

Article

Nutricorn Plus: Sweet corn (*Zea mays saccharata*) milk innovation for stunting prevention in Jenggawah Village

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Abstract

Background: Stunting remains a major public health problem in Indonesia, requiring sustainable nutrition interventions through the utilization of locally available food resources. Sweet corn (*Zea mays saccharata*), which is rich in essential nutrients, has the potential to be developed into an affordable supplementary food to support stunting prevention in the community.

Identification problems: A community assessment in Jenggawah Village identified limited knowledge of local food diversification for stunting prevention and inadequate skills among health cadres and mothers of toddlers in processing sweet corn into nutritious and child-friendly food products.

Methods: This community service programme involved health cadres and mothers of toddlers in Jenggawah Village. The programme was implemented through a pre-test, health education on stunting prevention and the nutritional benefits of sweet corn, a practical demonstration of preparing Nutricorn Plus sweet corn milk, followed by a post-test and programme evaluation. Outcomes were evaluated descriptively based on participants' knowledge improvement, practical skills, and feedback on product acceptability.

Results: Participants' knowledge of stunting prevention increased by 85% following the educational intervention. Most participants were able to independently prepare Nutricorn Plus and expressed positive perceptions regarding its nutritional value, affordability, and acceptability as a child-friendly supplementary food. The programme also enhanced participants' confidence in utilizing local food resources for family nutrition.

Conclusion: Participants' knowledge of stunting prevention increased by 85% following the educational intervention. Most participants were able to independently prepare Nutricorn Plus and expressed positive perceptions regarding its nutritional value, affordability, and acceptability as a child-friendly supplementary food. The programme also enhanced participants' confidence in utilizing local food resources for family nutrition.

Keywords: community service; local food; nutricorn plus; stunting; sweet corn

1. Introduction

Stunting is a chronic nutritional status problem in toddlers resulting from long-term nutrient deficiencies, which remains a major challenge for health development in Indonesia (Mardiah et al., 2024). This condition of physical growth failure and cognitive development impairment demands serious, integrated interventions that target down to the village level (Lestari, 2024). Rural areas frequently become the primary focus of intervention due to limited access to



nutritional information and high food vulnerability. In Jember Regency, particularly in Jenggawah Village, reinforcement of stunting prevention programs continues to be promoted through the optimization of community participation and mobilization of local food resources to suppress the prevalence rate of cases sustainably.

Stunting prevention must be carried out intensively during the first 1,000 Days of Life (HPK), where deficits in energy, protein, fat, and carbohydrate intake will directly impact metabolic processes and hinder a child's height growth (Pontang et al., 2025). One of the recovery strategies massively implemented by the government is the provision of Supplementary Feeding (PMT) programs (Kusuma & Achyar, 2025). However, dependence on commercial manufactured PMT products often encounters obstacles in terms of high-budget costs and periodic distribution barriers at the village level. Therefore, national technical guidelines now strongly encourage the implementation of local food-based PMT that is independent, economical, and easy to process independently by families (Direktorat Jendral Kesehatan Primer dan Komunitas, 2025).

Jenggawah Village possesses potential in the agricultural sector, one of which is as a producer of sweet corn (*Zea Mays Saccharata*). However, the utilization of sweet corn by local residents is generally still limited to simple culinary processing, such as boiling, or direct sales in raw form with low economic value (Khadijah, S., Lahope, J., Wahyu, E., & Paramita, 2024). In fact, this commodity has a high nutritional value that is excellent for supporting child growth and development, as it is rich in starch, fiber, natural sugars, and plant-based protein containing albumin and globulin fractions (Rinanda & Sarjito, 2024). Its natural sweet flavor characteristics also provide superior organoleptic qualities, making it easily liked by children if processed into innovative food diversification products.

Based on situation analysis and field observations in Jenggawah Village, several fundamental problems were identified within the partner groups consisting of posyandu health cadres and mothers of toddlers. In general, the community's level of nutritional literacy regarding food diversification based on local agro-commodities is still classified as low (Veronica et al., 2025). Most mothers of toddlers do not yet understand the techniques for processing sweet corn into nutrient-dense, functional derivative products for children. Furthermore, a lack of practical skills in processing local food ingredients remains a major obstacle, so daily food menu variations for children become highly limited and are prone to causing toddlers to grow bored of consuming healthy food.

Observing this gap, the diversification of sweet corn into a functional plant-based milk product named "Nutricorn Plus" offers a promising tactical and strategic solution. The utilization of plant-based milk from sweet corn is an effective step to address undernutrition issues through the provision of a healthy, anti-stunting beverage (Lamona et al., 2024). The "Nutricorn Plus" product is formulated to optimize the original nutritional content of sweet corn, processed hygienically, and served in liquid form (milk) so that nutrient absorption by the child's digestive system occurs more optimally. The existence of this innovative product also serves as a healthy PMT option to replace nutrient-poor snacks that are widely consumed by children in the village environment.

Departing from this background, this community service activity aims to organize training on "Nutricorn Plus" corn milk production for health cadres and mothers of toddlers in Jenggawah Village. Through a participatory training approach, this program is designed to enhance the knowledge, nutritional awareness, and motor skills of partners in processing the agricultural potential within their environment (Veronica et al., 2025). The success of this community service program is expected to build food independence at the household level, thereby providing a real and applicable contribution to reducing the risk and incidence rate of stunting in Jenggawah Village over the long term.

2. Identification problem

A preliminary needs assessment conducted with community partners in Jenggawah Village identified several challenges related to toddler nutrition and stunting prevention. Health cadres at the Integrated Healthcare Center (Posyandu) and mothers of toddlers had limited knowledge of stunting, its risk factors, and its long-term consequences for child growth and development. Many participants perceived short stature as primarily determined by genetic factors, resulting

in low awareness of the importance of nutritional interventions during the First 1,000 Days of Life. In addition, knowledge regarding food diversification using locally available agricultural products remained inadequate, despite the village's considerable potential for sweet corn (*Zea mays saccharata*) production.

The assessment also revealed limited practical skills among mothers in processing local food into nutritious, hygienic, and attractive supplementary feeding (Pemberian Makanan Tambahan [PMT]) products for toddlers. As a result, daily meals were often monotonous, increasing the likelihood of picky eating behaviors and reducing children's consumption of nutritious household foods. This situation was further compounded by dependence on commercially available snacks, sweetened beverages, and instant food products, which are generally less nutritious but more accessible than quality supplementary foods.

Furthermore, the role of Posyandu health cadres in delivering nutrition education had not been fully optimized because of the limited availability of practical educational media and food-based intervention models. Existing Posyandu activities primarily focused on routine growth monitoring and recording, with minimal emphasis on practical demonstrations of innovative local food products. These findings highlighted the need for a community-based educational programme that empowers health cadres and families to utilize locally available sweet corn through the Nutricorn Plus innovation as a sustainable strategy for stunting prevention.

3. Implementation methodology

This community service programme was implemented using a participatory educational approach combined with a food-based intervention demonstration. The programme actively involved Posyandu health cadres and mothers of toddlers in Jenggawah Village to improve their knowledge and practical skills in utilizing locally available sweet corn (*Zea mays saccharata*) as a nutritious supplementary feeding (Pemberian Makanan Tambahan [PMT]) alternative for stunting prevention.

The programme began with a preparation and coordination phase involving the Jenggawah Village Government, village midwives, and the Family Welfare Movement (PKK) team to determine the programme schedule, venue, and participant recruitment. Educational materials, including the Nutricorn Plus booklet, presentation slides, leaflets, and standardized food-processing equipment, were prepared before implementation. Prior to the educational sessions, participants completed a pre-test questionnaire to assess their baseline knowledge of stunting prevention and the nutritional potential of sweet corn.

The educational phase focused on improving participants' nutritional literacy through interactive presentations and discussions. Topics included the importance of adequate nutrition during the First 1,000 Days of Life, the long-term consequences of stunting, and the nutritional value of sweet corn as a local food resource. Participants were encouraged to discuss challenges encountered in feeding toddlers, particularly issues related to picky eating and the preparation of nutritious meals at home.

Practical training was subsequently conducted through a live demonstration of Nutricorn Plus sweet corn milk preparation. Participants were guided through each stage of the production process, including selecting fresh sweet corn, washing, boiling, blending, filtering, and packaging the final product. The training also emphasized food hygiene practices, such as equipment sterilization, hand hygiene, and safe packaging procedures. At the end of the demonstration, participants and their toddlers evaluated the product through a simple organoleptic assessment of its taste, aroma, and texture.

The final phase consisted of programme evaluation and follow-up. Participants completed a post-test questionnaire to measure changes in knowledge after the intervention. Feedback was also collected to evaluate participants' understanding and confidence in preparing Nutricorn Plus independently. To support programme sustainability, participants received standardized preparation guidelines and access to instructional videos through social media, enabling continued practice and dissemination of the innovation within the community.

4. Results and Discussion

Results should be clear and concise. Tables and figures are preferred.

Implementation Results

The community service programme was conducted at the Jenggawah Village Hall and involved 35 participants, consisting of Posyandu health cadres and mothers of toddlers at risk of stunting. The programme began with coordination involving village officials, village midwives, and Posyandu cadres to ensure that participant recruitment was aligned with the priority stunting prevention programme of the Jenggawah Primary Healthcare Center (Puskesmas).

The educational intervention consisted of nutritional counseling, interactive discussions, and practical demonstrations on producing Nutricorn Plus sweet corn milk as a locally based supplementary feeding (Pemberian Makanan Tambahan [PMT]) innovation. Counseling focused on the importance of nutrition during the First 1,000 Days of Life, stunting prevention, and the nutritional value of sweet corn (*Zea mays saccharata*) (Figure 1).

The effectiveness of the educational intervention was evaluated using pre-test and post-test questionnaires. As presented in Table 1, participants' knowledge improved across all assessment indicators. The overall average score increased from 41.6% before the intervention to 90.0% after the intervention, representing a knowledge gain of 48.4%.

Table 1. Pre-test and post-test results of participants' knowledge on stunting prevention and sweet corn utilization

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Nutritional assessment and stunting indicators	Pre-test (%)	Post-test (%)	Knowledge gain
Understanding of stunting and the first 1,000 days of life	45	90	+45
Knowledge of the nutritional content of sweet corn	30	85	+55
Awareness of local food-based supplementary feeding	50	95	+45
Overall average	41.6	90.0	+48.4

Following the educational session, participants attended a live demonstration on preparing Nutricorn Plus sweet corn milk using standardized food processing procedures. The demonstration covered ingredient selection, hygienic preparation, processing techniques, and safe packaging methods to preserve nutritional quality (Figure 2). At the end of the session, participants stated that the product was easy to prepare and could be reproduced independently at home.



Figure 1. Counseling on stunting prevention and the nutritional benefits of sweet corn



Figure 2. Demonstration of Nutricorn Plus sweet corn milk preparation

The completed Nutricorn Plus product was then introduced to participants and toddlers for visual observation and simple organoleptic evaluation (Figure 3).



Figure 3. Nutricorn Plus sweet corn milk product

Community Impact

The programme positively improved participants' knowledge of stunting prevention and increased their understanding of the nutritional benefits of locally available sweet corn. The substantial improvement in knowledge shown in Table 1 indicates that the educational intervention successfully addressed misconceptions regarding stunting and strengthened participants' awareness of the importance of adequate nutrition during the first 1,000 days of life.

In addition, the practical demonstration enhanced participants' confidence in preparing Nutricorn Plus independently using affordable local ingredients. The product received positive acceptance from toddlers because of its natural sweetness, smooth texture, and attractive appearance, indicating its potential as a locally produced supplementary feeding alternative. The programme also strengthened the capacity of Posyandu health cadres by providing practical educational materials and food-processing equipment to support continued nutrition education and routine PMT activities within the community.

Discussion and Practical Reflection

The substantial improvement in participants' knowledge demonstrates that combining interactive nutrition education with practical demonstrations is an effective strategy for improving community understanding of stunting prevention. The increase in the average knowledge score from 41.6% to 90.0% (Table 1) suggests that participants gained a better understanding of the importance of nutrition during the First 1,000 Days of Life and the role of local food resources in preventing stunting. Similar findings have shown that targeted nutrition education effectively corrects misconceptions regarding stunting and promotes healthier family feeding practices (Veronica et al., 2025).

The practical demonstration (Figure 2) was another important strength of the programme because it translated theoretical knowledge into practical skills. Participants learned not only the nutritional value of sweet corn but also appropriate processing techniques that preserved food quality and safety. Previous studies have reported that practical, food-based educational interventions improve participants' confidence and encourage the adoption of healthy feeding practices using locally available resources (Rinanda & Sarjito, 2024).

The positive acceptance of Nutricorn Plus by toddlers (Figure 3) indicates that locally produced sweet corn milk has the potential to serve as an affordable supplementary feeding option in rural communities. Utilizing locally available agricultural products may reduce dependence on commercially processed foods while promoting household food security and nutritional self-

reliance. Food diversification based on local commodities has been recognized as one of the most sustainable community-based strategies for improving child nutrition and reducing the prevalence of stunting (Rinanda & Sarjito, 2024).

From a practical perspective, collaboration with Posyandu health cadres and village health workers is essential for sustaining programme outcomes. Providing cadres with educational materials and food-processing equipment enables them to continue promoting Nutricorn Plus during routine Posyandu activities and encourages wider dissemination of locally based nutrition innovations. This collaborative approach supports long-term community empowerment and contributes to sustainable stunting prevention through the utilization of local food resources.

5. Conclusion

The community service programme successfully improved the knowledge of *Posyandu* health cadres and mothers of toddlers regarding stunting prevention and the nutritional benefits of locally available sweet corn, with the average knowledge score increasing from 41.6% to 90.0% after the intervention. Participants also demonstrated the ability to independently prepare Nutricorn Plus sweet corn milk following the practical training. The high acceptability of the product and the abundant availability of sweet corn in Jenggawah Village indicate that Nutricorn Plus has strong potential as an affordable, locally based supplementary feeding (*Pemberian Makanan Tambahan* [PMT]) innovation to support sustainable community-based stunting prevention.

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Recommendations or sustainability plan

To sustain the impact of this community service programme, Nutricorn Plus is recommended to be incorporated into routine *Posyandu* supplementary feeding (*Pemberian Makanan Tambahan* [PMT]) activities in Jenggawah Village. Continuous nutrition education, practical training, and mentoring should be provided to *Posyandu* health cadres and mothers of toddlers to strengthen the utilization of locally available sweet corn as a nutritious food resource. Collaboration among the primary healthcare centre (Puskesmas), village government, and academic institutions is also recommended to support the wider dissemination of the Nutricorn Plus innovation and promote sustainable community-based stunting prevention.

References

- Direktorat Jendral Kesehatan Primer dan Komunitas. (2025). *Peraturan Direktorat Jendral Kesehatan Primer dan Komunitas Nomor HK.02.02/B/575/2025* (pp. 1–2).
- Khadijah, S., Lahope, J., Wahyu, E., & Paramita, F. B. A. C. (2024). Mitra Ibu-Ibu Pkk Kecamatan Pacet Kabupaten. *Prosiding Patriot Mengabdi*, 3(1), 1080–1088.
- Kusuma, M., & Achyar, K. (2025). Hubungan Pemberian Makanan Tambahan (PMT) Lokal Dengan Kenaikan Tinggi Badan Pada Balita Stunting Usia 24-59 Bulan Di Wilayah Kerja Puskesmas Jeruklegi Ii Tahun 2024. *Jurnal Berita Kesehatan*, 17(1), 220–234. <https://doi.org/10.58294/jbk.v17i1.264>
- Lamona, A., Rikandi, M., Saputra, R., & Putri, C. P. (2024). Sosialisasi Pemanfaatan Jagung Manis dan Kacang Hijau Bergerminasi Sebagai Minuman Sehat Anti Stunting di Kelurahan Mata Air. *Humanism, Jurnal Pengabdian Masyarakat*, V(2), 57–70.
- Lestari, T. R. P. (2024). Evaluasi Kebijakan dan Strategi Penurunan Angka Stunting pada Tahun 2024 Evaluation of Policies and Strategies for Reducing Stunting in 2024. *Aspirasi: Jurnal Masalah-Masalah Sosial*, 16(1), 71–85. <https://doi.org/10.46807/aspirasi.v16i1.4800linkonline:http://jurnal.dpr.go.id/index.php/aspirasi/index>
- Mardhiah, Aldera, Rahma, F. A., & Turrahmah, M. (2024). Menentukan Prioritas Intervensi Pencegahan Stunting. *Policy Brief Si Bijak Awards 2024*, 121–128.
- Pontang, G. S., Setyaningsih, S., Aliya, A. P., & Zeinisa Fariza. (2025). View of Pendampingan Program Pemberian Makanan Tambahan (PMT) Pangan Lokal di Desa Tanjung dan Desa Kalijambe, Kecamatan Bringin, Kabupaten Semarang.pdf. *Indonesian Journal of Community Empowerment (IJCE)*, 7(1), 156–161.
- Rinanda, I., & Sarjito, S. (2024). Pelatihan Pengolahan Produk Pangan Berbasis Jagung Sebagai Upaya Meminimalisir Kasus Stunting di Desa Dasan Tapen. *Abdi Geomedisains*, 3(2), 100–105. <https://doi.org/10.23917/abdigeomedisains.v3i2.422>

Veronica, S. Y., Destiana, E., Komariah, S., Putri, W. E., Fadilah, I. N., Hestina, N., Dewi, T. N., Juliani, D., Riskiani, D., & Siskarina, A. (2025). Pemberian Makanan Tambahan (PMT) Berbasis Pangan Lokal untuk Pencegahan dan Penanganan Wasting dan Stunting Pada Balita di Desa Rejosari Kecamatan Pringsewu Kabupaten Pringsewu. *Jurnal Pengabdian Masyarakat Bangsa*, 3(6), 2889–2897. <https://doi.org/10.59837/jpmba.v3i6.2833>