



MOVEMENT TO EAT MACKEREL TO OVERCOME STUNTING IN CIOMAS DISTRICT BOGOR REGENCY

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Abstract

Stunting is a condition of impaired growth and development in children under five due to chronic malnutrition, resulting in a child being too short for their age. Nutritional deficiencies begin during pregnancy and in the early postnatal period; however, the signs of stunting typically become apparent after the child reaches two years of age. Stunting has a significant impact on the quality of human resources. In the short term, it affects brain development, intelligence, physical growth, and metabolism. In the long term, it leads to decreased cognitive abilities, weakened immune function, increased risk of metabolic diseases, and learning difficulties. Stunting prevention is currently one of the government's main priorities. In addition to education about stunting, another preventive measure is the optimization of animal protein intake, such as through the consumption of mackerel. Mackerel is a locally available, highly nutritious fish. This community service program aims to raise public awareness about the importance of animal protein consumption in the prevention of stunting. With improved understanding, it is expected that communities will be able to meet daily protein needs, especially for infants and young children. To raise awareness and promote behavioral change in the community, particularly in fostering the habit of consuming animal-based protein as a strategy to prevent stunting. The intervention involved educational sessions about stunting, the introduction of the "Gemakan Kemuning" campaign an initiative promoting mackerel consumption to combat stunting, video demonstrations on mackerel-based food preparation, and the distribution of mackerel-based food products.

The activity was conducted on Thursday, June 12, 2025, at community health centre Kemuning 3, Bogor Regency, and was attended by 35 mothers with infants or toddlers. The program encompassed preparation, implementation, and evaluation phases. Educational content included definitions, causes, symptoms, impacts, prevention, and management of stunting. The program was successfully implemented. It is recommended that similar initiatives be continued and expanded by other healthcare professionals so that communities can better understand how to prevent and manage stunting, including by increasing their consumption of animal protein sources such as mackerel.

Keywords: Stunting, Children Under Five, Animal Protein, Mackerel, Fish-Based Products

INTRODUCTION

Stunting is a condition of impaired growth in children under five years of age resulting from chronic malnutrition, which causes a child to be significantly shorter than the average for their age. Nutritional deficiencies often begin during fetal development and continue into the early postnatal period; however, the signs of stunting typically become evident only after the child reaches the age of two. The short stature observed in children is frequently attributed to genetic factors, leading many in the community to accept it as a natural condition without attempting any form of prevention. In reality, genetic factors contribute only minimally compared to behavioral, environmental (social, economic, cultural, political), and healthcare-related factors (Ministry of Health, 2022).




Stunting has a significant impact on the quality of Indonesia's human resources, both in the short and long term. In the short term, it can lead to impaired brain development, reduced intelligence, delayed physical growth, and disrupted metabolism. In the long term, stunting is associated with decreased cognitive abilities, weakened immune function, increased risk of metabolic diseases, and learning difficulties. Stunting prevention is currently one of the government's top priorities. These

efforts aim to ensure that Indonesian children grow and develop optimally, possessing emotional, social, and physical capabilities that prepare them to learn, innovate, and compete at the global level (Ministry of Health, 2022).

In 2022, the global prevalence of stunting was 22.3%, affecting approximately 148.1 million children under five years of age. Of these, 52% were from Asia and 42% from Africa (WHO, 2023). Indonesia has made progress in reducing stunting prevalence from 37.6% in 2013 to 21.6% in 2022, with an average annual decrease of around 1.55%. However, the 2023 SKI (Indonesian Nutritional Status Survey) findings indicate that the prevalence has remained relatively stagnant at 21.5%, suggesting that the 2020–2024 National Medium-Term Development Plan (RPJMN) target of reducing stunting to 14% by 2024 has not yet been achieved. The 2022 Indonesian Nutritional Status Survey (SSGI) also reported a 1.6-fold increase in stunting risk between the 6–11-month age group (13.7%) and the 12–23-month age group (22.4%), indicating issues related to the provision of complementary feeding (MP-ASI). This is largely due to suboptimal feeding practices in terms of age-appropriateness, frequency, quantity, texture, and dietary diversity. Ensuring adequate energy and protein intake during this critical period is essential to prevent stunting.

One of the efforts to prevent stunting is to optimize the consumption of animal-based protein, such as mackerel. Mackerel is a locally available fish species that is easily accessible and highly nutritious. A comparison of the nutritional content of mackerel, catfish, and salmon is as follows:

Table 1. Comparison of Nutritional Content of Mackerel, Catfish, and Salmon

| PERBANDINGAN NILAI GIZI | | |
|--|--|---|
| Ikan salmon (100 gram) (IMPORT) | Ikan kembung (100 gram) | Ikan Lele (100 gr) |
|  |  |  |
| <ul style="list-style-type: none"> • Omega 3 = 1,4 g • Lemak = 3,45 gr • Kolesterol = 52 mg • Protein = 19,9 g • Kalori = 116 kal • Zat Besi = 0,77 mg | <ul style="list-style-type: none"> • Omega 3 = 2,6 gr • Lemak = 2.3. gr • Kolesterol = 33 mg • Protein = 21,4 g • Kalori = 112 kal • Zat Besi = 0,9 mg | <ul style="list-style-type: none"> • Omega 3 = 6gr • Lemak = 9,09 gr • Kolesterol = 82 mg • Protein = 15,45 g • Kalori = 145 mg • Zat Besi = 1,2 mg |

Sumber : Tampubolon, Joyakin dkk. (2021)

Based on the table above, mackerel contains the highest protein content, which is essential for the growth and development of infants and toddlers. The animal protein in mackerel provides a complete profile of essential amino acids, which are difficult to obtain from plant-based proteins, and is also rich in other important nutrients. Mackerel is easily digestible and preferred by children,

making it an excellent choice to meet their animal protein requirements. By processing mackerel into a variety of dishes, it is expected to help increase animal protein intake among infants and toddlers.

METHODS AND PROSEDURES

The activity was conducted on June 12, 2025, with the location for the Community Service Program selected based on current relevance, specifically at community health centre Kemuning 3, RW 03, Sukamakmur Village, Ciomas District, Bogor Regency. The target audience for this community service was mothers with infants or toddlers.

This community service activity consisted of educational sessions about stunting, the introduction of “Gemakan Kemuning,” a campaign promoting mackerel consumption to combat stunting, and demonstrations of mackerel-based food preparation, including dishes such as sate lilit, shredded fish (abon), potato sticks, ekado, meatballs, and mackerel crackers through video presentations, followed by the distribution of mackerel-based products. The materials, tools, and instruments used in this community service program included:

1. Educational materials
2. Venue
3. LCD projector
4. Laptop
5. Leaflets
6. Videos
7. Mackerel-based food products

Prior to the implementation of the community service program, a preparation phase was conducted. The preparation phase began with obtaining permission from the local neighborhood and community leaders (RT and RW), conducting a preliminary survey, and identifying priority issues through a Focus Group Discussion (FGD) method. The FGD was held on Tuesday, June 3, 2025, at 14:00 WIB until completion and was attended by 16 participants, including the village midwife, RT and RW leaders, community health volunteers (kader), and representatives of mothers with infants or toddlers. This was followed by preparations for the implementation stage, which included making banners, developing educational materials and leaflets, and preparing the venue and necessary equipment.

The next implementation phase of the community service was carried out at the predetermined location. The activities included:

1. Introducing the community service facilitators and participants
2. Conducting a pre-test
3. Providing information and education about stunting
4. Introducing the "GEMAKAN KEMUNING" campaign

5. Screening a video on how to prepare mackerel-based dishes
6. Distributing mackerel-based food products
7. Facilitating discussion and question-and-answer sessions
8. Conducting a post-test
9. Distributing souvenirs
10. Taking a group photo

The final stage involves preparing the report, which is carried out by the team after completing the implementation of the community service.

RESULTS OF ACTIVITIES AND DISCUSSION

The community service activities were conducted at Posyandu Kemuning 3, RW 03, Sukamakmur Village, Ciomas District, Bogor Regency. RW 3 in Sukamakmur Village consists of five neighborhood units (RT). The majority of residents in RW 3 work as laborers and entrepreneurs. One posyandu in this area is Posyandu Kemuning 3, located in RT 2, managed by one village midwife and five community health volunteers (kaders). Six pregnant women registered at Posyandu Kemuning 3, with no high-risk pregnancies reported.

Meanwhile, the total number of registered infants and toddlers was 107, comprising 54 males and 53 females. The average number of infants and toddlers visiting the posyandu ranges from 40 to 50 per session. Seven stunted children and one child with undernutrition were recorded. The distance between RW 3 and the nearest community health center (Puskesmas) is approximately one kilometer, which can be reached by walking or public transportation.

The community service implementation took place on Thursday, June 12, 2025, with 35 participants. The implementation phase was conducted at the predetermined location. The activities included: 1) introducing the community service facilitators and participants; 2) conducting a pre-test; 3) providing information and education about stunting; 4) introducing the "GEMAKAN KEMUNING" campaign; 5) screening a video demonstrating how to prepare mackerel-based dishes; 6) distributing mackerel-based food products; 7) facilitating discussion and question-and-answer sessions; 8) conducting a post-test; 9) distributing souvenirs; and 10) taking a group photo.

The education provided during the community service activities covered the definition, causes, signs and symptoms, impacts, prevention, and management of stunting, and the introduction of "GEMAKAN KEMUNING," a campaign promoting mackerel consumption to combat stunting. It was followed by a demonstration of mackerel-based food preparations, including sate lilit, shredded fish (abon), potato sticks, ekado, meatballs (bakso), and mackerel crackers, presented through video screenings and the distribution of these mackerel-based products to the infants and toddlers in attendance.

During the discussion and question-and-answer session, participants showed enthusiasm, as evidenced by the numerous questions they asked. The evaluation results from the pre-test and post-test indicated an increase in participants' knowledge before and after the educational intervention.

Table 2. Pre-test and Post-test Results

| Skor Pretest | Skor Posttest | Hasil (%) |
|--------------|---------------|------------|
| 50 | 87.5 | + 75.00 % |
| 75 | 100 | + 33.33 % |
| 25 | 75 | + 200.00 % |
| 50 | 75 | + 50.00 % |
| 37.5 | 87.5 | + 133.33 % |
| 37.5 | 75 | + 100.00 % |
| 50 | 75 | + 50.00 % |
| 87.5 | 100 | + 14.29 % |
| 75 | 100 | + 33.33 % |
| 75 | 100 | + 33.33 % |
| 87.5 | 100 | + 14.29 % |
| 100 | 100 | - |
| 25 | 75 | + 200.00 % |
| 37.5 | 75 | + 100.00 % |
| 62.5 | 87.5 | + 40.00 % |
| 100 | 100 | - |
| 75 | 87.5 | + 16.67 % |
| 75 | 87.5 | + 16.67 % |
| 62.5 | 75 | + 20.00 % |
| 62.5 | 87.5 | + 40.00 % |
| 37.5 | 75 | + 100.00 % |
| 75 | 100 | + 33.33 % |
| 50 | 87.5 | + 75.00 % |
| 50 | 87.5 | + 75.00 % |
| 75 | 100 | + 33.33 % |

The program's effectiveness is demonstrated by an average score increase of +59.48%, indicating that the learning method employed was effective in enhancing participants' understanding. Based on the pre-test and post-test results, it can be concluded that this community service program successfully improved participants' knowledge. The significant score improvement shows that the training method applied was effective in delivering the material to the participants.

ACTIVITY DOCUMENTATION



Figure 1. Opening Ceremony



Figure 2. Education about Stunting



Figure 3. Distribution of processed mackerel products for babies and toddlers



Figure 4. Discussions and questions and answers



Figure 5. Providing souvenirs



Figure 6. Closing



Figure 7. Leaflet

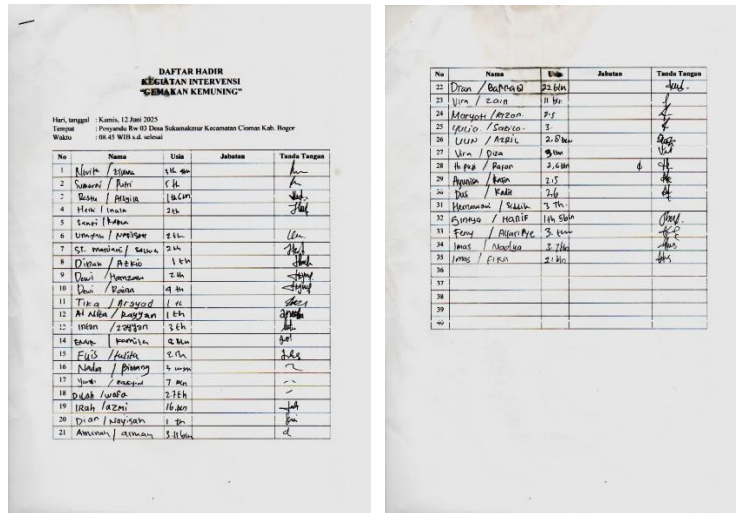


Figure 8. List Documentation Present

CONCLUSION

The community service program was conducted on Thursday, June 12, 2025, at Posyandu Kemuning 3, Sukamakmur Village, Ciomas District, Bogor Regency, with a total of 35 participating mothers who have infants or toddlers. The activities included education on stunting, introducing “Gemakan Kemuning,” a campaign promoting mackerel consumption to combat stunting, demonstrations of mackerel-based food preparations through video presentations, and distributing mackerel-based products. The event ran smoothly for approximately 120 minutes. It is hoped that this series of activities can be recommended and continued by other healthcare workers so that the community not only gains knowledge about the definition, causes, signs, and impacts of stunting but also understands how to prevent and address stunting, one of which is by increasing the consumption of animal protein, such as mackerel.

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REFERENCES

- Badan Kebijakan Pembangunan Kesehatan. (2022). *Buku Saku Hasil Studi Status Gizi Indonesia (SSGI) Tahun 2022*. Jakarta: Kementerian Kesehatan Republik Indonesia.
- Basri, *et. al.* (2020). Pembuatan Value Added Product Ekado Ikan Kembung Dari Desa Sungai Rawa Kecamatan Sungai Apit Kabupaten Siak Provinsi Riau. *Semah : Journal Pengelolaan Sumberdaya Perairan*. Vol. 4 No. 2 Desember 2020
- Diskominfo Kabupaten Bogor. (2024). *Profil Wilayah Kabupaten Bogor*. BESTIE (Bogor E-Summary Information Executive).
- Falakh. (2021). Pengaruh Edukasi Metode FGD (Focus Group Discussion) Terhadap Pengetahuan Swamedikasi Antipiretik di Kabupaten Pematang. *Seminar Nasional Kesehatan*, Hal 135-143
- Kementerian Kesehatan RI. (2022). Infodatin Keluarga Bebas Stunting. Pusat Data Dan Informasi Kementerian Kesehatan RI.
- Khaerunnisa, Apriani, *et al.* (2024). Pengolahan dan Pemanfaatan Ikan Kembung sebagai Sumber Protein Hewani dalam Upaya Cegah Stunting di Desa Damarsari Kabupaten Kendal. *Bangun Desa : Jurnal Pengabdian Masyarakat*, Vol.3 No.2 (Desember) 2024, Hal. 90-99
- Mahyuddin, *et. al.* (2024) Kualitas Organoleptik Dan Kandungan Gizi Kerupuk Ikan Lokal (Bleberan) Formulasi Sebagai Camilan Untuk Balita Stunting. *Amerta Nutrition* Vol. 8 Issue 4 (Desember 2024). 528-536
- Moling, Albert, *et. al.* (2024). Peningkatan Nilai Gizi Dan Kadar Vitamin A Pada Bakso Ikan Kembung (*Restrelliger Sp.*) Dengan Penambahan Sari Wortel (*Daucus Carota L.*). *Jurnal Riset Pangan*. Vol. 2, No.4, P. 304 - 315 Th 2024
- Rauf, Suriani. (2007). Pengaruh Pemberian Abon Ikan Terhadap Perubahan Status Gizi Anak Gizi Kurang Umur 24-59 Bulan. *Program Pascasarjana Universitas Diponegoro Semarang Januari 2007*
- Sari, E. P. (2016). Peningkatan Pengetahuan Ibu Tentang Upaya Preventif Penyakit Ispa Pada Balita Melalui Focus Group Discussion (FGD). *Adi Husada Nursing Journal*, Vol. 2, No, Hal 32-34.
- Siswanti, *et.al.* (2017). Pemanfaatan Daging Dan Tulang Ikan Kembung (*Rastrelliger Kanagurta*) Dalam Pembuatan Camilan Stik. *Jurnal Teknologi Hasil Pertanian*, Vol. X, No. 1, Februari 2017
- Sulistiyadewi, N. P. E., *et. al.* (2024). Pengolahan Dan Pemanfaatan Ikan Sebagai Sumber Protein Hewani Dalam Mencegah Stunting Di Kabupaten Jembrana. *Jurnal Paradharma* 8 (1) : 21-28
- Supardi, Nurjannah, *et. al.* (2024). Peningkatan Gemar Makan Ikan Pada Balita Melalui Pelatihan Diversifikasi Ikan Kembung Sebagai Strategi Pencegahan Stunting. *JMM (Jurnal Masyarakat Mandiri)*. Vol. 8, No. 1, February 2024, Hal. 103-114
- Susilowati, Nurdian, *et. al.* (2024). Pelatihan Pembuatan Menu Sate Lilit Ikan Tenggiri sebagai Alternatif DASHAT (Dapur Sehat Atasi Stunting) di Kelurahan Krandon. *Jurnal Bina Desa*. Volume 6 (3) (2024) 396-406 p-ISSN 2715-6311 e-ISSN 2775-4375
- Tampubolon, Joyakin dkk. (2021). *Modul Pencegahan dan Penanganan Stunting*. Jakarta: Kementerian Sosial & Tanoto Foundation.
- WHO. (2023). Levels and trends in child malnutrition: UNICEF/WHO/World Bank Group joint child malnutrition estimates: key findings of the 2023 edition.