

Empowering mothers in fulfilling preconception nutrition: Stunting prevention strategy

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ABSTRACT

Preventing stunting from an early age is one of the Ministry of Health's strategies for tackling stunting in Indonesia. This community service aims to empower partners as agents of Change who collaborate with the community service team to empower mothers with teenage children through nutritional education to ensure preconception nutrition. This empowerment method in community service is the implementation of participatory action research. Empowerment targets are cognitively and economically empowered to fulfill preconception nutrition. Community service will occur in Pantai Labu Village, Pantai Labu District, Deliserdang Regency. A pre and post-assessment was carried out on the empowerment targets to evaluate the impact of this empowerment. Data collection methods were carried out using questionnaires, observations, and interviews. Data analysis using the Paired T-test if the data is usually distributed, and if the data is not normally distributed, the Wilcoxon test is used. The results showed an increase in knowledge and attitudes. Knowledge and attitudes of Preconception Nutrition Change Agent Training Participants (p-value < 0.05). Change Agents were committed to health promotion in Pantai Labu Village. Moreover, there was an increase in mothers' knowledge and attitudes about preconception nutrition (p-value < 0.05).

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INTRODUCTION

Stunting is still a nutritional problem for children in Indonesia and a public health problem that must be addressed seriously and sustainably (Aulina et al., 2024; Herawati & Sunjaya, 2022). Even though there was a decrease in the stunting rate in 2018, the stunting rate in Indonesia is still relatively high (36.4%) compared to other Southeast Asian countries such as Malaysia (20%) and Thailand (10.5%). In the world, Indonesia ranks 17th out of 117 countries for the incidence of stunting (Huriah & Nurjannah, 2020; Kementerian Kesehatan Re, 2018).

Pantai Labu is a sub-district with the highest child marriages (early marriages) in Deli Serdang Regency (Dinas Pemberdayaan Perempuan dan Perlindungan Anak 2023). Based on data from the PA and PPKB Service, it is known that several factors cause families to marry off children at the age of under 18, such as family economic factors. This factor is quite dominant in Deli Serdang Regency. The perception of the child's family to marry off their child immediately reduces the burden on the family and can help ease parents and family in terms of household expenses. In addition to economic factors, socio-cultural factors are also influenced. Socio-cultural factors in society are also still quite dominant, the reason being fear that their child will be considered an old maid or unsellable. Low information on reproductive health and life skills also results in children being trapped in socializing and pre-marital sex, unwanted pregnancies, and other child problems. Several studies have proven that early marriage is a contributing factor to stunting and nutritional issues that continue during pregnancy from the pre-conception period (Hanum & Tukiman, 2015; Kartikawati, 2015; Pasaribu et al., 2023). In addition to early marriage, data also shows that Pantai Labu District is one of the sub-districts with the highest stunting in Deli Serdang Regency. In 2022, 2.83 percent of stunted toddlers in Deli Serdang Regency came from Pantai Labu District (Dinas Pemberdayaan Perempuan dan Perlindungan Anak 2023). Based on the results of the 2018 Riskesdas, the prevalence of stunted toddlers in Deli Serdang Regency was 25.68%, while according to the 2019 Indonesian Toddler Nutrition Status Survey (SSGBI), it was reported at 30.97% (Riskesdas Sumut, 2018).

Trials *multicountry Women First* (WF) showed that comprehensive nutritional supplementation starting at least three months before conception or at the end of the first trimester resulted in significantly higher birth length (the primary outcome) and greater birth weight. Although the nutritional intervention was discontinued at delivery, the beneficial growth effects on linear growth and sustained growth were maintained through six months, and the rate of stunting at six months was lower for the preconception nutritional intervention group (Krebs et al., 2022; Sudfeld et al., 2022).

Analysis of preconception women's nutritional problems and program findings emphasize the importance of reaching and empowering women during adolescence, preconception, and preconception (Lang et al., 2020; Ramakrishnan, 2020; Vogel et al., 2021). Nutritional problems in preconception women are still often found. Double nutritional problems, namely undernutrition and overnutrition, anemia in adolescents, and negative body image in adolescents (Dewi et al., 2023; Perng & Oken, 2022). Body image is an individual's perception of their body shape and weight, as well as the behavior that the individual carries out regarding their physical appearance (Dutta & Das, 2024; Srivastava et al., 2024). This perception leads to teenagers thinking/feeling that they are too fat or thin. Girls or adult women with deficiencies or inadequacies in micronutrients becoming pregnant will have negative implications for the mother and children. When the nutrition of adolescents and young adults is not managed well in the preconception period, during and after pregnancy, it will have negative impacts that repeat in cycles (Hillesund et al., 2018; Kransdorf et al., 2016; Taneja et al., 2020).

Women's empowerment is the main driver for achieving health goals and improving maternal and child nutrition. Women's empowerment has a significant relationship with maternal malnutrition and stunting (Kabir et al., 2020; Mekonnen et al., 2021). In their research, (Ewerling et al., 2017) suggest that policies are needed to increase women's empowerment. This community service is also the result of research by the head of the community service, namely the results of dissertation research, which found that empowering women with a participatory approach is effective in increasing the knowledge and attitudes of teenagers, effectively increasing the knowledge and attitudes of mothers of teenage children regarding preconception nutrition; increasing mothers' skills in preparing and processing preconception nutrition menus and giving rise to social movements to fulfill preconception nutrition in the community. The empowerment

carried out gives mothers the ability to fulfill preconception nutrition. Mothers are empowered in cognitive, psychological, cultural, and economic dimensions to fulfill preconception nutrition.

The maternal empowerment program does not have different approaches to addressing undernutrition and overnutrition. Maternal empowerment aims to empower mothers cognitively (knowledge and attitudes about preconception nutrition). Maternal knowledge includes knowledge about preconception nutrition including measuring and identifying various nutritional problems faced by preconception women, both overnutrition and undernutrition, and knowing how to address nutritional problems faced by their children; being psychologically empowered such as not being embarrassed by children's menus that are always the same due to economic limitations and being economically empowered through cognitive changes such as changes in knowledge and skills in compiling and processing menus according to daily expenses.

Pantai Labu is a coastal area. The economic conditions of the fishing community in the coastal area of Pantai Labu Village are still quite concerning the cost of income that is not balanced with the daily living costs of the fishing community. Most fishermen use traditional methods in catching fish so sometimes the results they get are not enough to cover daily costs, especially the number of dependents of the fishermen who are quite large. This is not comparable to the income received by the fishermen (Seftyani et al., 2023). The mother's job is generally a housewife. Mothers who manage the menu at home, with low economic conditions and knowledge of compiling menus that are also lacking, worsen the nutritional conditions of the community in this village. To break the stunting cycle with prevention strategies in the pre-conception phase, this research with women's empowerment is important. The habit of people who often gather among mothers and have religious organization groups such as mothers' religious organizations is also an opportunity in efforts to empower mothers. This background underlies the community service team's efforts to empower mothers to fulfill preconception nutrition as one of the stunting prevention strategies in Pantai Labu Village, Pantai Labu District, Deli Serdang Regency.

RESEARCH METHOD

This empowerment in community service is the implementation of participatory action research. Empowerment is the process of obtaining power, strength, or ability and giving power, strength, or ability from parties who have power to parties who are less or still need to be empowered. In this community service, maternal empowerment is carried out on mothers with teenage children to gain the power, strength, or ability to access or fulfill preconception nutrition.

Empowerment is an essential strategy in increasing the role and opportunities of women in efforts to increase and actualize their potential so that they are more able to be independent and work in efforts to improve family nutrition. Empowerment can be achieved through coaching and improving women's skills namely being empowered in the cognitive and economic dimensions through preconception nutrition education strategies using counseling methods in the preconception group and preconception nutrition education strategies using the preconception nutrition exhibition method.

The population in this study were all mothers with adolescent children. The minimum sample size was calculated using the calculation of the Hypothesis Test for population proportion (one-sided test) and from previous research The effect of preconception nutrition counseling on knowledge and attitudes in Batang Kuis District, Deli Serdang Regency in 2019 (SIMATUPANG, 2019). From the calculation of the large sample above, the number was 44, and to anticipate sample dropout, the researcher added 10 percent so that the number of samples set was 50 people. The sampling method was Systematic sampling. First, the researcher will take household samples by dividing the total number of households by the number of samples set. If there are no samples in the selected household, the researcher will take the closest household.

The research process in empowering mothers began with training PKK mothers and Health cadres in Pantai Labu ($n = 10$) as agents of change who were tasked with the promotion of

nutritional preconceptions towards the empowerment goals, namely mothers who have toddlers. After completing the training of change agents, the researcher provided further assistance to the change agents to promote nutritional preconceptions independently. The trained change agents carried out nutritional preconception promotion actions using the following methods: 1) Interpersonal communication method of promoting nutritional preconceptions (counseling). This method aims to provide education about nutritional preconceptions and overcome them together with the nutritional preconceptions received. Counseling is carried out until the mother is cognitively empowered, meaning that there are no more roles or problems conveyed by the mother. On average, counseling is carried out 2-3 times. On the third day, the researcher evaluated the monitoring of the implementation of counseling by change agents through field notes from each agent. 2) Nutrition preconception exhibition method. This method is carried out once by the change agent together with the researcher. The data collection method to measure the impact of maternal empowerment on cognitive (knowledge and attitudes of mothers who have adolescent children) was measured before (pre-test) and after (post-test) the empowerment intervention was carried out using a knowledge and attitude questionnaire instrument that had previously undergone validity and reliability tests. The post-test was conducted one month after all empowerment activities were completed. Data were analyzed using statistical analysis of the Paired T-test.

RESULTS AND DISCUSSIONS

Results

This activity aims to increase the knowledge and attitudes of mothers of teenagers in preparing preconception women's menus in preventing stunting through the empowerment of the Chairperson of Perwiritan and PKK Mothers in Pantai Labu Bayan Village, Saentis Village, Deli Serdang Regency. There are several stages of community service activities carried out, namely:

Exploration Stage

The process at the beginning of the exploration stage begins with a meeting, telling stories, and conveying what activities will be carried out to the Head of Pantai Labi Village. Then, the service permit letter is delivered to the Saentis District Village Office. Deli Serdang, the village head, was pleased to attend and enthusiastically accepted community service activities. The Service Team also conveyed to the head of the military service and the PKK mother about the activities that would be carried out because they would be agents of Change.

This exploratory stage was conducted through in-depth interviews with 5 mothers and adolescents about adolescent nutrition or preconception nutrition. The interview results stated that the mothers had never heard of adolescent nutrition and stated that adolescent nutrition was not a priority because the children were already grown up and if they were hungry they could eat by themselves. The mothers stated that child nutrition was most important to pay attention to when the children were under two years old. The researchers also interviewed health center officers, namely the coordinating midwife, nutrition officers, and health promotion officers. The interview results stated that there was no special program for adolescent nutrition or preconception nutrition. The preconception nutrition program only provides Fe tablets for adolescents at school. However, there is no program for targeting mothers and it has never been done.

Community Service Implementation Process

Preconception Nutrition Change Agent Socialization and Training

Preconception Nutrition Change Agent Training. A teaTrainingvants carried out this training as trainers and ten training participants, namely the Head of the Advisory Committee and the Family Welfare Development Mother (PKK), who were interested and very concerned about preconception nutrition issues and were willing to become a team of preconception nutrition change agents. The training method used was a question-and-answer lecture, and on the last day

of the training, the practice was carried out in the form of mentoring. The training location was held at the village head's office. Training lasts one day, starting from 10.00 – 14.30 WIB. Training is tailored to participants' hours and time. The media used in this training and modules will later become participant media in providing preconception nutrition education towards preconception nutrition targets. The module contains all training materials.

Table 1. Preconception nutrition change agent training materials

Day	Material
First (1)	Preconception Nutrition Theory - Definition of pre-conception - Preconception Nutrition Goals - The importance of nutrition in the preconception period - Nutrients in the preconception period - Preconception Nutritional Problems
Second (2)	Review of preconception nutrition theory How to Find Out Nutritional Status During the Preconception Period - Measurement of nutritional status - Examination of anemia with physical symptoms.
Third (3)	Practice anthropometric measurements (body weight and height). Practice checking for physical symptoms of anemia Health promotion theory - Counselor - Interpersonal Communication - Peer Educator
Fourth (4)	Preconception nutrition promotion media (flip sheets, leaflets, and pocketbooks) Practices for promoting preconception nutrition with counseling. Peer educators' preconception nutrition promotion practices / Interpersonal Communication Preconception Nutritional Modifying Agents - Understanding Preconception Nutritional Modifying Agents - Duties and responsibilities of preconception nutrition agents - Discussion of work plans for preconception nutritional change agents
	Mentoring (the practice of promoting preconception nutrition to targets)

Before carrying out training, nutrition change agents first carry out a pretest and then receive training. Completing the training, nutrition change agents carry out a posttest on knowledge and attitudes to provide health promotion to mothers of teenage children. The results of the level of knowledge and attitudes of local leader training are as follows:

Table 2. Frequency distribution of knowledge and attitude categories of preconception nutrition change agent training participants (n = 10)

Variable	Pre Test		Post Test	
	n	%	n	%
Knowledge				
Good	1	10	10	100
Not enough	9	90	0	0
Attitude				
Good	2	20	10	100
Not enough	8	80	0	0
Amount	10	100	10	100

Based on the table above, it can be seen that before the preconception nutrition change agent training (pre-test), knowledge was less than 90%, while attitudes before training were less than 80%, good only 2%. After training (post-test), 100% good knowledge and 100% good attitude.

The Effect of Training on Preconception Nutritional Change Agents

The influence of training on preconception nutrition change agents can be seen in the table below.

Table 3. Average distribution of knowledge and attitudes of preconception nutrition change agent training participants before and after training

Variable	Mean $\pm$ SD	Mean Change $\pm$ SD	p-value*
Knowledge			
Before	40.50 $\pm$ 19.35		
After	83.50 $\pm$ 3.374	-43.00 $\pm$ 15.976	0.001
Attitude			
Before	53.00 $\pm$ 18.28		
After	88.50 $\pm$ 7.090	-35.50 $\pm$ 11.19	0.001

*difference within groups (before and after) using paired t-test, at a significance level of 5%

Tables 2 and 3 above show that after the preconception nutrition change agent training was carried out for four days, there was an increase in the average knowledge score of 43.00. All training participants were in the excellent knowledge category about preconception nutrition. There was also an increase in the mean attitude value, namely 35.50, and all training participants had a good attitude towards preconception nutrition. The results of statistical tests using the paired t-test showed differences in the average knowledge and attitudes of preconception agent training participants before and after the training.

Training conception Nutrition Education by Change Agents through Nutrition Fairs

The problems of mothers who have teenage children are limited costs for serving food every day and a lack of knowledge and skills in preparing menus so that teenagers get bored with the taste of the same food every day, and teenagers' snacking habits become the basis for implementing this community service activity. This preconception nutrition exhibition aims to provide the target audience with a better visual understanding of nutrition in food. In this exhibition, food displays were displayed, namely processed products originating from local food ingredients and menu creations made from animal protein foods. In this exhibition, processed Moringa leaves, processed green beans, processed tamban fish, catfish, processed tofu, and processed tempeh were displayed.

This nutrition exhibition aims to provide knowledge and skills for mothers who have teenage children and adult women in processing food that is around them: low-priced, easy to process, delicious, and, of course, rich in nutrition, especially nutrients that are needed during the preconception period.

Preconception Nutrition Fair Preparation. Menu preparation is the initial process of this exhibition; researchers and female participants who have been trained as agents of Change discuss and practice processing Moringa leaves, processed green beans, processed tamban fish, catfish, processed tofu, and processed tempeh into delicious food but at a low price that is affordable to the public.

Preparation of the implementation location. PKK mothers in Pantai Labu village prepared the location for the nutrition exhibition planned for the Labu Beach village field. The community provided tents, chairs, and tables for food displays. Youth organizations helped prepare the place for the nutrition exhibition. Researchers prepared posters, leaflets, banner stands, and banners.

Implementation of Preconception Nutrition Exhibition. The Nutrition Exhibition is held one day starting from 10.00-16.00 WIB. The exhibition was opened directly by the village head. At this

event, researchers and agents of Change also distributed preconception nutrition education leaflets.

Food Displays. At this preconception nutrition exhibition, food displays were carried out where stands were operated by agents of Change, students, and community service. Each table is also equipped with a banner explaining the benefits and nutritional content of each pagan ingredient. Each dish is also given the full name of each dish. Visitors can directly ask the dining display table participants about ingredients and how to process them.

Table 4. Frequency distribution of knowledge and attitude categories of mothers who have teenage children (n = 50)

Variable	Pre Test		Post Test	
	n	%	n	%
Knowledge				
Good	3	6	48	96
Not enough	47	94	2	4
Attitude				
Good	4	8	47	94
Not enough	46	92	3	4
Amount	50	100	50	100

From the results of measuring knowledge and attitudes, an increase in the average knowledge and attitudes was obtained before and after the nutrition exhibition and the provision of preconception nutrition education leaflets. Changes in the average knowledge and attitudes can be seen in the following table:

Table 5. Average distribution of knowledge and attitudes of mothers of teenage children before and after the nutrition fair (n = 50)

Variable	Mean ± SD	Mean Change ± SD	p-value*
Knowledge			
Before	45.00 ± 16.35		
After	85.10 ± 6.427	-40.10 ± 6.410	0.001
Attitude			
Before	53.50 ± 14.11		
After	86.00 ± 10.00	-32.50 ± 4.11	0.001

*difference within groups (before and after) using paired t-test, at a significance level of 5%

The results of statistical tests using paired t-test statistics show differences in the average knowledge and attitudes of mothers who have teenage children before and after being given nutrition education using the nutrition exhibition method and giving leaflets.

Discussion

Efforts to prevent stunting in Pantai Labu Village, Deli Serdang Regency, have gone well – preconception nutrition change agent training in Pantai Labu Village, district. Deli Serdang was carried out for one day, from 11 to 14 July 2023. Preconception nutrition change agent training, which was carried out for one day using lecture methods and counseling practices, significantly increased the knowledge and attitudes of change agents; this can be seen in Table 3. After it was carried out, Preconception nutrition change agent training for four days increased the average knowledge score to 43.00, and all training participants were in the excellent knowledge category about preconception nutrition. There was also an increase in the mean attitude value, namely 35.50 and all training participants had a good attitude towards preconception nutrition. The results of statistical tests using paired t-test statistics show differences in the average knowledge and attitudes of preconception agent training participants before and after training.

The training preconception nutrition exhibition aims to give the target audience a better visual understanding of food nutrition. In this exhibition, food displays are displayed: processed

products originating from local food ingredients such as processed moringa leaves, processed green beans, processed tempeh, processed tofu, processed tamban fish, and processed catfish. The researcher and preconception nutrition change agents also created various dishes from tempeh, the type of side dish that is most often consumed and consumed almost every day. The implementation of the nutrition exhibition went smoothly, and the public was very enthusiastic, as evidenced by the large number of visitors and the many questions visitors had when the exhibition was held. The problem faced during implementation was the time each visitor had, and because of this limited time, many visitors who wanted nutritional consultations were not served.

After that, a posttest was carried out to measure the knowledge of mothers who have teenage children. So, it was found that after the preconception nutrition change agent training, there was an increase in the average knowledge score of 40.10, and all training participants were in the excellent knowledge category about preconception nutrition. There was also an increase in the mean attitude value, namely 32.50, and they had a good attitude towards preconception nutrition. The results of statistical tests using paired t-test statistics show differences in the average knowledge and attitudes of mothers who have teenage children before and after nutrition education through nutrition exhibitions and giving leaflets. Increasing adolescent nutritional knowledge or nutrition during preconception is an important target (Nur et al., 2023; Salam et al., 2020; Young et al., 2015). It has the potential to improve eating habits and lifestyles so that they do not continue during the conception period and, at the same time, reduce the incidence of non-communicable diseases related to obesity throughout life (Cairncross et al., 2019; Canavan & Fawzi, 2019; Lassi et al., 2020).

CONCLUSION

There was an increase in the knowledge and attitudes of participants in preconception nutrition change agent training (p-value < 0.05), change agents were committed to health promotion in Pantai Labu Village, and there was an increase in mothers' knowledge and attitudes about preconception nutrition (p-value < 0.05). Preconception Nutrition Change Agents are influential as providers of nutritional health promotion and the possibility of program sustainability because the change agents come from the village where community service is carried out. Empowering these change agents can be a strategy for villages, health centers, or health services.

The ultimate goal of maternal empowerment in society is the occurrence of social change, namely changes in intellectual traits (knowledge and attitudes) in this case is a gradual change in the way of thinking and the power of human thinking. Factors inhibiting this change such as internal forces both cultural and structural such as the flow of globalization that influences the pattern of community adaptation to external influences so that the process of change occurs. The process of change is a process of decentralization of many fields because the core of social change lies in changes in the norms of life so for the sake of progress, reintegration must be carried out. Therefore, suggestions for further research need to be carried out further research to evaluate the influence of maternal empowerment on maternal behavior in the long term.

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