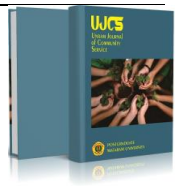
UJCS 6(2) (2025)

Unram Journal of Community Service

https://jurnalpasca.unram.ac.id/index.php/UJCS



Improving Knowledge of Family Nutrition Fulfillment as an Effort to Prevent Congenital Disorders in Couples of Reproductive Age in Rambipuji District, Jember

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Received: March 16, 2025
Revised: May 20, 2025
Accepted: June 14, 2025
Published: June 30, 2025

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DOI: 10.29303/ujcs.v6i2.951

Abstract: The global prevalence of congenital defect reaches 0.992 per 1,000 live births, with a high incidence rate also observed in Jember Regency, particularly in Rambipuji District. Nutrition intake, including protein, is essential to prevent congenital defect, but many sufferers come from families with poor nutritional intake. To prevent congenital defect through education and assistance in planting healthy crops for family nutrition and mapping cases in Jember Regency as a promotive and preventive measure. This study design is a quasi-experimental using pretest and posttest. Participants consisted of 30 married couples aged 14-49 years. The intervention included two educational sessions on congenital defect and the management of healthy crops to be processed into nutritious food. A healthy food recipe book was provided, followed by a cooking demonstration by each participant. The knowledge of couples of reproductive ages increased from pretest to posttest with an average increase of 22.5. Statistical analysis using Wilcoxon showed a significant difference in the knowledge of couples of reproductive ages after the intervention (p=0.000). Providing education and training effectively increases knowledge and skills in managing food for family nutrition among couples of reproductive ages. Similar studies with a larger population can be conducted to review the effectiveness more comprehensively.

Keywords: Congenital defect, Education, Healthy Foods, Knowledge, Married Couples.

Introduction

Congenital disorders are structural, functional, or metabolic abnormalities present at birth, contributing significantly to global mortality and morbidity. These disorders encompass a wide range of conditions, including genetic, fetal, and developmental anomalies, with varying severity and impact on physical and mental health (Modell et al., 2018; Moorthie, 2018). Congenital disorders contribute 1.4% to mortality in newborns aged 0–6 days and 18.1% to mortality in infants aged 7–28 days. In Indonesia, congenital disorder cases occur in 59.3 per 1,000 live births. The most common congenital disorder found in Indonesia is musculoskeletal system abnormalities (talipes equinovarus) at 22.3%, followed by nervous system disorders (anencephaly, spina bifida, and meningocele) at 22%, cleft lip and palate at 18.5%, and omphalocele at 12.5%. Nationally, the overall prevalence of cleft lip cases reaches 2.4% (Kemenkes, 2016).

Jember is a region that requires special attention, as cleft lip and palate cases occur in 1 per 1,445 births.

How to Cite:
Elfiah, U., Shinta Rumastika, N., Surya Wahyudi, S., Krisno Adji, N., Aisyah Amini, S., Faa'is Artama, A., … Nur Hidayah, S. (2025). Improving Knowledge of Family Nutrition Fulfillment as an Effort to Prevent Congenital Disorders in Couples of Reproductive Age in Rambipuji District, Jember. *Unram Journal of Community Service*, *6*(2), 307–311. https://doi.org/10.29303/ujcs.v6i2.951

Additionally, Jember is at high risk for other congenital disorders due to its significantly high stunting rate, which reached 7.72% in 2023 (Ely Rahmatika Nugrahani, 2024). Rambipuji is one of the areas in Jember Regency with a relatively high incidence of cleft lip and palate compared to other regions. This is due to Rambipuji being a plantation center with fertile latosol soil (Elfiah et al., 2021).

The occurrence of congenital disorders is suspected to be closely related to genetic, maternal, and environmental factors (Intan, 2020). Nutrition during pregnancy is one of the most important factors in preventing congenital disorders. During pregnancy, maternal nutritional status plays a crucial role. Malnutrition can cause problems for both the mother and the fetus, affecting development and potentially leading to congenital disorders in the fetus (Mustofa & Nurmalasari, 2015). Poor nutrition during the preconception and pregnancy periods can lead to micronutrient deficiencies, such as folic acid, iron, and iodine, which play a crucial role in fetal development (Murbawani, 2017). Therefore, it is essential to enhance the knowledge of reproductive-age couples regarding family nutrition fulfillment to prevent congenital disorders.

Further research also proves that most individuals with cleft lip and palate come from families whose dietary intake does not meet nutritional standards. Protein deficiency, as a macronutrient component, is strongly suspected to be a significant risk factor for the occurrence of this condition (Elfiah et al., 2021). Additionally, Rambipuji is one of the fostered areas of the University of Jember, requiring development in various sectors, including health. Through this community service initiative, the goal is not only to prevent cleft lip and palate but also to reduce stunting and other nutrition-related diseases. By enhancing nutritional knowledge among reproductive-age couples, it is expected that they will better understand the importance of consuming a balanced diet and taking micronutrient supplements as recommended by medical guidelines. Nutrition education focused on preventing congenital disorders can increase awareness and promote healthy behaviors, ultimately supporting the creation of a healthy and productive generation.

Method

This community service program targets Rambipuji District, Jember Regency, as the primary focus due to its higher incidence of cleft lip and palate compared to other areas in Jember Regency. The preparation stage includes coordinating with relevant stakeholders in Rambipuji District and obtaining permission from the National and Political Unity Agency (Bankesbangpol). Once the administrative process is complete, a selection process will be conducted for married couples in Rambipuji District based on the following inclusion criteria:

a. Reproductive-age couples aged 14–49 years
b. Willing to complete the questionnaire without any assistance.
c. Willing to complete the questionnaire within the specified time frame.
d. Reproductive-age couples will not be informed of the final results or correct answers from the questionnaire.
e. Committed to participating until the end of the study

After selecting 30 eligible couples, an integrity pact will be signed, followed by a pre-test. Then, the first phase of educational intervention will be carried out, covering the following topics:

a. Definition and types of congenital disorders
b. Methods to prevent congenital disorders during pregnancy
c. Types of nutritious foods suitable for preventing congenital disorders
d. Types of healthy plants that can be grown in home gardens

Following this, monitoring of participants' residences will be conducted, along with planting nutritious plants that can be processed into healthy meals as part of the implementation of the first-phase educational intervention. Additionally, participants will receive guidance on how to care for these nutritious plants. In the second phase of the educational intervention, participants will receive additional counseling focused on:

a. The importance of regular health check-ups for babies
b. Proper early-life care for infants
c. Good family nutrition
d. Cooking methods to prevent nutrient loss

At the end of this phase, a book containing healthy and nutritious recipes will be distributed to the participating couples, followed by a cooking demonstration involving all participants and a nutritional status assessment by a nutritionist as part of the implementation of the second-phase educational intervention. The program will conclude with a post-test and participant feedback session. Data obtained from the pre-test, post-test, participant home evaluations, and compliance levels are expected to contribute to an article on intervention outcomes, which can serve as a reference for congenital disorder prevention among reproductive-age couples across various regions. Participant follow-ups will also be conducted, particularly at Rambipuji Public Health Center (Puskesmas) and dr. Soebandi

Regional General Hospital (RSUD), for reproductive-age couples experiencing pregnancy-related concerns in the future.

The pre-test and post-test results from the cooking demonstration will be subjected to normality testing using the Kolmogorov-Smirnov test, with normality defined as $p > 0.05$. If the data are non-normal, analysis will be conducted using the Wilcoxon Signed Rank Test.

Result and Discussion

The implementation of the Family Nutrition Awareness Program to Prevent Congenital Disorders in Reproductive-Age Couples in Rambipuji District, Jember Regency, took place from May to October 2024. This initiative aimed to prevent congenital disorders, stunting, and other nutrition-related diseases.

Figure 1. Education on Congenital Disorders for Couples

The knowledge enhancement program began with an educational session on congenital disorders on June 7, 2024. This session focused on understanding the various causes of congenital disorders, including the impact of nutritional deficiencies during preconception and pregnancy. The material covered the importance of family nutrition in preventing congenital disorders. Participants, consisting of reproductive-age couples, received explanations on the role of nutrition in maintaining reproductive health and the adverse effects of inadequate nutrition. The goal of this educational session was to raise awareness and improve community understanding of the importance of adequate and balanced nutrition in preventing congenital disorders in future generations.

Figure 2. Cooking Demonstration Activity

The following day, on June 8, 2024, a follow-up intervention was conducted through a practical activity designed to help participants understand and apply the knowledge they had learned. One key intervention was a cooking demonstration, showcasing how to prepare nutritious meals using easily accessible and affordable ingredients.This hands-on approach was chosen to reinforce participants' understanding, as directly practicing the acquired knowledge makes it easier to remember and apply nutritional principles in daily life. Participants observed the step-by-step process of preparing healthy meals, encouraging them to adopt better dietary habits at home. This initiative serves as a crucial step in preventing congenital disorders and stunting.

To assess the effectiveness of the educational and mentoring program on family nutrition knowledge, monitoring and evaluation were conducted. This process involved administering a pre-test before the intervention and a post-test after the intervention. The questions used in the pre-test and post-test were identical to measure the success of the material delivery. Each test consisted of 10 questions, with each question worth 10 points, making the total score 100.

The Kolmogorov-Smirnov normality test was used to analyze the pre-test and post-test scores. According to Table 1, the significance values for both the pre-test and post-test were 0.000, indicating that the data did not follow a normal distribution (p-value < 0.05).

Table 1. Kolmogorov-Smirnov Normality Test Results

	Statistic	df	Sig.
Pre-test	2.99	60	.000
Post-test	.355	60	.000

Subsequently, the pre-test and post-test scores were analyzed using the Wilcoxon Signed Rank Test to determine whether there was a difference before and after the educational intervention. The results of the Wilcoxon Signed Rank Test are presented in the following table.

Table 2. Wilcoxon Signed Rank Test Results

		N	*Mean Rank*	*Sum of Ranks*
Posttest-Pretest	**Negative Rank**	0[a]	.00	.00
	Positive Rank	44[b]	22.50	990.00
	Total	60		

	Posttest-Pretest
Z	*-6.082[b]*
Asymp. Sig. (2-tailed)	.000

Table 2 shows that 44 subjects experienced an increase in scores from the pre-test to the post-test, with an average improvement of 22.5. The Wilcoxon Signed Rank Test results indicate that the Asymp. Sig. value is 0.000 < 0.05, demonstrating a significant difference between the post-test and pre-test scores among reproductive-age couples.

This finding aligns with the study by (Pakhri et al., 2018), which demonstrated a difference in knowledge levels and nutritional intake after the implementation of nutrition education. Malnutrition in pregnant women can be caused by a lack of knowledge about balanced nutrition and the specific nutritional needs during pregnancy, low education levels that limit access to information, or economic constraints that make it difficult to meet nutritional requirements (Mustofa & Nurmalasari, 2015).

Fetal nutrition during pregnancy comes from the nutrient intake of the mother. If a pregnant woman experiences malnutrition, it can affect the growth and development of the fetus's organs (Mustofa & Nurmalasari, 2015). This is consistent with the study conducted by (Anita, 2017), which found that 45% of the 112 samples belonged to the malnourished status group. The study results showed a p-value of 0.004 and an odds ratio (OR) of 8.226, indicating a significant relationship between nutritional factors and the occurrence of congenital abnormalities. This means that mothers with poor nutritional status have an 8.226 times higher risk of giving birth to a baby with congenital abnormalities. This is consistent with the study by (Dewi et al., 2023), which found that mothers with poor nutritional status have a 10.417 times higher risk of having a child with congenital abnormalities compared to mothers with good nutritional status.

Severe malnutrition in pregnant test animals can cause congenital abnormalities. Nutrient deficiencies, such as protein, vitamin A, folic acid, thiamine, and others, can increase the risk of congenital abnormalities. The micronutrient requirements for pregnant women include iron at 15–18 mg per day, folic acid at 600 mcg per day, vitamin A at 900 RE per day, and calcium at 1.5–2 g per day. Folic acid is needed to support cell growth, cell division, and the formation of nerve cells during fetal development (kemenkes, 2021). Folic acid deficiency increases the risk of congenital abnormalities, particularly neural tube defects (Anita, 2017). In addition, pregnant women need iodine. Iodine deficiency can lead to miscarriage, stillbirth, congenital abnormalities, and increased perinatal mortality (Ernawati, 2017).

Therefore, ensuring proper family nutrition is one of the efforts to prevent congenital abnormalities. Additionally, Nutrition education has been shown to be an effective intervention for preventing stunting in toddlers by improving mothers' knowledge and self-efficacy. Studies have demonstrated significant increases in mothers' self-efficacy related to stunting prevention after receiving nutritional education (Sari, 2024).

Conclusion

A total of 44 samples showed an increase in scores from the pre-test to the post-test, with an average improvement of 22.5. This indicates that the education and training provided were effective in enhancing knowledge and skills in managing food for family nutrition. These results serve as a positive indicator that improving knowledge of family nutrition can be an effective effort in preventing congenital abnormalities and stunting.

Acknowledgments

We extend our heartfelt gratitude, especially to the Institute for Research and Community Service (LP2M) of Universitas Jember, and generally to Universitas Jember as an institution, as well as to all parties who contributed to the success of this community service program.

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