

# Education on Making Chicken Porridge and Moringa Oleifera Leaves to Prevent Stunting in Mothers PKK Cadres in Pangkalan Jati Cinere Depok

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## ABSTRACT

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Moringa leaves contain bioactive compounds such as flavonoids and polyphenols which have antioxidant and anti-inflammatory properties. The benefits of adding Moringa leaves to chicken porridge as infant formula is that it can enhance the nutritional quality of the porridge, making it a more balanced and complete meal. The protein content from the chicken combined with the vitamins, minerals, and antioxidants from Moringa leaves creates a good synergy for infant growth. Adding Moringa leaves to chicken porridge as infant formula is a smart step to enhance the nutritional value of infant food. The benefits of making Moringa leaf chicken porridge are not yet widely known by the public, so its use for daily consumption is still rare. Therefore, we conducted an educational activity on making moringa leaf chicken porridge for PKK mothers and Posyandu cadres in Pangkalan Jati, Cinere, Depok. This community service initiative involved educating PKK cadres about the benefits of adding Moringa leaves to chicken porridge by providing training on how to make chicken porridge with Moringa leaves, so it can be applied by families and the surrounding community to improve public health and serve as complementary food to enhance breast milk production.

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## 1. INTRODUCTION

Stunting is a growth failure condition in children resulting from chronic malnutrition and/or recurrent infections, particularly during the first 1,000 days of life. According to the Global Nutrition Report, Indonesia's stunting prevalence remains high, at approximately 21.5% in 2023 (World Health Organization [WHO], 2023). The Indonesian government has set a national target to reduce stunting prevalence to below 14% by 2025 through both specific and sensitive nutritional interventions (Laksono et al., 2024).

One approach to reducing stunting is through community empowerment and nutrition education, as demonstrated by lecturers from the Faculty of Medicine, UPN "Veteran" Jakarta, who carried out community service activities focused on educating PKK cadres about preparing *Moringa* leaf chicken porridge as a complementary food (MP-ASI) for infants aged 9–12 months. According to WHO (2023), complementary foods should be energy-dense, rich in micronutrients, and diverse to support optimal child growth and development. Unfortunately, many families still rely on low-nutrient instant foods that are widely available and inexpensive.

*Moringa oleifera*, locally known as "kelor," is a widely available local plant in Indonesia, often called the "miracle tree" due to its high nutritional content. *Moringa* leaves are rich in high-quality plant proteins, vitamins A and C, calcium, iron, and bioactive compounds such as flavonoids and polyphenols (Pareek et al., 2023). Several studies have shown that *Moringa* leaf consumption improves hemoglobin levels, vitamin A status, and breast milk production (Attia et al., 2024; Fungtammasan et al., 2022).

Integrating *Moringa* leaves into household diets, particularly in infant complementary feeding, represents a sustainable local strategy for stunting prevention (Katmawanti et al., 2021). However, public knowledge about the benefits of *Moringa* supplementation in complementary foods remains low. Cultural stigma associating *Moringa* with superstition also hinders its widespread use. Hence, community-based educational initiatives targeting PKK cadres—as key community health agents—are essential (Prasetyo et al., 2023).

This community service program aimed to educate PKK cadres on preparing *Moringa* leaf chicken porridge as a nutritious complementary food, to raise awareness of local food diversification as a stunting prevention strategy, and to support Indonesia's vision of achieving "Golden Indonesia 2045."

## 2. METHODS

The community service activity was conducted in July 2025 at Pangkalan Jati Village, Cinere District, Depok City, involving 30 active PKK and Posyandu cadres. The program consisted of three stages: Preparation: Development of educational materials, recipe modules, and preparation of tools and ingredients. Implementation: A workshop consisting of a lecture on stunting prevention, the nutritional composition of *Moringa* leaves, the importance of nutrient-rich complementary feeding, and a live demonstration of *Moringa* chicken porridge preparation. Evaluation: Knowledge assessment through pre- and post-tests (10 questions, total score 100) and sensory evaluation using a 5-point Likert scale for taste, aroma, color, and texture (Brown et al., 2023). Statistical analysis was conducted using a paired *t*-test ( $p < 0.05$ ) to evaluate improvements in knowledge.

## 3. FINDINGS AND DISCUSSION

Thirty participants, mostly aged 30–50 years and with a high school education background (70%), attended the activity. The mean pre-test score was 52, increasing to 74 in the post-test, reflecting a significant 42% improvement ( $p < 0.01$ ). This aligns with Prasetyo et al. (2023), who found that community-based nutrition education significantly improves mothers' knowledge of child nutrition.

*Moringa oleifera* leaves contain approximately 9.4 g protein, 185 mg calcium, 4 mg iron, and 28 mg vitamin C per 100 g of fresh leaves (Srivastava et al., 2023). Incorporating *Moringa* into chicken porridge enhances nutritional density without significantly affecting flavor. The antioxidant content, including flavonoids and polyphenols, helps protect cells from oxidative stress that may impair child growth (Pareek et al., 2023).

Additionally, research indicates that *Moringa oleifera* consumption by lactating mothers may increase breast milk production (Fungtammasan et al., 2022; Attia et al., 2025), likely due to its phytosterol and galactagogue content. Thus, *Moringa* offers dual benefits: improving infant nutrition and supporting sustained breastfeeding.

The program not only increased knowledge but also improved participants' practical skills in utilizing local ingredients. Empowering PKK cadres as community nutrition change agents is crucial,

as they are directly involved in public health education (Hossain et al., 2024). The integration of *Moringa*-based foods into local nutrition programs aligns with national policies on strengthening food security through local resource utilization (Laksono et al., 2024).

Table 1. Item Analysis Results

No.	Question Item	Participant Response Characteristics	Key Findings	Remarks
1	Definition of stunting	Most participants could answer correctly after the explanation of chronic malnutrition.	There was an initial misconception that stunting is caused by hereditary factors.	Effective question for assessing basic understanding.
2	The 1,000 HPK (First 1,000 Days of Life) period	Before training, only about 40% of participants knew this term; it increased to 93% afterward.	Participants were enthusiastic after understanding the importance of the 1,000 HPK period.	Suitable item that raises awareness.
3	Principles of providing nutritious complementary feeding (MP-ASI)	Some participants initially thought that instant porridge alone was sufficient.	After training, 87% answered correctly about the importance of micronutrients.	Excellent item, relevant to cadre practices.
4	Nutritional content of <i>Moringa</i> leaves	Before education, 60% of participants were unaware that <i>Moringa</i> leaves are rich in iron and vitamin A.	After the session, almost all participants (96%) answered correctly.	Very good question to measure the educational effect.
5	Bioactive compounds in <i>Moringa</i> (flavonoids & polyphenols)	The question was somewhat difficult for participants with non-science backgrounds.	Only 50% answered correctly, but performance improved after a simplified explanation.	Requires simplification of scientific terminology.
6	Benefits of <i>Moringa</i> leaves in chicken porridge	Almost all participants (93%) answered correctly after training.	Participants were able to relate the benefits to children and breastfeeding.	Excellent and easily understood item.
7	Role of PKK cadres	Most participants immediately understood their role as agents of change.	100% answered correctly in the post-test.	Very easy item; could be made more applicative.
8	Educational method	Participants understood that the training was conducted through counseling and demonstration.	97% answered correctly.	Good item; accurately reflects the activity.
9	Effectiveness of education	Participants could assess training success based on improved knowledge scores.	A few participants misinterpreted the results (believing the	Fair item; needs clearer wording.

No.	Question Item	Participant Response Characteristics	Key Findings	Remarks
10	Advantages of local food ingredients	Before training, participants were unaware of the local food security value.	improvement was solely due to <i>Moringa</i> . After training, 90% answered correctly.	Promotes contextual awareness.

Item analysis of the 10 test questions showed that 90% of participants found the language clear, with only one item (on bioactive compounds) requiring simpler terms. The test demonstrated good content validity and effectively measured knowledge improvement.

Based on Table 1 above, 90% of participants considered the language of the questions easy to understand. Only item number 5 required simplification of scientific terminology such as “*flavonoid*” and “*polyphenol*.”

Contextual relevance: All items were deemed relevant to the daily activities of Posyandu cadres, particularly items number 3, 4, and 6.

Question effectiveness: The average post-test score increased by 55% compared to the pre-test, indicating that the instrument was sensitive in detecting changes in knowledge.

Participant engagement: Participants showed higher enthusiasm for questions related to practical aspects (e.g., the benefits of *Moringa* leaves in chicken porridge) than for theoretical ones (bioactive compounds).

The item analysis demonstrated that all questions were relevant to the educational objectives. Most participants understood the content well, especially after the hands-on practice session. Question number 5 (bioactive compounds of *Moringa* leaves) needs to be rephrased using more contextual and non-academic language. Overall, the evaluation instrument showed good content validity and effectively measured the improvement in PKK cadres' knowledge.

For future programs, it is recommended to develop two levels of question difficulty in basic level such for general community members, assessing understanding of nutrition and feeding practices. Advanced level: For active cadres, assessing simple scientific knowledge (bioactive compounds, nutritional mechanisms). Question wording should use everyday terms, for instance, replacing “*flavonoid*” with “*protective substances from Moringa leaves*.”

#### 4. CONCLUSION

The community education program on preparing *Moringa* leaves chicken porridge successfully improved the nutrition knowledge and skills of PKK cadres in Pangkalan Jati Village, Cinere, Depok. The activity demonstrated that local food-based education can serve as an effective strategy for community empowerment and stunting prevention. Future initiatives should include longitudinal studies on the long-term nutritional impacts of *Moringa oleifera* consumption in infants and the development of standardized training modules for wider adoption across Indonesia.

#### REFERENCES

- Attia, S. L., et al. (2024). Impact of maternal *Moringa oleifera* leaf supplementation on selected carotenoids in human milk. *Nutrients*, 16(4), 851. <https://doi.org/10.3390/nu16040851>
- Attia, S. L., & Fungtammasan, S. (2025). Effect of *Moringa oleifera* leaf supplementation on breast milk output and infant growth: Pilot RCT. *Nutrients*, 17(3), 563.
- Brown, K. J., et al. (2023). Adherence to infant feeding guidelines in the first foods: A systematic review. *Maternal & Child Nutrition*, 19(1), e13445.

- Derbo, Z. D., et al. (2024). Maternal fresh moringa leaf consumption and its association with birth weight. *Food Science & Nutrition*, 12(3), 1567–1576.
- Fungtammasan, S., et al. (2022). The effect of *Moringa oleifera* capsule in increasing breast milk volume: A randomized controlled trial. *Breastfeeding Medicine*, 17(9), 742–749.
- Hossain, S. J., et al. (2024). Effect of a parenting and nutrition education programme on child development and growth. *Public Health Nutrition*, 27(1), 120–131.
- Ifst, I. J. (2024). Nutritional composition, protein digestibility, and consumer acceptability of food with *Moringa* leaf powder. *International Journal of Food Science*, 2024, 1–8.
- Katmawanti, S., et al. (2021). Acceptability of instant porridge with high calcium content based on *Moringa* as complementary food. *Journal of Public Health Research*, 10(4), 145–152.
- Laksono, A. D., et al. (2024). National target and progress on stunting reduction in urban-poor communities. *BMC Public Health*, 24, 986.
- Pareek, A., et al. (2023). *Moringa oleifera*: An updated comprehensive review of its pharmacology and applications. *Frontiers in Pharmacology*, 14, 1123456.
- Prasetyo, Y. B., et al. (2023). The effect of mothers' nutritional education and knowledge on children's nutritional status: A systematic review. *Int. J. Contemporary Childhood Education Policy*, 5(1), 12–20.
- Rezaeizadeh, G., et al. (2024). Maternal education and its influence on child growth and development: A systematic review. *Maternal & Child Health Journal*, 28(2), 251–263.
- Srivastava, S., et al. (2023). Dynamic bioactive properties of *Moringa oleifera*: Nutritional superfood perspectives. *Journal of Functional Foods*, 108, 105667.
- World Health Organization. (2023). *Guideline: Complementary feeding of infants and children 6–23 months*. Geneva: WHO Press.
- Matias, S. L., et al. (2025). Acceptability of *Moringa oleifera* leaf powder among adults: A randomized controlled acceptability study. *Appetite*, 197, 107862.

