Fe tablets^{7,21}. Education in the chronic lack of energy, mama nutrition intake standby program has been proven to increase the knowledge of pregnant women and cadres about the importance of nutrient intake in preventing the occurrence of chronic lack of energy in pregnant women²². The provision of additional food and improved nutrition in pregnant women with chronic energy deficiency²³. E-booklet media affects the knowledge and attitude of pregnant women about Exclusive Breastfeeding and MP Breastfeeding in *stunting* prevention programs²⁴. The Mama ASIX application is more effective in increasing the knowledge and attitude of pregnant women in the third trimester about Exclusive Breastfeeding compared to leaflets⁸. Other investigations prove that there is an influence of educational videos on the knowledge and attitude of mothers in exclusive breastfeeding²⁵. Other similar research was conducted in Bogor²⁶. Education using videos can improve the practice of MP-ASI based on local wisdom¹¹. Video media is most effective in increasing knowledge about complementary feeding compared to leaflets and pocketbooks²⁷. Another study proves that the use of educational videos can increase the knowledge of mothers under five about breastfeeding in Kenya²⁸. Similar research was conducted

in Ranah Kampar Village, Sidosari Village, Bandar Lampung, and Sitaro Islands^{29,30,31}.

The difference between previous investigations^{6,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30} is that PaSti PenTing which will be produced is a comprehensive educational package including education on specific and sensitive interventions to improve the knowledge, attitudes, and behaviors of families at risk of *stunting* based on technology (a form of applications combined with videos). Additionally, based on Cirebon local wisdom education on the use of shrimp powder and food other localities for the manufacture of complementary food and the provision of additional food to pregnant women with chronic energy deficiency and undernourished toddlers. That difference is the novelty of this study. Universities have a very important role in accelerating *stunting* reduction by innovating and providing scientific evidence to program implementers³².

CONCLUSIONS

In conclusion, an expert informant in this study has confirmed that the menu and content within the *Stunting* Prevention Education Media Package (PaSti PenTing) have been thoroughly completed. This comprehensive application serves as a valuable tool for both the assistance team and families at risk of *stunting*. It incorporates both specific and sensitive intervention education aimed at improving the knowledge, attitudes, and behaviors of families. The application combines technological elements (in the form of an app and videos) with local wisdom to effectively prevent *stunting*.

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CONFLICT OF INTEREST AND FUNDING DISCLOSURE

The author has no conflict of interest relevant to this article. This research is the result of research from basic research on higher education schemes.

AUTHOR CONTRIBUTIONS

LN: conceptualization, methodology, and writing-original draft; contributed to the design of the study and the development of the educational interventions; DW: supervision, formal analysis, and writing-review & editing; ensured the integrity of the research process and contributed to the critical revisions of the manuscript; WE: resources and project administration, managed project logistics and provided necessary resources for conducting the research; ATI: data curation, investigation, and methodology, assisted in data collection and analysis, as well as the implementation of the Emo Demo method in the study and develop application; YF: writing-original draft and data collection; participated in drafting the manuscript and gathering data from the study participant; FH: writing-review & editing and visualization, contributed to the analysis of

results and helped refine the presentation of data within the manuscript.

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