

## The Garpu Banting-Women's Movement Program Prevent Stunting Increases Knowledge of Feeding Practices: Quasi-Experiment

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### ABSTRACT

**Background:** The prevalence of stunting in Indonesia in 2022 was 21.6%, stunting can cause cognitive impairment, short stature, pain and even death. The aim is to determine the effect of the Garpu Banting Program on the mothers' level of knowledge, attitudes, and practices in feeding. **Methods:** This study used a quasi-experimental design with pre-test, post-test and control group designs. The Sampling used experimental research standards (CONSORT) with a sample size of 50, namely 25 in the experimental group and 25 samples in the control group. **Results:** The findings revealed variations in the experimental group's mothers' knowledge ( $p=0.000$ ), attitudes ( $p=0.000$ ), and practices ( $p=0.000$ ) regarding feeding before and after receiving the Garpu Banting Program's nutrition education and home visits. In the control group, there were differences in the mean ratings of mothers' feeding knowledge ( $p=0.000$ ), attitude ( $p=0.000$ ), and practice ( $p=0.009$ ). Logistic regression analysis found that education ( $OR=10.630$  ( $0.820-0.140$ ), source of information ( $OR=0.673$  ( $0.177-2.555$ ), and employment ( $OR=3.781$  ( $0.754-18.949$ )) did not influence on mothers' attitudes and practices in feeding. **Conclusion:** The Garpu Banting Program has a considerable impact on mothers' knowledge, attitudes, and feeding patterns through nutritional education on complementary foods and home visits.



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### INTRODUCTION

Malnutrition is a health problem that continues to occur globally. This affects children's growth and development as well as mortality and morbidity (Binagwaho et al., 2020; Yaya et al., 2020). According to the World Health Organization (WHO), 149.2 million toddlers (22.0%) had stunted growth in 2020 (UNICEF, WHO, and World Bank 2021). The stunting rate in Indonesia has significantly decreased. For the previous three years. The incidence of stunting in 2020, the prevalence of stunting prevalence was recorded at 26.9%, then decreased to 24.4% in 2021 (Kemenkes RI, 2021), and in 2022, the rate dropped again to 21.6% (Kemenkes RI, 2022). The 2020–2024 National Medium Term Development Plan (RPJMN) established a target for this proportion, namely 14%, despite the fact that the prevalence of stunting has dropped from the previous year (Kemenkes RI, 2020). In the short term, children easily get sick and become a cause of mortality (Annisa & Sulistyaningsih, 2022), and children experience cognitive, motor, and language disorders (Alam et al., 2020). Consequently, it affects learning ability and the quality of human resources (HR).

(Ekholuenetale et al., 2020). Stunting causes children to grow physically slower over time, resulting in a short stature (Aprillia et al., 2023). Stunting increases the risk of degenerative disorders (such as diabetes, heart disease, stroke, and obesity) in adulthood (D'Alonzo & Garsman, 2020). It also effects country's poverty (Eshete *et al.*, 2020).

Incorrect use of supplemental feeding is one of the causes of stunting (Afework, 2021), limited knowledge and inappropriate parenting style (Julianti & Elni, 2023). Based on research conducted by UNICEF Indonesia, several factors have been identified that contribute to the high prevalence of stunting in Indonesia, one of which is the lack of maternal awareness about the importance of nutrition and proper feeding practices (Unicef, 2020; Rachmawati *et al.*, 2021). Stunting can be avoided with targeted dietary interventions that target the first 1,000 days of life (Kemenkes RI, 2022), providing supplemental food to infants between the ages of 6 and 24 months (Kemenkes RI, 2020). The feeding program in India yielded no significant results. Mothers' knowledge of the practice of providing complementary foods did not follow the recommendation (Kamble et al., 2020). The feeding practice intervention program in Tanzania stated that most children did not receive optimal complementary foods. This was due to the mother's lack of knowledge and behavior regarding the practice of feeding according to the required nutrition (Masuke et al., 2021). Using the best complementary feeding techniques, one-third of child fatalities (Assefa et al., 2021).

The "Garpu Banting" Program (Women's Movement to Help Prevent Stunting) is an action plan to support the government's efforts on the second pillar of Presidential Regulation No. 72 of 2021 by providing video education on complementary feeding practices for infants and toddlers aged 6 to 24 months based on amount, variety, frequency, texture, cleanliness, and child's response as well as assistance through home visits to increase mothers' knowledge, attitudes, and behavior in eating parenting to prevent stunting (Aldossari *et al.*, 2019; Naulia *et al.*, 2021; Purwanti *et al.*, 2022). Providing supplemental food to infants in addition to breast milk has been shown to be a successful tactic for enhancing their nutritional status. . According to Muluye et al. (2020), mothers' knowledge of complementary foods has greatly increased, from 54% to 70% (Muluye et al., 2020).

Mothers' knowledge, attitudes, and behavior in providing food play a critical role in avoiding childhood stunting (Bella et al., 2020). is crucial for the development of the body and mind. Therefore, efforts to prevent malnutrition, including stunting, are important during this period (Kamble et al., 2020). Therefore, in this program, it is necessary to consider the determinants of stunting contained in the WHO conceptual framework (WHO, 2018) by utilizing Green's precede-proceed approach for the planning and assessment of health programs (Porter, 2016). The aspects assessed were the mothers' knowledge, attitude, and practical behavior in providing appropriate and optimal complementary feeding. It follows the principles of Health Technology Assessment (HTA) in midwifery promotively, namely carrying out activities with the introduction of health-to-healthy living recommendations (Kemenkes RI, 2017). This study aimed to ascertain how the Garpu Banting Program affects mothers' level of knowledge, attitudes, and practices in feeding.

## METHODS

This study used a control group design and a quasi-experimental approach with pre- and post-tests (Creswell, 2021). The samples used in this study were separated into two groups: experimental and control. In the test group, the scientists offered nutrition education on complementary foods through video screenings and home visits

twice a month, whereas in the control group, the researchers only provided nutritional education on complementary foods through video screenings without home visits.

This study was conducted at one of the Community Health Centers in the Bantul Yogyakarta area from June to July 2023. The study's independent variable is Garpu Banting (Program Women's Movement through Empowerment by providing video education on the practice of complementary feeding for children aged 6-24 months based on amount, variety, frequency, texture, cleanliness and response and assistance through home visits to improve mothers' knowledge, attitudes and practices in stunting prevention) available from the <https://youtu.be/hWj5Lt96nqQ>. The dependent variable is knowledge, attitudes, and practices and the confounding variables are education, employment, and information sources. Mothers of stunted infants aged between 6 and 24 months comprised the study sample. Purposive sampling was used for sampling. The population in this study was mothers of children aged 6-24 months with stunting. Mothers with stunted children between the ages of 6 and 24 months met the inclusion criteria and mothers who passed at least elementary school (SD), while the exclusion criteria were mothers who did not take part in the research until completion. The sampling used experimental research standards (CONSORT) with a sample size of 50, namely 25 in the experimental group and 25 in the control group (Eldridge et al., 2016).

Data was collected using a questionnaire on newborn and child feeding knowledge, attitudes, and practices, particularly regarding complementary foods. This questionnaire was adapted from the "IYCF-CCPQ" (Zakria et al., 2019), and translated into Indonesian. The validity of the questionnaire was tested on 30 respondents with stunted toddlers aged 6-24 months using the Pearson Product Moment. Construct validity was assessed through a bivariate correlation test, with an r-value of 0.361, based on a significance level of 0.05 and 28 degrees of freedom ( $df = 28$ ). Furthermore, from the validity tests conducted, results were obtained from invalid questions on the knowledge, attitudes, and practices questionnaire which were then discarded or not used in the research. The reliability test's findings were obtained using the SPSS program with a scale-reliability analysis test that obtained a knowledge questionnaire value of 0.809, an attitude questionnaire of 0.760, and a practical questionnaire of 0.698. In summary, all questionnaires are trustworthy.

Both the paired and independent t-tests, which were utilized for data analysis, were checked for normality and data homogeneity using the Shapiro-Wilk test because the sample consisted of 50 respondents. Based on the results of the data normality test on the pre-and post-test data, knowledge, attitudes, and practices had a significance value of  $> (0.05)$ . This indicates that the samples were normally distributed. The results of the Levene test's homogeneity analysis revealed p-values of 0.754 for knowledge, 0.487 for attitude, and 0.116 for practice. The resulting value was greater than the  $\alpha$  significance level of 0.05; therefore, the data in this study were homogeneous. This indicates that the sample data had the same variance. Data analysis was assisted by computer software with the SPSS application SPSS (Statistical Product and Service Solutions) version 26.

Informed consent was obtained directly from all patients. Respondents understood the purpose of the research and were willing to voluntarily fill in the consent form without coercion. After receiving approval from the Health Research Ethics Committee of 'Aisyiyah University of Yogyakarta, the study was conducted on May 22 2023 No. 2892/KEP-UNISA/V/2023.

## RESULTS

**Table 1. Frequency Distribution of Mothers' Knowledge, Attitudes, and Practices in Feeding**

Indicators	Experiment Group (Education and Home Visits)				Control Group (Education)			
	Pretest		Post-test		Pretest		Post-test	
	n	%	n	%	n	%	n	%
<b>Knowledge</b>								
Not enough	15	60.0	1	4.0	22	88.0	9	36.0
Enough	8	32.0	6	24.0	2	8.0	12	48.0
Good	2	8.0	18	72.0	1	4.0	4	16.0
<b>Attitude</b>								
Not enough	5	20.0	0	0	12	48.0	15	60.0
Enough	18	72.0	5	20.0	12	48.0	10	40.0
Good	2	3.0	20	80.0	1	4.0	25	100.0
<b>Practice</b>								
Not enough	22	88.0	8	32.0	21	84.0	6	24.0
Enough	3	12.0	8	32.0	4	16.0	4	16.0
Good	0	0	9	36.0	0	0	15	60.0

Table 1 shows an increase in response rates in both the experimental and control groups across knowledge, attitudes, and practices. In the experimental group, most respondents initially had low knowledge, adequate attitudes, and limited practices. After the intervention, most showed good knowledge, positive attitudes, and adequate practices. In the control group, respondents initially had poor knowledge, attitudes, and practices, but after the intervention, the majority demonstrated good knowledge, attitudes, and practices.

**Table 2. Test Results for Differences in Knowledge, Attitudes, and Practices in the Experimental Group and the Control Group**

Variables	Paired t-test				Independent t-test			
	Mean	Difference Value	Std. Deviation	Sig.	Mean	Std. Deviation	Difference Value	P Value
<b>Knowledge</b>								
Pretest Experimental	7.32		1.492					
Post-test Experimental	10.76	3.44	1.714	0.000	3.44	1.474		
Pretest Control	5.72		1.720				9.60	0.024
Post-test Control	8.20	2.48	1.334	0.000	2.48	1.446		
<b>Attitude</b>								
Pretest Experimental	21.80		2.645					
Post-test Experimental	27.64	5.84	2.360	0.000	5.84	1.518		
Pretest Control	20.20		3.162				1.00	0.025
Post-test Control	24.96	4.76	3.115	0.000	4.76	1.762		

<b>Practice</b>								
Pretest	3.00		1.190					
Experimental		2.00		0.000	2.00	0.912	1.08	0.015
Post-test	5.00		1.080					
Experimental								
Pretest	3.20		1.190					
Control		1.00		0.009	1.00	1.755		
Post-test	4.20		1.528					
Control								

Table 2 T-test results showed a significant difference between the mean scores of the pretest and post-test in both groups. In the experimental group, the difference between the pretest and post-test scores of knowledge reached 3.44, attitude 5.84, and practice 2.00. In the control group, the differences were 2.48, 4.76, and 1.00, respectively. The independent t-test for attitude resulted in a significance value of 0.005, indicating a significant improvement in mothers' attitudes regarding the Forks Banting program.

**Table 3. Relationship of Education, Occupation, and Information Sources to Mothers' Knowledge, Attitudes, and Practices in Feeding**

Independent Variables	Dependent variables		
	Knowledge	Attitude	Practice
	<i>P-value</i>		
Education	0.585	0.084	0.689
Occupation	0.527	0.792	0.217
Information sources	0.571	0.132	0.180

Table 3. shows that the relationship between indicators of education, occupation, and information sources with the level of knowledge does not meet the requirements for multivariate analysis (significance value > 0.25). However, education and occupation variables and occupation and information sources meet the criteria for multivariate analysis (significance value < 0.25) with a sig value < 0.25.

**Table 4. Results of Analysis of Education, Occupation, and Information Sources on Mothers' Knowledge, Attitudes, and Practices in Feeding**

Variables	P-value	Odds Ratio	95% CI	
			Lower	Upper
Attitude				
Education	0.73	10.630	0.820 – 0.140	
Low (elementary-middle school)				
Information Sources (print media)	0.561	0.673	0.177 – 2.555	
Practice				
Occupation	0.106	3.781	0.754 – 18.949	
Housewife				
Information Sources (print media)	0.215	2.737	0.557 – 13.453	

## DISCUSSION

### **The Effect of the Garpu Banting Program on Mothers' Level of Knowledge in Feeding**

Nutrition education provided through home visits can teach parents about caring for appropriate and responsive complementary foods so that they can increase the food intake, growth, and development of children (Koplin et al., 2019). Home visits effectively broaden mothers' knowledge of various aspects and are supported by the family. This creates an optimal setting that is beneficial to children's health. This program not only changes the mindset of mothers regarding child development but also encourages parents to build positive interactions with their children. In addition, this program actively involves mothers in increasing their knowledge about the growth and development of their children's health (Kahssay et al., 2020).

Research in Bangladesh has revealed that home visit programs for health workers are effective in increasing nutritional coverage. In this situation, mothers who underwent visits were not only able to absorb the information provided but were also able to apply it in providing food to their children daily (Sarma et al., 2021). A similar study reported that mentoring by providing nutrition education could maximize knowledge and protein intake with post-test results for two groups having a significant value ( $p < 0.001$ ) (Nafista et al., 2023). Home visits provided mothers with the opportunity to ask questions about their feeding practices. This differs from the provision of education without visits. The mother has limited information and solutions needed to overcome the feeding problems she is experiencing (Saaka et al., 2021).

The effectiveness of home visits given to groups of mothers or peers can improve children's nutritional outcomes, as door-to-door home visits are effective in improving breastfeeding practices and quantity, and quality of child feeding related to complementary foods (Jensen et al., 2021). An educational program for complementary feeding is effective and optimal for supporting feeding practices to increase children's growth and development in an effort to stop stunting (De-Jongh et al., 2021).

### **The Influence of the Garpu Banting Program on Mothers' Attitudes in Feeding**

Through nutrition education programs with home visits, mothers can develop cooking skills and experience improved attitudes and behaviors because they can interact directly. Mothers are less informed and apply food-making skills directly when they are educated without assistance (Bleiweiss-sande et al., 2022). It effectively overcomes obstacles such as transportation problems and time constraints that often hinder access to nutrition education (Vazir et al., 2013).

Based on the analysis of the independent sample t-test results, a significant difference was found in the average value of the mothers' attitude between the experimental group and the control group of 1.00, with a significance level of 0.025. Thus it can be concluded that home visits and nutrition instructions had an effect on mothers' attitudes toward feeding.

Research in Madagascar showed that providing nutritional supplements, nutritional counseling, and intensive home visits changed mothers' attitudes and habits in feeding their children. This approach not only contributed positively to children's growth but also played an important role in preventing stunting (Galasso et al., 2019). Research in Indonesia found that family assistance through integrated nutrition packages carried out by members of the National Police through home visits had a significant impact of 0.41 times on stunting. This program can improve understanding and attitudes towards monitoring the growth and development of children (Siswati,

Iskandar, Pramestuti, Raharjo, Rialihanto, et al., 2022). Similar findings have revealed that mentoring and providing nutritional education through home visits can improve mothers' attitudes and skills in processing food ingredients, so optimal infant and child feeding practices can be implemented (Nafista *et al.*, 2023).

Mothers with a positive attitude play an important role in providing children with complementary foods optimally (Abiyu & Belachew, 2020), supporting the improvement of children's growth and development of children (De-Jongh *et al.*, 2021). Based on the researchers' assumptions, mothers' attitudes can be further formed and strengthened through information provided directly. This is because it was easier for mothers to accept and understand the material that had been presented regarding proper feeding to prevent stunting.

### **The Influence of the Garpu Banting Program on Mothers' Feeding Practices**

Based on the results of the different group tests, there was an average difference between the pretest and post-test scores of 2.00. These results indicate that nutrition education programs and home visits can significantly improve mothers' feeding practices  $<0.000$ . There was an average difference between the pretest and post-test scores in the control group which reached 1.00. These results indicate that the nutrition education program can significantly improve maternal practice  $<0.000$ . Home visits are a form of assistance in empowerment programs targeting pregnant women, new mothers, and brides (Aprillia *et al.*, 2023). This activity is effective in maternal practice because it can increase mothers' knowledge and skills in carrying out the practices instructed regarding feeding practices (Suharto, 2022).

Analysis of the results of the independent sample t-test revealed a significant difference between the experimental and control groups' average value of maternal practice. of 1.08, Therefore, nutritional education and home visits influenced maternal feeding practices.

Research in Ethiopia revealed that nutrition education through home visits can significantly improve mothers' practice of providing supplemental nutrition to children aged 6-23 months supplemental nutrition from 59% to 96% (Muluye *et al.*, 2020). In India, complementary breastfeeding nutrition education provided through home visits has proven successful in modifying mothers' knowledge feeding practices and increasing growth. (Vazir *et al.*, 2013). Similar findings revealed that home visits significantly increased complementary breastfeeding practices from 78.5% to 92.1%. The findings of this study emphasized the significance of integrated nutrition programs through home visits by health workers, as a very relevant factor (Rahman *et al.*, 2023). Children who received home visits had higher standard deviation (0.15) developmental outcomes than those who did not receive them (Araujo *et al.*, 2021).

### **Analyzing the Influence of Education, Occupation, and Information Sources on Knowledge, Attitudes, and Practices of Mothers in Feeding**

According to the findings of an analysis using logistic regression education did not affect mothers' attitudes towards feeding with a p-value of 0.75. Mothers' limited education level can affect their attitudes toward feeding. Mothers with low education at elementary and junior high school levels tend to have a more limited understanding of complementary foods than mothers with higher education (Rumicha & Gemed, 2021).

Low maternal education with a value (OR 10.635, 95% CI 0.820-0.140) has a risk of 10.630 for inappropriate feeding practices, which is a factor that causes children to experience stunting. A study (Trauner & Williams, 2021) revealed that low maternal education influenced attitudes toward fulfilling family nutrition, especially children.

Mothers with low education are likely to experience illiteracy, making it difficult to obtain information related to nutrition, and are at risk of experiencing stunted children. Similar findings have revealed that mothers with low education experience limitations in making decisions about optimal food needs and good health care for children (Rachman et al., 2021).

According to the findings of an analysis using logistic regression, maternal employment did not affect maternal feeding practices 0.106. Mothers who do not work or are housewives have limitations in meeting the dietary requirements of their families, particularly children. Mothers who do not work do not have additional sources of income. Consequently, it was difficult for them to buy food. In addition, mothers who do not work are limited in obtaining information from outside regarding appropriate feeding methods for their children. A study (Ahmed et al., 2022) demonstrated that mothers who are not employed have a restricted knowledge of the information related to nutrition education, so their knowledge of child-feeding practices is lacking as a result, mothers are 2.5 times more likely to experience stunted children compared to children of mothers who have received nutrition education.

The findings of the logistic regression test revealed that the information sources did not affect mothers' attitudes and feeding practices  $>0.05$ . Information sources using print media are less effective in improving mothers' knowledge and attitudes toward absorbing information. This is in line with research (Moon et al., 2019) which stated that information obtained through print media is more difficult for mothers to understand because of limited text and images so they are less interested or reluctant to read. This can reduce the mothers' motivation for attitudes and feeding practices. Mothers who obtain information through electronic media are more likely to have good attitudes toward optimal feeding practices. In line with research (Abiyu & Belachew, 2020) that mothers who receive information through electronic media have a better chance of obtaining education that is easy to understand compared to using print media.

## CONCLUSION

The Garpu Banting Program, through nutrition education and home visits, significantly improved mothers' feeding knowledge, attitudes, and practices compared to the control group that only received nutrition education. Factors like maternal education, employment, and information sources did not influence these outcomes. The program's goal is to enhance mothers' attitudes and ensure consistent feeding practices to prevent stunting, while inspiring health workers through home visits and educational videos. Future research is recommended to observe and interview mothers to monitor whether their feeding practices remain consistent over time.

**Author's Contribution Statement:** Lulu Annisa: Conceptualization, Data Collection, Analysis, Writing-Original Draft Preparation. Djauhar Ismail: Supervision, Methodology, Validation, Writing-Review & Editing. Sulistyaningsih: Supervision, Methodology, Validation, Writing-Review & Editing.

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