

Effectiveness of Giving Green Bean Juice (*Vigna Radiata*) to Increase Breast Milk Production for Postpartum Mothers

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Abstract: The quantity and quality of a mother's food greatly influences the amount of breast milk produced. Mothers who breastfeed are strongly encouraged to obtain additional nutrition for breast milk production and maternal energy. One of them is green beans as a food that is useful for facilitating breast milk production. This research aims to analyze the effectiveness of giving green bean juice (*vigna radiata*) to increase breast milk production for postpartum mothers in North Tapanuli Regency in 2023. This research is a type of quantitative research. The design used in this research is a quasi-experimental design using a pre-test and post-test nonequivalent control group approach. The results of statistical research with Mann Whitney showed that there was an average difference (mean) between the control group and the intervention group before consuming green bean juice and after consuming green bean juice 8.54. The results of the analysis using the Mann-Whitney Test showed that there was a significant difference between postpartum mothers in the treatment group (given Green Bean Juice) and postpartum mothers in the control group in terms of increasing breast milk production for postpartum mothers with a p-value of 0.007.

Keywords: Green bean juice; Postpartum mothers; *Vigna Radiata*

Introduction

One of Indonesia's development goals for 2020-2024 is to form quality and competitive human resources, namely healthy and intelligent human resources. One effort that can be made to achieve this goal is to improve the quality of children (Darling-Hammond et al., 2020). Health care for mothers, especially pregnant women, will affect the condition of the child they conceive and give birth to in the future. Therefore, maternal health needs to be considered about the child who will be born as an investment in the future of the Indonesian nations.

Indonesia currently still has complex health problems. The level of health of the Indonesian people has not experienced significant progress. The high problem of malnutrition in various regions, especially in big cities, is a nutritional problem in Indonesia. The reluctance of pregnant women to undergo antenatal check-ups (K1 and K4) significantly increases the Maternal Mortality Rate (MMR) and Infant Mortality

Rate (IMR). The nutrition needed for pregnant women is very necessary to gain weight and increase the mother's fat reserves which are needed for the growth and development of the baby (King, 2000). During the pregnancy process, a mother will experience changes, both anatomical, physiological, and other changes. These changes will have an impact on increasing the need for nutritional intake on the menu (Lichtenstein et al., 2021). Pregnant women who consume low nutritional intake and experience infectious diseases will give birth to babies with Low Birth Weight (LBW), and the baby's body length is below standard. Good nutritional intake is not only determined by food availability at the household level but is also influenced by parenting patterns such as giving colostrum (the first breast milk to come out), Early Breastfeeding Initiation (EBI), exclusive breastfeeding, and giving Complementary Foods for Breast Milk (MP- breast milk) appropriately (Artikasari et al., 2021).

How to Cite:

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Breast milk is the single most perfect food for babies in the first 6 months of growth, without any additional drinks or food. The impact of not giving breast milk to babies is mostly related to nutritional factors (Martin et al., 2016). Some diseases that arise due to malnutrition include pneumonia (20%), diarrhea (15%), and perinatal (23%) (Singh, 2020). Another impact is that it can cause obesity in toddlers. Breast milk is an emulsion of fat in a solution of protein, lactose, and organic salts secreted by both mother's breast glands, as the main food for babies. Factors that influence the composition of breast milk are the stage of lactation, race, nutritional status, and the mother's diet. Breast milk according to the lactation stage is colostrum, transitional milk and mature (nature) milk (Khelouf et al., 2023).

Apart from getting complete basic immunization, exclusive breastfeeding for children is also one of the things that should not be left behind at 1.000 HPK. Breastfeeding provides benefits for both mother and baby. Breast milk contains many nutrients that babies need in the first 6 (six) months after birth. Some of the benefits of exclusive breastfeeding for babies are preventing disease, and helping the baby's brain and physical development. Meanwhile, the benefits for mothers include overcoming trauma and preventing breast cancer (Zhang et al., 2022).

The quantity and quality of a mother's food greatly influences the amount of breast milk produced. Postpartum mothers are strongly encouraged to obtain additional nutrition for breast milk production and maternal energy (Bravi et al., 2016). One of them is green beans as a food that is useful for facilitating breast milk production (Puspitasari et al., 2022). The choice of green beans to facilitate breast milk production is because of their beneficial content for postpartum mothers (Çavdar et al., 2019). Various types of (processed) food from green beans such as green bean porridge, green bean drinks, traditional cakes, and green bean sprouts have long been known to the Indonesian people (Yanti et al., 2023). 100 grams of green beans contains 124 mg calcium and 326 mg phosphorus, useful for strengthening bone skeleton, and 19.7-24.2% protein and 5.9-7.8% iron can produce maximum amounts of breast milk.

Green beans (*Vigna radiata*), which are also commonly called mungbeans, are plants that can grow almost everywhere in Indonesia. Various types of (processed) food from green beans such as green bean porridge, green bean drinks, traditional cakes, and green bean sprouts have long been known to the Indonesian people (Harmayani et al., 2019). Traditionally, pregnant women in Indonesia are often advised to drink green beans so that babies born will have thick hair (Aryastami & Mubasyiroh, 2021). 100 grams of green beans contain 124 mg of calcium and 326 mg of phosphorus, which are

useful for strengthening the bone framework, and 19.7-24.2% protein and 5.9-7.8% iron can produce maximum amounts of breast milk.

According to BPS data for 2020, the achievement of exclusive breastfeeding has not reached the expected figure of 80%. The achievement of exclusive breastfeeding was 69.62% (Pratiwi & Ernawaty, 2023). In 2019, the achievement of exclusive breastfeeding was 66.69%. Meanwhile, data in North Sumatra Province in 2019 achieved exclusive breastfeeding was 50.20% and in 2020 it was 53.39%. Meanwhile, data from the North Tapanuli District Health Service achieved exclusive breastfeeding at 58.90%.

According to research by Laksono et al. (2021), the obstacles faced in the practice of exclusive breastfeeding are the mother's lack of knowledge, lack of support from the environment and health practitioners, giving food and drink too early, and the widespread promotion of formula milk for babies. The nutritional status of postpartum mothers plays an important role in the success of postpartum, the indicators of which are measured by the duration of exclusive breast milk (ASI), baby growth, and the nutritional status of postpartum mothers.

Considering that there are many changes in behavior in society, especially mothers who tend to refuse to give birth to their babies, especially mothers who work on the ground because their milk comes out little or not at all, this situation has a negative impact on nutrition and level of intelligence child. Efforts are made by health workers so that mothers gain knowledge about the right way to make things easier. Expressing breast milk, one of which is consuming green bean juice which can help the process of expressing breast milk and provide an understanding of the importance of exclusive breastfeeding for babies. By providing counseling, it is hoped that mothers can understand and understand the importance of consuming foods rich in protein and minerals for smooth breast milk production and mothers can postpartum their babies exclusively for 6 months (Jama et al., 2020).

Based on the data and phenomena above, researchers are interested in conducting research with the title Effectiveness of Giving Green Bean Juice (*vigna radiata*) to Increase Breast Milk Production for Postpartum Mothers in North Tapanuli Regency in 2023.

Method

This research is a type of quantitative research. The design used in this research was a quasi-experimental design using a pre-test and post-test nonequivalent control group approach (Rusmana & Suprihatin, 2019). This research aims to determine the difference in breast

milk production of postpartum mothers who consume green bean juice and those who do not consume green bean juice in North Tapanuli Regency in 2023:

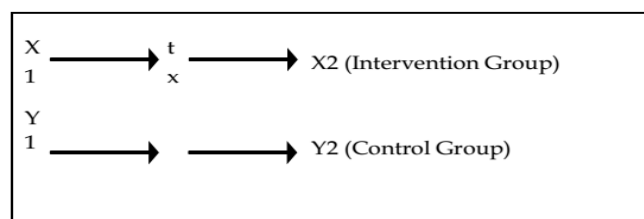


Figure 1. Research design model

Information:

X1: Pre-test, measurement of breast milk production before treatment.

X2: Post-test, measurement of breast milk production after treatment

tx: Trial in the treatment group, namely administration of green bean juice

Y1: Pre-test in both control groups

Y2: post-test on both control groups (Modification of Notoadmojo, 2010).

Research Variable

The variables in this research consist of independent variables and dependent variables. The independent variable in this research is the provision of green bean juice and the dependent variable in this research is breast milk production.

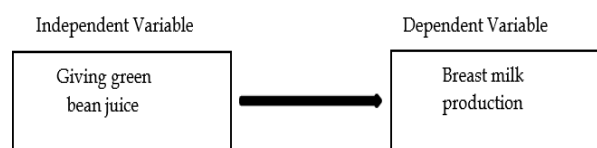


Figure 2. Research variables

Result and Discussion

Overview of Research Locations

Pahae Julu Health Center, Huta Baginda Health Center and Siatas Barita Health Center are located in North Tapanuli Regency. Data collection in this research was carried out using a Purposive Sampling technique where the targets were taken directly by visiting the targets at their respective places in the three Community Health Centers until the research quota was met, such as:

Table 1. Number of Postpartum Mothers in each Community Health Center

Name of the Community Health Center	Number of Postpartum	Treatment	Control
Pahae Julu Community Health Center	10	5	5
Hutabaginda Health Center	10	5	5
Siatas Barita Community Health Center	10	5	5
Total	15	15	30

Univariate Analysis

Sample Characteristics

The sample in this study consisted of 2 groups, namely 15 postpartum mothers who were treated with green bean juice and 15 postpartum mothers who were given no treatment. An overview of the characteristics of respondents including age, education, and occupation can be seen in Table 2.

Table 2. It can be seen that the age distribution of postpartum mothers in the treatment group is the majority aged 20-35 years, namely 13 people (86.7%) and minorities aged >35 years were 2 people (13.3%). Meanwhile, there were 16 people in the control group aged 20-35 years (100%). Educational characteristics, it is known that the largest treatment group had secondary education, 9 people (60%), then the minority had primary and tertiary education, 3 people (20%). For the control group, the majority had secondary education as many as 13 people (86.70%), then the minority had high education as many as 2 people (13.30%). Characteristics of respondents based on work, it is known that for the treatment group the largest number of respondents who did not work were 9 people (60%), followed by

respondents who worked, namely 6 people (40%). For the control group, all 15 respondents were unemployed (100%).

Table 2. Sample Characteristics Based on Age, Education, and Employment of Postpartum Mothers at Pahae Julu Health Center, Siatas Barita Health Center, and Hutabaginda Health Center

Characteristics	Treatment Group		Control Group	
	Amount	%	Amount	%
Age	-	-	-	-
<20 Years	13	86.70	15	100
20-35 Years	2	13.30	-	-
>35 Years	-	-	-	-
Amount	5	100	15	100
Education				
Base	3	20	-	-
Intermediate	9	60	13	86.70
Tall	3	20	2	13.3
Amount	15	100	15	100
Work	6	40	-	-
Doesn't work	9	60	15	100
Amount	15	100	15	100

Description of Breast Milk Production in the Treatment Group and Control Group

Based on the pre-test results, it is known that in the treatment group postpartum mothers with the highest breast milk production before being given Green Bean Juice were in the poor category, there were 8 people (53.3%), good breast milk production was 7 people (46.7%), while in the control group The most with poor breast milk production was 11 people (73.3%), good breast milk production was 4 people (26.7%). It can be seen that in general the breast milk production of postpartum mothers in both groups before giving peanut juice was the same, namely in the less category.

After being given treatment by administering peanut juice to the treatment group, it was found that the postpartum mothers with the highest breast milk production were in a good category as many as 12 people (80%), postpartum mothers with less breast milk production were 3 people (20%), while the postpartum mothers in the control group had the most. many with good breast milk production were 9 people (60%), poand stpartum mothers with poor breast milk production were 6 people (26.70%). If we look at the results of the pre-test and post-test, it can be seen that the breast milk production of postpartum mothers increased in the good category in the treatment group after being given green bean juice.

Table 3. Distribution of Breast Milk Production for Postpartum Mothers

Production breast milk	Treatment Group					Control Group		
	n	Pre %	n	Post %	n	Pre %	n	Post %
Good	7	53.3	12	80	4	26.7	9	60
Not enough	8	46.7	3	20	11	73.30	6	40
Total	15	100	15	100	15	100	15	100

Bivariate Analysis

Based on table 4 shows that there is an average difference (mean) between the control group and the intervention group before consuming green bean juice and after consuming green bean juice 8.54. In the ManMann-Whittneyst, the results of measuring postpartum mothers with breast milk production in the treatment group (giving green bean juice) and the control group obtained a p vp-value 0.007 (< 0.05) which shows that there is a significant difference in effectiveness in the treatment group and the control group. Control on breast milk production among postpartum mothers in the working area of Pahae Julu Health Center, Hutabaginda Health Center, Siatas Barita.

Table 4. Effectiveness of Green Bean Juice (Vigna Radiata) in Increasing Breast Milk Production Among Postpartum Mothers in the Working Area of Pahae Julu Health Center, Hutabaginda Health Center, and Siatas Barita Health Center

Category	Mean	p-value	n
Treatment group	19.77		15
Control group	11.23	0.007	15

Postpartum Mothers' Breast Milk Production Before and After Treatment

Based on the research results, it was found that of the 15 postpartum mothers before treatment with green bean juice, it was found that 7 (53.30%) postpartum mothers had good breast milk production, and 8 (46.70%) postpartum mothers had poor breast milk

production. After treatment by giving peanut juice to postpartum mothers, it was found that there were 12 (80%) postpartum mothers with good breast milk production and 3 (20%) postpartum mothers with poor breast milk production.

Based on Univariate analysis, it was found that the age distribution of postpartum mothers in the treatment group was the majority aged 20-35 years, namely 13 people (86.70%) and the minority aged >35 years was 2 people (13.30%). Meanwhile, the control group was all 16 people aged 20-35 years (100%). Educational characteristics, it is known that the largest treatment group had secondary education, 9 people (60%), then the minority had primary and tertiary education, 3 people (20%). For the control group, the majority had secondary education as many as 13 people (86.7%), then the minority had high education as many as 2 people (13.30%). Characteristics of respondents based on work, it is known that for the treatment group, the largest number of respondents who did not work were 9 people (60%), followed by respondents who worked, namely 6 people (40%). For the control group, all 15 respondents were unemployed (100%).

According to Tawfik et al. (2019), one of the factors related to giving breast milk to babies is the characteristics of the mother. Maternal characteristics include the mother's age at birth, parity, the mother's education, and the mother's occupation. Mothers who are young or less than 35 years old produce more breast milk than older mothers. Mothers who give birth to their second child and so on can produce more breast milk than those who give birth to the first child (Piccolo et al.,

2022). First. A mother's low level of education regarding breastfeeding affects her modeling behavior (Ouyang & Nasrin, 2021), if a mother more often sees a baby being bottle-fed rather than breast-fed by her mother, and also often sees a 1-month-old baby being given a banana or soft rice as additional breast milk, then the mother is not having the knowledge of that behavior. Mothers who work will result in reduced breast milk production because the baby rarely breastfeeds (Oyelana et al., 2021).

Effectiveness of Giving Green Bean Juice (Vigna Radiata) to Increase Breast Milk Production in Postpartum Mothers at Pahae Julu Health Center, Hutabaginda Health Center, Siatas Barita Health Center

Based on the research results, there was a difference in breast milk production before and after treatment where there was an average difference (mean) between the control group and the intervention group before consuming green bean juice and after consuming green bean juice 8.54. In the Mann-Whitney test, the results of measuring breast milk production in the treatment group (administration of green bean juice) and the control group obtained a p -value $0.007 < 0.05$, which shows that there is a significant difference in the effectiveness of the treatment group and the control group on breast milk production in postpartum mothers in the work area of Pahae Julu Health Center, Hutabaginda Health Center and Siatas Barita Health Center. This research is in line with (Ikhlasiah et al., 2020). Likewise with (Lisviarose et al., 2023), where the results showed a p -value of $0.000 < 0.05$, so can be assumed that there is an effect of giving green bean juice (*vigna radiata*) on increasing breast milk production in postpartum mothers at the Yeni clinic, Tinggi Raja District. This research is also in line with (Rahardjo et al., 2022), showing that the p -value $0.000 < 0.05$, which means there is a difference in breast milk production for breastfeeding mothers before and after giving green bean juice to breastfeeding mothers. This research is also in line with research conducted by Irmawati et al. (2022), where the results showed that there was a significant difference in the smoothness of breast milk production before and after being given green bean juice (*vigna radiata*) with a p -value $0.002 < 0.05$.

Benefits of green bean juice for breastfeeding mothers as a source of high carbohydrates which can convert calories into energy. This is very beneficial for mothers during breastfeeding, a good source of protein for baby growth and is easily absorbed by the body and produces good breast milk triggers, a source of fat to form cholesterol both needed by the body and neurons which can increase brain intelligence in babies who

consume breast milk, sources of vitamins such as Vitamins A, B, B1 and C, sources of minerals such as calcium, phosphorus to prevent osteoporosis and iron are needed by breastfeeding mothers which can prevent anemia, a source of folic acid for treating complaints about breast milk that is difficult to express, clogged and runs out easily or not much (Obeid et al., 2023)

Conclusion

Based on the pre-test results, it is known that in the treatment group postpartum mothers with the highest breast milk production before being given Green Bean Juice were in the poor category, there were 8 people (53.3%), good breast milk production was 7 people (46.7%), while in the control group The most with poor breast milk production was 11 people (73.3%), good breast milk production was 4 people (26.7%). After being given treatment by administering peanut juice to the treatment group, it was found that the postpartum mothers with the highest breast milk production were in a good category as many as 12 people (80%), postpartum mothers with less breast milk production were 3 people (20%), while the postpartum mothers in the control group had the most. many with good breast milk production were 9 people (60%), postpartum mothers with poor breast milk production were 6 people (26.7%). There is a significant difference in effectiveness between the treatment group and the control group on breast milk production in postpartum mothers with p -value of 0.007.

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Author Contributions

Conceptualization, J. P. S, N. I. H, D. R. N.; methodology, J. P. S.; validation, N. I. H. and D. R. N.; formal analysis, J. P. S.; investigation, N. I. H. and D. R. N.; resources, J. P. S. and N. I. H.; data curation, D. R. N.; writing—original draft preparation, J. P. S and N. I. H.; writing—review and editing, D. R. N.; visualization, and J. P. S. and N. I. H. All authors have read and agreed to the published version of the manuscript.

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Conflicts of Interest

The authors declare no conflict of interest.

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