



PROSIDING KONFERENSI NASIONAL PENGABDIAN DAN PEMBERDAYAAN MASYARAKAT (KNPPM)

Direktorat Pengabdian kepada Masyarakat Universitas Gadjah Mada

ISSN : 3031-304X (Print)

PROMOTING HYGIENIC PRODUCTION AND NUTRITIONAL BENEFITS OF TEMPE IN THE INTEGRATED SERVICE POST (POSYANDU) IN EAST JAKARTA

Widya Indriani^{1*}, Siti Muslimatun¹, Aninditya Nugraha², Marcheline Angela Christy¹,
Azarya Teoforus¹, Sekar Jovina Putri¹, David Christantyaputra Gunawan², Dechen
Wangmo Armando², Abhirama Radya Asasta²

¹School of Life Sciences, Indonesia International Institute for Life Sciences, Jakarta, Indonesia

²School of Life Sciences, Indonesia International Institute for Life Sciences, Jakarta, Indonesia

*Corresponding author : widya.indriani@i3l.ac.id

ABSTRACT

Adequate food preparation and hygiene practices are crucial in preventing stunting, besides providing nutritious complementary foods. Food safety and hygiene practices during food preparation is fundamental among caregivers to ensure that complementary foods prepared for their child are safe from food hazards. This community engagement program aimed to enhance the cadres' knowledge and caregivers of children under five years old's awareness of hygienic tempe and its nutritional benefits as an essential source of complementary foods. A total of 15 cadres from an integrated service post (*posyandu*) in East Jakarta participated in a seminar and field visit to a hygienic tempe production house to learn about the production process and nutritional benefits of hygienic tempe. A pre-and post-test was conducted before and after the visitation. After the visitation, the cadres conducted education sessions to transfer the knowledge from the visit to the community in *posyandu*. The pre-and post-test results show an improvement in the cadres' knowledge with mean scores of 74.67 ± 11.87 (pre-test) to 80 ± 21.58 (post-test), although the improvement was not significant ($p \geq 0.05$). Nevertheless, the cadres had a fair to good knowledge of the hygienic production process and nutritional benefits of tempe, as well as the importance of packaging and fungi starter in the fermentation process of tempe. The cadres' knowledge is crucial to promote hygienic tempe and its nutritional benefits to the caregivers as a complementary food source to prevent stunting in children under five.

Keywords

Complementary food; Community engagement; Hygienic production; Nutrition; Tempe

1. Introduction

The prevalence of stunting in children under five in Indonesia has declined from 30.8% in 2018 to 21.6% in 2022 (Ministry of Health of Indonesia, 2019; Ministry of Health of Indonesia, 2023). Among those affected, children aged 24–35 months old (26.2%) mostly suffered from this nutritional condition (Ministry of Health of Indonesia, 2023). Stunting can begin during pregnancy, affecting foetal growth and development and continues after birth due to inadequate maternal nutrition (Fitriani et al., 2020). The prevalence increases rapidly during the complementary food introduction period (6–23 months old), peaks at 24 months old, and continues until 59 months old (Headey et al., 2018). This condition emphasizes the importance of intervention strategies that target pregnant women and children under the age of five years to reduce stunting.

According to the conceptual framework on maternal and child nutrition (UNICEF, 2021), providing adequate, age-appropriate, nutrient-rich foods is not the only underlying determinant of maternal and child nutrition. Other determinants, such as adequate food preparation and hygiene practices, are as important as providing good food. During the introduction of complementary foods, the risk of exposure to food contamination and infectious disease is increased exponentially if the complementary foods are not prepared in hygienic conditions. Unhygienic food preparations could increase the frequency of diarrhoea among children and, ultimately, nutrition deficiency (Dominguez-Salas et al., 2024).

Food safety and hygiene practices during food purchasing and preparation are often unrehearsed due to insufficient knowledge and awareness about the fundamental principles of food safety (Arfines et al., 2022). One of

the fundamental principles of food safety is using raw materials and water that are safe to consume and free from physical, biological, and chemical hazards (Rahayu et al., 2020). Children's caregivers are the ones who prepare the complementary foods daily. Increasing the knowledge and awareness about the fundamental principles of food safety among caregivers is crucial to ensure that the complementary foods prepared are safe and do not become a source of food hazards.

Tempe is a well-known Indonesian food product that can be an option for complementary foods. Tempe is high in protein and fiber and a good source of iron. It also contains other nutrients, such as zinc and vitamin B12, as well as bioactive compounds, such as isoflavone and saponin (Ahn-an-Winarno et al., 2021). Its nutritional content offers many benefits, such as improving weight gain in underweight children (Suriani et al., 2021).

Over the past four decades, tempe is mostly produced by small-scale producers using a traditional processing method. Due to its affordable price, initially, people perceive tempe as a low-class food compared to other protein sources. Lately, the attitude toward tempe has shifted, and many tempe producers have been practicing modern and hygienic tempe production process. Tempe is now widely consumed as an affordable nutritious food by people from various socio-economic classes (Romulo & Surya, 2021). Therefore, the present community engagement program aimed to enhance the community's awareness towards hygienic tempe production and nutritional benefits of tempe for complementary foods.

One of the methods to disseminate the mentioned knowledge is through the Integrated Service Post, or *Pusat Pelayanan Terpadu (Posyandu)*, a program run by and made for the community that has been long implemented in Indonesia. Many nutritional education, child growth monitoring services, and other activities are conducted regularly in *posyandu*, making it a suitable platform to promote and disseminate knowledge about food safety principles, hygienic tempe production, and the nutritional benefits of tempe for complementary foods. Cadres from *posyandu* and the Family Empowerment and Welfare or *Pemberdayaan dan Kesejahteraan Keluarga (PKK)* were involved in the present community engagement program. The activities took place in *Posyandu Menur*, which administers 110 children from the nearby area. As an introduction to the hygienic tempe production process, the cadres visited a modern tempe production house, Rumah Tempe Indonesia, in Bogor, West Java. Afterwards, a series of fresh, hygienic tempe distribution and counselling on food safety and nutritional benefits of tempe was conducted monthly in *posyandu*, targeting mothers with children under five years old.

2. Method

2.1. Design, time, and participants

The community engagement program was targeted to two groups, the *posyandu* cadres and the community, the caregivers of children under 5 years covered in the *Posyandu Menur* area. Based on an interview with the cadres, it was found that there is a lack of understanding of the hygienic production process and nutritional benefits of tempe both in the cadres and the community.

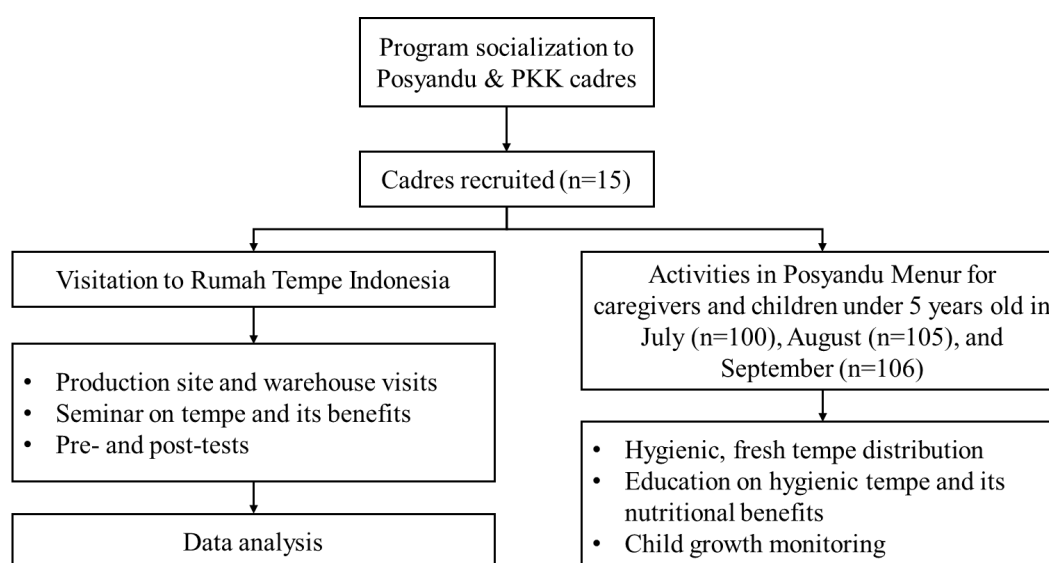


Figure 1. The design of the community engagement program in *Posyandu Menur*

A field visit to a hygienic tempe production house, Rumah Tempe Indonesia, in Bogor, East Java, was conducted to increase the cadres' understanding of the processing method and nutritional benefits of hygienic tempe. Fifteen female *posyandu* and PKK cadres from *Posyandu* Menur participated in the field visit and seminar in July 2024. In this activity, pre-and post-tests were conducted to evaluate the effectiveness of the visitation in improving the cadres' knowledge.

The knowledge obtained by the cadres through the visit was expected to be transferred to the caregivers in *Posyandu* Menur, located in Balai RW 11, Pulomas, East Jakarta. The activities in *posyandu* were conducted every month from July to September 2024 with a total participant of 100, 105, and 106 caregiver-child pairs, respectively. The activities included hygienic tempe distribution, education on the production process and nutritional benefits of hygienic tempe to the caregivers, and the routinely conducted child growth monitoring activity. The design of the community engagement program is shown in [Figure 1](#).

2.2. Visitation to Rumah Tempe Indonesia (RTI)

The activities in RTI consisted of a field study by the cadres of the production site and warehouse of RTI, a seminar, and pre-and post-tests to evaluate the effectiveness of the activities in improving the cadres' knowledge.

2.2.1. Seminar and discussion by the representatives from RTI

Upon arrival at the RTI, the head of operation of the RTI delivered an opening speech and general information about the history and activities of RTI to the participants. The seminar was continued with a discussion led by the RTI's operational chief, about the history of RTI and its goals to promote tempe as wholesome and sustainable food. The head of operation outlined some of RTI's noteworthy accomplishments, including research, community involvement, and technology in tempe production. The discussion also included how RTI effectively innovating by producing a range of tempe products on a small scale using homemade production techniques and large-scale manufacturing procedures, demonstrating the adaptability and demand for tempe in many markets. The seminar also focused on how the manufacturing of tempe has become more well-known worldwide, with many countries realizing the benefits of this nutrient-dense and environmentally beneficial diet.

2.2.2. Observing the production facilities and process of making hygienic Tempe

The cadres observed the storage and production sites of tempe at RTI. In the warehouse, the representatives from the RTI explained how the soybeans, the raw material for the tempe, were stored and filtered before they were continued for hygienic tempe production. Moreover, the representative also explained the type of soybeans used, which are the cheaper Genetically Modified Organisms (GMO) and non-GMO soybeans. GMO soybeans are preferred due to higher production yield and lower cost.

At the production site, the cadres received a thorough, step-by-step breakdown of the preparation and fermentation of tempe ([Figure 2](#)). Firstly, the soybeans go through a soaking phase in water for 8–12 hours to obtain an ideal condition for lactic acid bacteria. The beans are cooked to eliminate anti-nutritional elements and to soften them after soaking. The beans must then be dehulled to remove the outer skins. The dehulled beans are chilled and added with a *Rhizopus* starter culture—a necessary step in the tempe fermentation process. The inoculated beans are fermented in a controlled environment for 24–48 hours at the ideal temperature and finished until the white mycelium grows to bind the beans together and give the tempe its texture and flavour.

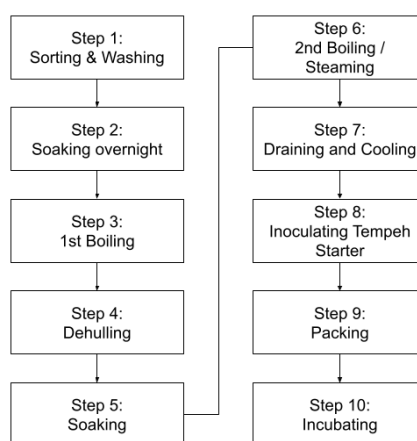


Figure 2. Process of tempe-making in RTI

2.2.3. Pre- and post-tests

A total of 15 cadres participated in the pre-and post-test questionnaires during RTI visitation. The tests aimed to gauge their basic understanding of tempe before and after the field study and seminar at RTI, which were mainly focused on exploring the cadres' knowledge of the nutritional value, production method, and associated procedures of tempe. In particular, the post-test was necessary to determine whether the activities had increased the participant's knowledge of the nutrition benefits and production processes of hygienic tempe. Each test consisted of five multiple choice questions related to the process of making raw tempe, the nutritional value of tempe, and the fermentation mechanism (Tabel 1).

Tabel 1. Pre- and post-test questions

No.	Pre-test question
1	What are the raw materials for tempe?
2	What are the characteristics of fresh tempe?
3	What are the procedure steps of making tempe?
4	What is the name of the process that turns soybeans into tempe?
5	What are the main nutritional benefits of consuming tempe?
No.	Post-test question
1	What role do yeast play in making tempe?
2	How do you store tempe properly so that its quality remains good?
3	What are the correct steps in making tempe?
4	What is the important role of the white mycelium covering soybeans during the tempe fermentation process?
5	Why does plastic packaging have to be perforated in the tempe processing process?

2.3. Activities in *Posyandu* Menur

The *posyandu* visits aimed to promote sustainable improvements in dietary practices, including by emphasising the significance of tempe in a balanced and nutritious diet for mothers and young children. The *posyandu* visits were conducted on three occasions—on 23 July, 12 August, and 9 September 2024 at *Posyandu* Menur RW 011, Kelurahan Kayu Putih, Kecamatan Pulo Gadung, East Jakarta. The activities included were vaccinations, vitamin distribution, and children's anthropometric measurements. In addition, various educational topics were shared, and hygienic tempe was distributed to the caregivers. The activities were successful due to the collaboration between i3L's students and lecturers, *posyandu* and *PKK* cadres, and health personnel from the public health centre.

2.3.1. Hygienic, fresh tempe distribution

The caregiver of children under 5 years old who participated in the *posyandu* sessions received hygienic tempe. In total, 120 kg and 100 kg of tempe were distributed during the first and second visits (tempe were not distributed during the third visit). The distribution of tempe had two primary purposes. First, it aimed to promote tempe as a source of plant-based protein for pregnant mothers, ensuring they received sufficient nutrition during pregnancy. Second, tempe was promoted as a nutritious complementary food source in infants' diets.

Besides the nutritional benefits, the distribution also aimed to inform the caregivers about the versatility of tempe. Multiple methods for preparing and cooking tempe were explained, highlighting its versatility in diverse culinary applications. Tempe can be prepared through steaming, frying, or incorporation into stews, providing versatile options for typical family dinners. This approach not only promoted healthier dietary practices but also enhanced awareness of local, economical food alternatives that can benefit both maternal and child health.

2.3.2. Education on hygienic tempe and its nutritional benefits

The nutritional education session focused on specific topics to enhance awareness and deepen the mothers' knowledge of nutrition and health. The cadres and i3L's students explained the production of tempe, its versatility as an ingredient for complementary foods, the several methods of processing and preparation, and its nutritional advantages both for maternal and child health.

During the second visit to *posyandu*, the educational session was concentrated on understanding nutrition information labels. The method for reading and interpreting the nutritional labels was taught to the mothers,

highlighting the sodium and sugar levels and discussing the potential adverse health effects of excessive use of these ingredients. The mothers were advised regarding food choices for their families by emphasising nutritional facts to enhance overall dietary habits. During the third visit, the educational session was not conducted as this session was aimed at socializing the caregivers for another activity related to the hygienic tempe practice in the household.

2.3.3. Child growth monitoring

During each visit, two to three students assisted the *posyandu* cadres with collecting the anthropometric measurement data, measuring the children's body weight and height or length. The students helped to ensure that the measurements were recorded accurately and systematically, supporting the ongoing monitoring of the children's growth patterns over time. This data collection is crucial for identifying any early signs of malnutrition or developmental delays, enabling the *posyandu* cadres to provide timely interventions or advice to the mothers.

In addition, some students assisted the *posyandu* cadres in administering vitamins or vaccines to the children. Their role was to assist in recording the data and preparing the necessary supplements or vaccines, ensuring that each child received the appropriate treatment as part of the regular *posyandu* services. The distribution of vitamins helps prevent deficiencies that could affect the children's health, while the vaccines play a vital role in protecting them from preventable diseases. By working alongside the *posyandu* cadres, the students not only contributed to the efficiency of the *posyandu* activities but also gained hands-on experience in public health practices and community service.

2.4. Data analysis

The responses from the pre- and post-tests were analysed to evaluate the effectiveness of the activities in improving the cadres' knowledge. The total score for each test was calculated using the following method: each question was coded as either 1 (correct) or 0 (incorrect). A participant's score was determined by dividing the number of correct answers by the total possible score and multiplying the result by 100. The mean scores of participants in the pre- and post-tests were statistically compared using paired t-tests in Microsoft® Excel® for Microsoft 365 MSO (Version 2410). A significance level of 0.05 was applied to assess the effect of the intervention on knowledge improvement. Additionally, descriptive statistics, including the frequency and percentage of correct answers, were analysed to identify the areas where the mothers had the least familiarity.

3. Result and Discussion

3.1. Knowledge level of the respondents before and after field study at RTI

Tabel 2 displays the mean pre- and post-test scores for the 15 participants. The mean score for knowledge of the participants increased from 74.67 ± 11.87 (pre-test) to 80 ± 21.58 (post-test), although the increment was not significant ($p \geq 0.05$).

Tabel 2. The pre- and post-test mean scores

Group (n=15)	Mean±SD	
	Pre-test	Post-test
Cadres	74.7±11.9	80±21.6
p-value	0.22	

The baseline knowledge of the cadres, as reflected by the mean pre-test score, could be considered moderate, confirming a fair understanding of the hygienic production and nutritional benefits of tempe. Through the field study at the hygienic tempe production house, the cadres were able to directly observe the production process and discuss the benefits of tempe during the seminar. These strategies resulted in an improvement of the cadres' knowledge of the topics, although the result indicated that the activity was not effective enough to significantly improve the cadres' knowledge of hygienic tempe. A community engagement program on the socialization of tempe as an organic and healthy food conducted by Hartanti et al. (2018) might be the closest method to the present program. The survey in that program showed that 73% of participants strongly agreed, and 37% of participants agreed that there was an improvement in knowledge after they received a counselling, demonstration, and mentoring session on the process of making organic and healthy tempe. Nevertheless, the survey conducted

in that program was based on the participant's perception of the activities, which could limit the interpretation of the result compared to the quantitative analysis conducted in the present study.

3.2. Question-specific Knowledge Level of the Respondents

The percentage of correct answers for each pre-test question is illustrated in Figure 3. The question concerning the methodology of tempeh-making yielded the least accurate answer, with only 6.67% of respondents answering the question correctly. All respondents (100%) successfully answered the questions regarding the nutritional benefits of tempeh and fermentation perfectly. In addition, 93.33% of respondents displayed a good understanding of tempeh freshness, whereas 73.33% of respondents correctly answered the question about the raw material of tempeh.

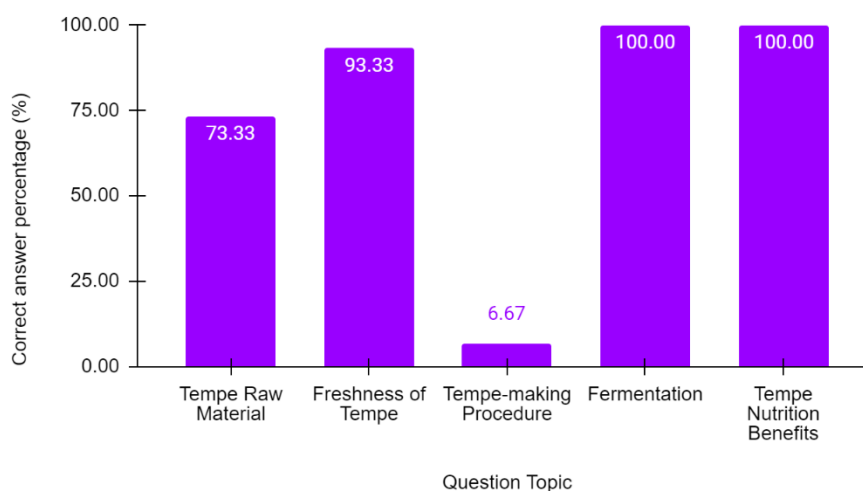


Figure 3. The percentage of correct answer for pre-test questions of the respondents (n=15)

Both fermentation and tempeh nutritional benefits categories resulted in a perfect score. This result indicates that the cadres have already grasped and understood the benefits of tempeh as a source of protein, the idea of making soybean into tempeh through fermentation, and how to determine the freshness of tempe. The topic of the main ingredients in tempeh-making resulted in a moderate level of knowledge. The respondent with a wrong answer in this topic failed to include fungi and water, besides soybeans, as the raw materials required to make tempe. Lastly, the knowledge of the tempe-making procedure is insufficient, indicating that the cadres were not familiar with how to make tempe despite having a comprehensive understanding of the benefits of tempe.

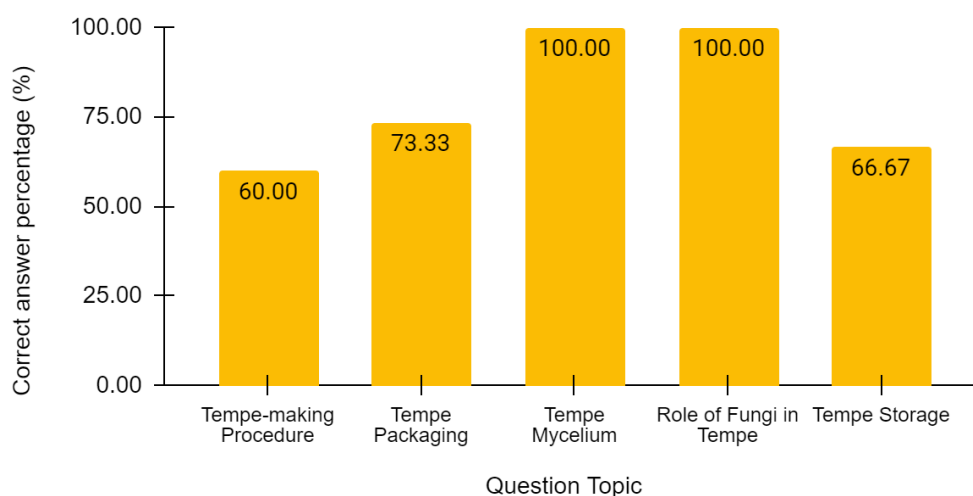


Figure 4. The percentage of correct answer for post-test questions of the respondents (n=15)

Figure 4 displays the percentage of correct answers for the post-test questions. Based on the results, all respondents (100%) answered the question about "tempeh mycelium" and "the role of fungi" in tempeh processing

correctly. The rest of the questions obtained a moderate level of understanding with 73.33%, 66.67%, and 60% of respondents answered correctly the questions about packaging, storage, and procedure to make tempe.

The perfect scores for questions on tempeh mycelium and the role of fungi suggest that the information shared during the production site visit effectively provided a strong knowledge of the fundamental biological processes involved in tempeh fermentation. Regarding the moderate level of response about tempeh packaging and storage, the respondents are somewhat familiar with these concepts but lack a deeper understanding of the technical aspects, such as which types of materials or methods best preserve tempe's qualities or how improper storage conditions can accelerate spoilage and hinder the safety of the product. Lastly, although only 60% of respondents understood the tempe-making procedure, compared to the pre-test result (6.7%), there is a substantial improvement. The moderate knowledge level in the post-test might indicate difficulties in understanding or recalling the detailed steps involved in tempeh production, such as soybean preparation, inoculation, and the conditions required for proper fermentation. The lack of practical experience or unclear instructions might be the cause, thus highlighting the need for more focused training on the step-by-step procedures, which are crucial for successful tempeh production.

3.3. Photos and figures

During the visitation to RTI, the cadres experienced direct learning of tempe production from raw soybeans with the assistance of a guide from the RTI (Figure 5). The cadres visited the warehouse where raw soybeans were sorted to remove any dirt, debris, and defects from the good-quality soybeans. The activities were continued by visiting the production room and observing the major tempe production processes, including washing, dehulling, soaking, drying, and mixing with the fungi starter, followed by packaging in perforated plastic bags. Subsequently, the cadres visited the incubating room to observe the fermentation process at the ideal temperature.



Figure 5. Activities at Rumah Tempe Indonesia (RTI): (a) seminar held by RTI; (b) the cadres were sorting soybeans during warehouse visit; and (c) the appearance of tempe production room at RTI

Visitation to the *posyandu* featured counselling and sharing sessions about the nutritional benefits of tempe, types of food menus, especially complementary food that utilizes tempe, and how to maintain hygiene when cooking the tempeh (Figure 6). The sessions were conducted in small batches, with 4-6 mothers per batch, to deliver the information more effectively. At the end of the counselling session, the mother received 300 g of fresh, hygienic tempe. The mothers participated in the activities positively, especially those interested in making complementary foods from tempe for their children.



Figure 6. Activities at *Posyandu* Menur: (a) counseling about tempe to the mothers; (b) distribution of hygienic tempe; (c) i3L's students were helping the cadres recording anthropometric measurement results

4. Conclusion

The present community engagement activities were able to disclose that the cadres in *Posyandu* Menur initially had a fair knowledge of the production process and nutritional benefits of hygienic tempe. Although the cadres successfully improved their knowledge after learning about hygienic tempe through a field visit, this method seems to be less effective due to the insignificant improvement of knowledge after the field visit. Another experience-based learning method, such as practical training in tempe production, should be considered as an alternative method to improve the cadres' knowledge. Despite the insignificant result, more cadres understood the production process of hygienic tempe after the field visit to Rumah Tempe Indonesia. Most cadres also have a fair to good knowledge about the nutritional benefits, the characteristics of fresh tempe, and the purpose of packaging and fungi starter in tempe fermentation. The cadres' knowledge is fundamental to improving the community's awareness about the importance of hygienic tempe and its nutritional benefits as a complementary food source to prevent child stunting

5. Acknowledgment

We would like to extend our sincere gratitude to the Directorate General of Higher Education, Research, and Technology of the Ministry of Education, Culture, Research, and Technology of the Republic of Indonesia for providing the necessary funding to support this community engagement program. Special thanks to the *posyandu* and Family Empowerment and Welfare cadres from *Posyandu* Menur, whose collaboration was invaluable to the success of this program.

6. References

- Ahnan-Winarno, A. D., Cordeiro, L., Winarno, F. G., Gibbons, J., & Xiao, H. (2021). Tempeh: A semicentennial review on its health benefits, fermentation, safety, processing, sustainability, and affordability. *Comprehensive Reviews in Food Science and Food Safety*, 20(2), 1717—1767. <https://doi.org/10.1111/1541-4337.12710>
- Arfines, P. P., Sitorus, N., Saptarini, I., Rosha, B. C., & Amaliah, N. (2022). Food sanitation and hygiene practice in foods purchasing during the early period of covid19 pandemic in Greater Jakarta, Indonesia: An online study. *Jurnal Kesehatan Lingkungan*, 14(2), 106—113. <https://doi.org/10.20473/jkl.v14i2.2022.106-113>
- Dominguez-Salas, P., Waddington, H. S., Grace, D., Bosire, C., Moodley, A., Kulkarni, B., Dasi, T., Banjara, S. K., Kumar, R. N., Fahmida, U., Htet, M. K., Sudibya, A. R. P., Faye, B., Tine, R. C., Heffernan, C., Saxena, D., Dreibelbis, R., & Häslér, B. (2024). Understanding the role of household hygiene practices and foodborne disease risks in child stunting: A UKRI GCRF action against stunting hub protocol paper. *BMJ Paediatrics Open*, 8(1), e001695. <https://doi.org/10.1136/bmjpo-2022-001695>
- Fitriani, H., R, A. S., & Nurdiana, P. (2020). Risk factors of maternal nutrition status during pregnancy to stunting in toddlers aged 12—59 months. *Jurnal Keperawatan Padjadjaran*, 8(2), 175—183. <https://doi.org/10.24198/jkp.v8i2.1305>
- Hartanti, A. T., Wulandari, Y. R. E., Hutagalung, R. A., & Barus, T. (2018). Sosialisasi tempe sebagai makanan organik dan sehat kepada ibu rumah tangga di Kota Tangerang Selatan. *MITRA: Jurnal Pemberdayaan Masyarakat*, 2(2), 92—103. <https://doi.org/10.25170/mitra.v2i2.103>
- Headey, D., Hirvonen, K., & Hoddinott, J. (2018). Animal sourced foods and child stunting. *American Journal of Agricultural Economics*, 100(5), 1302—1319. <https://doi.org/10.1093/ajae/aay053>
- Ministry of Health of Indonesia. (2019). *Laporan nasional Riskesdas 2018*. Badan Penelitian dan Pengembangan Kesehatan. <https://repository.badankebijakan.kemkes.go.id/id/eprint/3514/1/Laporan%20Riskesdas%202018%20Nasional.pdf>
- Ministry of Health of Indonesia. (2023). *Buku saku hasil survei status gizi indonesia (SSGI) 2022*. Badan Kebijakan Pembangunan Kesehatan.
- Rahayu, W. P., Gani, I. A., Latifa, Y. K., Dewi, C. N. S., Achmadi, F., Abdy, I., & Rosniawati, T. (2020). *5 Kunci mengolah pangan dengan aman*. Direktorat Pemberdayaan Masyarakat dan Pelaku Usaha, Deputi Bidang Pengawasan Pangan Olahan, Badan Pengawas Obat Dan Makanan.

- Romulo, A., & Surya, R. (2021). Tempe: A traditional fermented food of Indonesia and its health benefits. *International Journal of Gastronomy and Food Science*, 26, 100413. <https://doi.org/10.1016/j.ijgfs.2021.100413>
- Suriani, B., Sudirman, J., Mukarramah, S., Sabar, S., & Saleng, H. (2021). Fermented soybean cake nugget (tempeh) as an alternative for increasing weight of little children aged 36—60 months. *Gaceta Sanitaria*, 35, S382—S384. <https://doi.org/10.1016/j.gaceta.2021.10.056>
- UNICEF. (2021). *UNICEF conceptual framework on maternal and child nutrition*. UNICEF Nutrition and Child Development Section, Programme Group. <https://www.unicef.org/media/113291/file/UNICEF%20Conceptual%20Framework.pdf>