



SIPENTING: DIGITAL INNOVATION IN SUPPORTING THE ROLE OF TODDLER CADRES IN STUNTING DETECTION AND PREVENTION

Amri Wulandari^{1*}, Berlina Putrianti¹, Adkhan Sholeh², Saumi Fijriyah¹, Murti Krismiyati¹

¹midwifery Study Program, PoltekNIK Kesehatan Karya Husada Yogyakarta, Jl Tentara Rakyat Mataram No 11 B Yogyakarta 55231, Indonesia

²information Technology Study Program, Universitas Jenderal Achmad Yani Yogyakarta, Jl. Brawijaya Jl. Ringroad Barat, Gamping Kidul, Ambarketawang, Sleman, Yogyakarta 55294, Indonesia

*amic.wuland@gmail.com

ABSTRACT

The stunting prevalence rate increased in 2020 to 9.74%, in 2021, 2022 it decreased while in 2023 it rose to 6.45%. The sipenting application was developed for early detection of stunting from the lowest order, namely in posyandu. The causes of stunting include several factors including nutritional intake of toddlers, infectious diseases, maternal factors, genetic factors, exclusive breastfeeding. The purpose of this study is to find out the knowledge of cadres before and after the transfer of application technology. Quantitative research with a pre-post test design, on 150 cadres who participated in technology transfer, sampling techniques with total sampling, all cadres who attended the technology transfer activity with paired t-test data analysis, data collection was carried out directly to all cadres who were respondents. There was a significant increase in cadres' knowledge about stunting $p < 0.005$ after participating in technology transfer. The sipenting application is effective in increasing cadres' knowledge about stunting and early detection of stunting in toddlers.

Keywords: cadres; detection; sipenting; stunting prevention

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INTRODUCTION

Stunting is one of the main problems about nutrition in toddlers in indonesia which is still a priority problem, nutrition problems have an impact on the health of children now and in the future because it affects the quality of human resources. Stunting is a condition of failing to grow in toddlers due to chronic malnutrition so that height is not appropriate for their age. Toddlers who experience stunting have a risk of not reaching maximum height and experience brain development obstacles so that their cognitive potential is not optimal (kumalasari 2025).

Stunting in children can be caused by many factors, both directly and indirectly, including nutritional intake, infectious diseases, maternal nutritional factors before conception, pregnancy, lactation, genetic factors, exclusive breastfeeding, food availability, economic factors, mother's education level, mother's knowledge about nutrition and the environment. Mother's lack of knowledge can affect the fulfillment of nutritional and care needs in children, thus affecting the selection and presentation of food consumed by children (mitra, anjani dian., nurhayati, sri. 2024).

The stunting prevalence rate increased in 2020 to 9.74%, but it fell again in 2021 to 8.36% and in 2022 to 6.42%, while in 2023 it rose slightly to 6.45%. However, for the absolute figure, the number of stunted toddlers in bantul regency in 2023 has decreased from previous years, namely the number of stunted toddlers in 2023 is 2,863 toddlers (bantul health profile, 2024). The causes of stunting include several factors including nutritional intake of toddlers, infectious diseases, maternal factors, genetic factors, exclusive breastfeeding. And within the who framework, stunting is influenced by socioeconomic factors (poverty), low education and knowledge about feeding

practices for infants and toddlers (adequate breast milk), adequate animal protein in complementary foods (mpasi), neglect, cultural influences and the availability of local foodstuffs (pnpk, 2022). The causes of stunting in bantul regency include poor families (47.29%), mothers < 20 years old 3.05%, mothers > 35 years old 9.20%, kek mothers during pregnancy 15.60%, anemia mothers during pregnancy 11.41%, no exclusive breastfeeding 21.04%, childcare to other people 2.7%, childcare to mixed 30.03% (asyik, parang, and amin -buku 2024).

The bantul government's efforts in order to reduce stunting rates, including specific nutrition interventions (supplementary feeding / pmt), sensitive nutrition interventions including the provision of clean water and sanitation, healthy lifestyle education, strengthening the capacity of cadres and health workers including training posyandu cadres to improve their skills in detecting and handling malnutrition cases, increasing the capacity of health workers at puskesmas in providing maternal health services and child. An integrated approach in stunting locus villages, bantul establishes stunting locus villages to focus on intervention, involving the village government, cadres, and the community in integrated programs such as family empowerment and health monitoring. Increasing public awareness through the "prevent stunting is important" campaign, the public is educated about the importance of good nutrition in the first 1,000 days of life (hpk). Multi-sector cooperation, cooperation between the health office, education office, and public works office to address the factors that cause stunting from various aspects, such as nutrition education in schools and sanitation infrastructure development, counseling on healthy eating and maternal and child care. With existing efforts but has not shown significant results to reduce stunting rates. Therefore, innovation is needed in the form of technology that can facilitate cadres in the early detection of stunting.

Stunting prevention efforts need cooperation from sharing sectors among the community, and accessibility of health service places to reduce stunting rates. Where health services or posyandu are places to share knowledge about nutrition ranging from pregnant women, toddlers and other health problems. Posyandu or health service places can contribute information about nutrition to prevent stunting (ratini, kurniasi, and peni 2024). Researchers together with partners, namely the bantul regency health office, developed an early detection of stunting assessment application (sipenting) which aims for early detection and prevention of stunting in toddlers. In the bantul district there are 75 villages, 16 hospitals in bantul regency consisting of 11 general hospitals, 5 special hospitals, and 27 health centers and there are 1,114 posyandu in bantul regency. This website-based application has been tested on 375 cadres from 75 villages in the bantul area. This study aims to analyze the use of the sipenting application in cadres to increase cadre knowledge about early detection of stunting in bantul regency. The results of this study are expected to be considered or discussed by policymakers in the development and utilization of digital innovations for early stunting detection.

METHOD

This study uses a quantitative approach with a pre-post test design. The research sample used was 150 cadres in the bantul area who had participated in the transfer of sipenting application technology. Sampling techniques with total sampling, all cadres who attended the technology transfer activity. Questionnaire used to measure cadres' knowledge about stunting. The validity test using product moments and reliability with alfa cronbach's, valid questions with a value greater than 0.279, and reliability 0.779. Valid and reliable questionnaire as many as 16 out of 20 questions. Data collection was carried out before and after the technology transfer using the sipenting application. Data analysis was conducted using paired t-test.

RESULT

The results of the study show that the transfer of sipenting application technology shows an increase in the knowledge of cadres in the bantul regency area about stunting. The assessment was carried

out by comparing scores before and after the transfer of sipenting technology. In general, there has been a significant increase in knowledge on all aspects measured about the definition, causes, impact and stunting prevention efforts. The following is presented comparative data on the average knowledge score of cadres before and after the transfer of sipenting application technology.

Table 1.

Comparison Average Knowledge Score Of Cadres Before And After Technology Transfer

Aspects That Are Assessed	Average Before	Average After	P-Value	Information
Definition Of Stunting	66,9	89,1	0,000	Significantly Increased
Causes Of Stunting	60,9	84,8	0,000	Significantly Increased
The Impact of Stunting	59,6	89,2	0,000	Significantly Increased
Stunting Prevention	57,1	90	0,000	Significantly Increased
Total Average Score	61,1	88,3	0,000	Significantly Increased

Table 1, It can Be Seen That Cadres' Knowledge About Stunting Has Increased From 66.9 To 89.1, The Causes of Stunting From 60.9 To 84.8, The Impact of Stunting From 59.6 To 89.2, Stunting Prevention From 57.1 To 90 After Technology Transfer. All Aspects Whose Values Have Increased Statistically Significantly or can be Shown by ($P < 0.05$). In Addition to Measuring the Knowledge of Cadres, The Researcher also Explored the Perception of the Use of the Sipenting Application. Cadres Provide an Assessment of the Use of the Application and the Benefits It Gets. The Results Are Presented in table 2.

Table 2.

Cadres' Perception of the Use of the Sipenting Application

Statement	Answer "Agree"
The Sipenting Application Is Easy to Use	90 %
Informative In-App Content	84,67%
Makes It Easy for Me with Logging and Reporting	91,33%
Makes It Easier for Me to Detect Stunting Early	80%
It Makes It Easier for Me to Give Recommendations to Parents of Toddlers According to the Results	80%

From the table above, it can be concluded that most cadres (90%) stated that the sipenting application is easy to use, 84.67% of cadres stated that the content in the application is informative or easy to understand. And most of the cadres, 91.33% stated that with the application, it made it easier for recording and reporting, with the application making it easier for cadres for early detection as much as 80%, and 80% of cadres stated that with this application, cadres could easily give recommendations to parents of toddlers according to the results of the examination.

DISCUSSION

Stunting or stunting is a long-term nutritional problem, still a big problem for the health of children in indonesia. As shown by data from the ministry of health of the republic of indonesia, stunting has a direct relationship with children's long-term quality of life. This impacts their brain development, increases their risk of disease, and reduces their physical and cognitive abilities. The stunting rate still shows a bad trend, even though the government and society have done a lot. Therefore, various prevention efforts continue to be developed, one of which is the posyandu (integrated service post) program, which functions to track children's nutritional status and their development (daerah 2025). Efforts to handle stunting to the maximum require the use of sophisticated technology (utami et al. N.d.). Mothers and babies need adequate, balanced and quality nutrition to ensure their nutritional status and health, motor, social, and cognitive abilities; learning and productivity in the future. Children who are malnourished during the 1000 hpk period will experience various kinds of neurological problems, decreased learning ability, increased risk of dropping out of school, decreased productivity and ability to work, decreased income, decreased ability to provide nutritious food, and decreased childcare skills (maryani and yuniyanti 2024).

Efforts to reduce and prevent stunting need to collaborate with local posyandu to monitor growth and development in toddlers around them. Posyandu has a strategic role in monitoring the nutrition of toddlers and community participation is needed for the achievement of community programs in

reducing stunting (hendrawan et al. 2025).the main role of cadres is needed in this regard, where not only monitoring but also providing information about balanced nutrition, and identifying symptoms of stunting in toddlers. This collaboration is not only for cadres, but for parents, the government's participation is needed to support stunting prevention programs (nurhayati 2023). Cadres are tasked with early detection of growth and development disorders, health education about nutrition, and monitoring nutritional status through weighing and measuring children's height (nugraheni and malik 2023). The success of stunting reduction efforts depends on the effectiveness of cadres in carrying out their duties (era et al.,2024). The role of cadres is very large in the early detection of stunting in reducing the incidence of stunting, in cadre public health services as the front line in providing counseling or education, examinations during posyandu activities monitoring the growth and development of toddlers, and early detection of growth and development disorders of toddlers (putri et al. 2025). The role of cadres, in addition to being the implementers of posyandu activities, of course, also has a role, namely as educators, motivators, and community mobilizers in stunting prevention (dewi anisyah 2024)

The results of the study show that the transfer of sipenting application technology shows an increase in cadre knowledge in the bantul regency area about stunting in accordance with table 1, this is in line with research conducted by (sekarwati 2022) which shows that respondents after being given educational interventions through android-based applications, respondents' knowledge has increased. In this study, it is hoped that the increase in cadre knowledge can help cadres in the field in the early detection of stunting in the bantul area so that the efforts made in accordance with the cases found and the stunting rate can be suppressed.

Statistically, the results of measuring cadre knowledge obtained a result of $p < 0.05$, proving that the sipenting application is effective as an educational medium and early detection of stunting in cadres and there are significant differences from the results of pre and post tests. This is in accordance with the research conducted by (widyagdo, daniati, and rifa'i 2021) there is an effect of counseling using the youtube application on increasing knowledge, because the youtube application is a video application that provides information features in the form of motion images, which makes it easier for respondents to enjoy directly. The results of similar research that have been conducted by (savitri, et al 2023) show that the existence of a midwifery health application can have a significant influence on increasing pregnant women's knowledge about childbirth readiness. This research is in line with what was conducted by (febrina and antarsih 2021) that the ppa application can increase the knowledge of posyandu cadres about stunting detection. In this study, the factor that causes an increase in knowledge in cadres is due to the treatment, namely the transfer of siimportant application technology. This is supported by the theory that states that the more often a person gets information exposure, the more insight or knowledge will increase, and vice versa if they rarely get information, insight or knowledge will not increase (margawati and astuti 2018).

In addition to measuring the increase in cadre knowledge, the researcher also explored the cadres' perception of the sipenting application, according to table 2, it can be concluded that most cadres (90%) stated that the sipenting application is easy to use, 84.67% of cadres stated that the content in the application is informative or easy to understand. And most of the cadres, 91.33% stated that with the application, it made it easier for recording and reporting, with the application making it easier for cadres for early detection as much as 80%, and 80% of cadres stated that with this application, cadres could easily give recommendations to parents of toddlers according to the results of the examination. These findings show that the sipenting application not only increases user knowledge, especially cadres, but can be accepted by cadres and is needed in toddler posyandu activities that make it easier for cadres to detect early stunting in toddlers in the bantul regency area. Cadre perception is very positive towards the application of sipenting, this is in accordance with the technology acceptance model (tam) theory, which is that the acceptance of a technology is greatly influenced by the ease of use and perceived benefits (nur et al. 2026).

The results of the research obtained show that the sipenting application is effective in increasing cadre knowledge and services features or informative content so that early detection of stunting in the bantul regency area can be carried out from the lowest order, namely in posyandu activities. Considering the duties of cadres that cadres have an important role in assessing the nutritional status of toddlers, including stunting, where we know that the impact caused by stunting is a serious problem, so cadres are expected to have knowledge and prevention and early detection of stunting, this is in accordance with the results of community service carried out by (utario and sutriyanti 2020).

By using the sipenting application, it will minimize the risk of cadre interpretation about the nutritional status of toddlers, because in the application the cadres only need to input the results of the weighing, and height measurement and then read the results according to the data. This is in accordance with the results of community service (purnamaningsih et al 2024) that the use of information technology minimizes the risk of miscommunication between cadres and health workers and accelerates access to needed health services. The transformation of recording from manual to digital has an efficiency impact by minimizing the risk of data loss, accelerating the reporting process to health centers (rum et al. 2026). Recording the growth of toddlers can be done quickly, precisely, accurately, and easily monitored for the long term, thereby increasing transparency and access to public health education and being able to strengthen cadre capacity and community participation (allyreza, jumiaty 2023).

Nutritional status of toddlers, because in the application cadres only need to input the results of the weighing, and the measurement of height then read the results according to the data. This is in accordance with the results of community service (purnamaningsih et al 2024) that the use of information technology minimizes the risk of miscommunication between cadres and health workers and accelerates access to needed health services. However, this needs infrastructure support such as the internet, laptops and cellphones and the ability of posyandu cadres in the use of technology, this is in line with the research of sari ., et al 2021 ((neneng yanti andriani, tedi pitri, sindrawati 2025). If cadres lack training and coaching, it will lead to a lack of information and understanding of their duties as cadres (susanti et al 2025)

CONCLUSION

Based on the results of the study, it can be concluded that the use of the early detection of stunting assessment application (siimportant) can have a positive impact on cadres, as shown by the increase in cadres' knowledge before and after technology transfer. This application can make it easier for cadres to detect early stunting in toddlers in the bantul region.

The health office and health workers of the bantul regency health center are expected to provide assistance to cadres in posyandu activities and monitoring examinations using the sipenting application with the aim of early detection of stunting and stunting incidents can be prevented or can be handled early.

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