THE EFFECT OF GIVING SOY MILK TO POSTPARTUM MOTHERS ON INCREASING THE WEIGHT OF NEWBORNS

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ABSTRACT

Background: Breastfeeding has many benefits for mothers and babies. Some of the benefits of breast milk for babies are preventing malnutrition, the growth and development of babies is largely determined by the amount of breast milk obtained including energy and other nutrients contained in breast milk. The purpose of this study was to determine the effect of giving soy milk to postpartum mothers on the adequacy of breast milk in the work area of UPTD Ulak Rengas Health Center in 2023.

Research Objective: The purpose of knowing the effect of giving Soy Milk to postpartum mothers on the increase in newborn weight in the work area of the UPTD Ulak Rengas Health Center in 2023.

Research Methods: this uses a quasi experiment research method. This research design uses a pre-experimental design with a one Group Pretest and Postest Design approach, the intervention group is given soy milk for 14 days, with a population of all postpartum women in the UPTD Puskesmas Ulak Rengas area, namely 38 people with purposive sampling technique based on inclusion, namely 15 respondents. Data were analyzed using univariate analysis, bivariate, with Shapiro wilk normality test and presented in tabular form.

The results of the study: it is known the mean value of the score of increasing baby weight before giving soy milk to postpartum mothers is 3077 and increased to 3633 (mean value after treatment). It is known that the t-count value is 21 with a probability (sig.) 0.000. because the probability (sig.) 0.000> 0.005 then Ho is rejected and Ha is accepted. The conclusion that the provision of soy milk to postpartum mothers has a significant effect on increasing the weight of newborns at the UPTD Puskesmas Ulak Rengas in 2023. Suggestions are expected to give soy milk to postpartum mothers as a non-pharmacological alternative in an effort to increase baby weight.

Keywords: Soy milk in postpartum mothers, increased infant weight gain

INTRODUCTION

The puerperium is the period that begins after the birth of the placenta and ends when the gynecological apparatus returns state (before pregnancy) which lasts approximately 6 weeks, or ± 40 days (Fitri, 2017). Baby's birth weight is the weight of the baby weighed within the first hour after birth, birth weight is an indicator of the health of newborns, the average weight of a normal baby is 3200 grams. (Wahyuni, 2015). Changes in body weight during the neonate period occur due to the transfer of fluid from intracellular to extracellular, increased extracellular fluid in neonates causes salt and water diuresis in the first 48-72 hours, excessive extracellular fluid expenditure results in physiological weight loss in the first week of life. Fluid loss in neonates must be balanced with adequate nutrition to prevent dehydration or calorie deficiency.

Low milk production is a major problem for new mothers, in addition to the problem of sunken or flat nipples, swollen breasts, reluctant babies to suckle due to improper technique or short-tongued babies (Dewi, 2013). This has a negative impact on the baby because mothers usually look for alternatives by giving formula milk to their babies which causes the intensity of the baby's suction to decrease because they take turns using formula milk which makes less milk come out (Budiasih, 2008).

Normally on the first day post partum the mother can produce 50-110 ml of milk a day from this amount will continue to increase to around 400-450ml by the time the baby reaches the age of the second week, therefore during this time breast milk is able to meet nutritional needs. After 6 months the volume of milk secreted decreases and from then on the nutritional needs cannot be met by breast milk alone and must be supplemented with additional food, in a state of normal milk production, the most milk volume that can be obtained is the first 5 minutes of suction or sucking by the baby while lasting 15-25 minutes. Over the next few months a healthy baby will consume about 700-800ml of breastmilk daily, but a baby can consume 1 liter of breastmilk in 24 hours.

Breastfeeding has many benefits for both mother and baby. Some of the benefits of breastfeeding for babies are preventing malnutrition, increasing endurance, increasing cognitive intelligence in babies, preventing gastrointestinal infections (vomiting and diarrhea), preventing respiratory infections and preventing the risk of death. While the benefits of breastfeeding for the mother are that the baby's suction on the breast will stimulate the formation of oxytocin by the pituitary gland. Oxytocin works by helping uterine involution and preventing postpartum bleeding in mothers, as well as delaying menstruation so that it can reduce the prevalence of iron deficiency anemia in new mothers, the incidence of mammary carcinoma in breastfeeding mothers (Valentine N. R, et al 2019).

A breastfeeding mother needs an additional 300-500 calories every day to successfully breastfeed her baby. The 300 calories needed by the baby comes from the fat deposited during pregnancy. This means that a breastfeeding mother does not need to overeat, but simply keep her nutritional intake balanced, and as long as she indulges her hunger. The breastfeeding process itself helps the mother lose weight and become slim again. But dieting or starvation will reduce the mother's milk production.

Breast milk is the perfect food for babies as it is guaranteed clean and has antibodies that can protect against many common childhood diseases. Breast milk provides all the energy and nutrients a baby needs from the first month of life to the second year. Breast milk will always be available and affordable to help babies get adequate nutrition (Puspita M, 2021).

Infant growth and development is largely determined by the amount of breast milk obtained, including the energy and other nutrients contained in the breast milk. Breast milk without other food ingredients is basically able to meet the needs of growth until the age of about 6 months. After that, breast milk only serves as the main source of protein, vitamins and minerals for infants who get additional food, especially rice. In the development of the Nation, improving human quality must begin as early as possible, namely early childhood or infancy. One factor that plays an important role in improving human quality is breast milk. Weight gain is determined by how much protein and calcium is consumed, in the daily menu that is read through the card towards healthy (KMS). The first rapid growth rate, which among others is reflected in significant weight gain, is certainly not the same between one toddler and another, considering that there are hereditary and environmental factors that contribute to it.

As World Healthy Organization (WHO) research has stated that the most common reason for mothers to stop exclusive breastfeeding is because they feel that their milk is not sufficient for the baby's needs, about 35% of mothers stop using exclusive breastfeeding in the postpartum weeks because they feel that the milk is insufficient and the baby is not satisfied.

The Indonesian government has established a national policy related to the exclusive
breastfeeding program contained in the government regulation of the republic of Indonesia number 33 of 2012. The regulation states that breast milk is the best source of nutrition that should ideally be given to infants from birth to 6 months without adding or replacing with other foods or drinks (except drugs, vitamins and minerals). This is also in line with Health Law number 36 of 2009, which explains that during breastfeeding, the family, government, local government and community must fully support the baby's mother by providing special time and facilities (Kusumaningrum, 2021).

Low milk production is a major problem for new mothers, in addition to the problems of sunken or flat nipples, swollen breasts, reluctant babies to breastfeed due to improper technique or short-tongued babies (Dewi, 2013). Factors affecting breastfeeding failure are often attributed to the onset of several factors including socio-cultural changes, psychological factors, physical factors of the mother, increased promotion of formula milk, health worker factors, maternal diet, infant birth weight and contraceptive use.

This is bad for the baby because mothers usually look for alternatives by giving formula milk to their babies, which causes the intensity of the baby's sucking to decrease because they take turns using formula milk which makes less breast milk come out (Budiasih, 2008). Decree No. 450 of 2004 on Exclusive Breastfeeding for Infants in Indonesia (Widjaya, 2007). In World Breastfeeding Week 2010, the Indonesian Ministry of Health also launched the Breastfeeding Program; ten steps to baby love, with the slogan Baby love, and breastfeed. Therefore, breastfeeding mothers need help to make the breastfeeding process more successful, one of which is by consuming foods that can stimulate breast milk production. Breast milk production can be stimulated by consuming several drugs that increase breast milk from katuk leaf extract, and powdered or liquid milk specifically for breastfeeding mothers. Ironically, in rural areas, katuk leaves are difficult to obtain, let alone drugs that increase breast milk, while milk specifically for breastfeeding mothers is too expensive for villagers, and not all mothers like milk.

Another alternative to support the nutritional needs of mothers during the postpartum period to help increase breast milk is the consumption of soy milk. Soy milk is a white liquid derived from extra soybeans with a similar appearance and composition to cow's milk products. The use of soy milk as a favorite beverage as well as a health drink has been known for quite some time.

Soy milk is a soluble fraction extract from soybeans that becomes a beverage product with the aim of increasing protein consumption. The content of beans is able to help the process of fetal growth in pregnant women and is able to optimize breast milk production and the density of breast milk color in postpartum women (Dwi, 2014). Soy milk is a processed beverage from soy bean starch juice which has many nutritional content and benefits, its potential in stimulating oxytocin and prolactin hormones such as alkaloids, polyphenols, steroids, flavonoids and other substances effective in increasing and facilitating breast milk production (Puspitasari, 2018).

Breastfeeding mothers are given 300 ml of soy milk per day, isoflavones or phytoestrogen hormones are estrogen hormones that are naturally produced by the body and can help the mammary glands of nursing mothers to produce more breast milk (Puspitasari, 2018). When consuming soy milk, it will affect the work of the prolactin reflex and letdown reflex due to nipple stimulation when the baby sucks. After that, the release of breast milk by the hormone oxytocin occurs due to sufficient milk supply.

The World Health Organization (WHO) in 2020 stated that only 41% of all babies in the world are exclusively breastfed and WHO targets that by 2025 the exclusive breastfeeding rate will increase to at least 50% (international journal. dewi aminasty siregar 2022). Nationally, the coverage of exclusive breastfeeding in 2021 is 40% and for the Lampung province in 2021 it reached 65.0% and for the North Lampung region 61.5%. (Health profile).

Based on an initial survey of research conducted by researchers in February 2023 in the work area of the Ulak Rengas Health Center, Abung Tinggi District, the number of postpartum mothers in 2022 was 327 people with exclusive breastfeeding coverage in the work area of the UPTD Ulak Rengas Health Center, namely 139 babies who were given exclusive breastfeeding only (45%) with various factors such as mastitis 10% nipples not protruding 35% and lack of milk production 55%. While postpartum visits include (100%). Infants and toddlers who did not gain weight were 5%, namely about 17 infants and toddlers who did not gain weight.

Based on the above problems, the researcher is interested in conducting research because the coverage of exclusive breastfeeding is still 45% with various factors such as mastitis, 10% of nipples not protruding 35 and lack of breast milk production 55%. In 2022, so the researcher is interested in conducting a study entitled "The Effect of Giving Soy Milk to Postpartum Mothers on Increasing Baby Weight in
the Working Area of UPTD Puskesmas Ulak Rengas”.

RESEARCH METHODS
The research method is quasi experiment. This research design uses a pre-experimental design with a one Group Pretest and Postest Design approach, the intervention group is given soy milk for 14 days, with a population of all postpartum women in the UPTD Puskesmas Ulak Rengas area, namely 38 people with purposive sampling technique based on inclusion, namely 15 respondents. Data were analyzed using univariate analysis, bivariate, with Shapiro Wilk normality test and presented in tabular form.

RESEARCH RESULTS
Respondent Characteristics
Based on table 1, it can be seen that the 15 respondents who were given soy milk were mostly respondents with the age of 26-32 years (73.3%), Parity in postpartum women, namely Multigravida (66.7%) and the sex of the baby is female (66.7%), IRT work (93.3%), SMA-SMP education (80%) and the highest pregnancy distance is 0-3 years (73.3%).

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>Persen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-25 years old</td>
<td>4</td>
<td>26.7</td>
</tr>
<tr>
<td>26-34 years old</td>
<td>11</td>
<td>73.3</td>
</tr>
<tr>
<td>Parity</td>
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<td>100.0</td>
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<tr>
<td>Multigravida</td>
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<td>66.7</td>
</tr>
<tr>
<td>Primigravida</td>
<td>5</td>
<td>33.3</td>
</tr>
<tr>
<td>Baby’s Gender</td>
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<td>100.0</td>
</tr>
<tr>
<td>Male</td>
<td>5</td>
<td>33.3</td>
</tr>
<tr>
<td>Female</td>
<td>10</td>
<td>66.7</td>
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<tr>
<td>Work</td>
<td>15</td>
<td>100.0</td>
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<tr>
<td>IRT</td>
<td>14</td>
<td>93.3</td>
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<td>Honorer</td>
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<td>6.7</td>
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<tr>
<td>Education</td>
<td></td>
<td></td>
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<tr>
<td>MIDDLE AND HIGH SCHOOL</td>
<td>12</td>
<td>80.0</td>
</tr>
<tr>
<td>D1-S1</td>
<td>3</td>
<td>20.0</td>
</tr>
<tr>
<td>CHILD Age Range</td>
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<td>100.0</td>
</tr>
<tr>
<td>0-3 years</td>
<td>11</td>
<td>73.3</td>
</tr>
<tr>
<td>4-6 years</td>
<td>4</td>
<td>26.7</td>
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</tbody>
</table>

Univariate Analysis
Based on table 2, shows the results before giving soy milk to postpartum mothers the average maximum baby weight is 3400.00 and a standard deviation of 223. While after giving soy milk the average baby weight is 3633 with a maximum baby weight of 4000 and a standard deviation of 242.

<table>
<thead>
<tr>
<th>Baby Weight</th>
<th>N</th>
<th>Mean</th>
<th>Min</th>
<th>Max</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before</td>
<td>15</td>
<td>3077</td>
<td>2500</td>
<td>3400</td>
<td>224</td>
</tr>
<tr>
<td>After</td>
<td>15</td>
<td>3633</td>
<td>3150</td>
<td>4000</td>
<td>242</td>
</tr>
</tbody>
</table>

Normality Test
Respondent Characteristics
Based on table 3, the data normality test using Shapiro-wilk for variables both after and before the intervention obtained a significant value > 0.05, which means that the data is normal.

<table>
<thead>
<tr>
<th>Baby Weight Gain</th>
<th>Shapiro-Wilk</th>
<th>Description</th>
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<tbody>
<tr>
<td>Before</td>
<td>0.093</td>
<td>Normal</td>
</tr>
<tr>
<td>After</td>
<td>0.566</td>
<td>Normal</td>
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</table>
Bivariate Test

Table 4
Baby Weight Gain

<table>
<thead>
<tr>
<th>Baby Weight Gain</th>
<th>N</th>
<th>Mean</th>
<th>Std.Error Mean</th>
<th>t-test</th>
<th>95% CI of Difference</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before soy milk administration</td>
<td>15</td>
<td>3077</td>
<td>26.66</td>
<td>21</td>
<td>613.86</td>
<td>499.47</td>
</tr>
<tr>
<td>After soy milk administration</td>
<td>15</td>
<td>3633</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

It is known that the t-count value for the results of giving soy milk to postpartum mothers on increasing baby weight at UPTD Puskesmas Ulak Rengas is 21 with a probability (sig.) 0.000, because the probability (sig.) 0.000 > 0.005 then Ho is rejected and Ha is accepted. This means that there is a significant effect of giving soy milk to postpartum mothers on increasing baby weight at the UPTD Ulak Rengas Health Center.

DISCUSSION

Univariate Analysis

The effect of giving soy milk to postpartum mothers on increasing the baby's weight in the work area of the UPTD Ulak Rengas Puskesmas based on the results of the study showed that the frequency distribution of characteristics based on age showed that 15 respondents who were given soy milk were mostly respondents aged 26-32 years (73.3%) and 18-25 years (26.7%) in line with the research of Wahyuni Sulia Nengsh (2020) aged 20-35 years (77.3%) and <20 (4.5%). Parity in postpartum women is Multigravida (66.7%) and the sex of the baby is female (66.7%), IRT work (93.3%), SMA-SMP education (80%) and the highest pregnancy distance is 0-3 (73.3%). In line with elikapuspitasari's research, 2018 the effect of giving soy milk on increasing breast milk production in postpartum women at RB bina sehat bantul. The gravida variation or the number of pregnancies that the mother has experienced mostly states the second pregnancy, namely as many as 19 people (47.5%).

It can be seen from the results of the univariate analysis that the lowest body weight in the postpartum period is 2500 grams and the average value of body weight is 3250 grams. Whereas when done after the highest weight was 4000 and the lowest baby was 3150 with an average value of baby weight of 3633. That there is an increase in baby weight. This research is in line with research (Dewi Aminasty Siregar1, 2022) entitled The Effect of Soy Milk Giving on Increasing Breast Milk Production in Postpartum Mothers in Salambue Village Southeast Padangsidimpuan District The results of the initial test in the experimental group obtained the highest body weight of 4700 grams and the lowest weight of 3900 grams. From the calculation of the SPSS 24 program, it is known that the average score (mean) is 4275.00 grams and the standard deviation is 434.93. After the experimental group was given treatment, a final test was conducted to determine the weight gain of the baby after the mother was given soy milk. The final test results in the experimental group obtained the highest body weight of 5800 grams and the lowest body weight of 5000 grams. From the calculation of the SPSS 24 program, it is known that the average score (mean) is 5425.00 grams and the standard deviation is 386.221. Before and after weight grouping of the experimental group.

According to researchers, the increase in baby weight and the increase in baby weight are influenced by the intake of nutrients consumed by mothers during puerperium such as protein intake, calories, fluids, minerals, iron (Fe) vitamin A, folic acid and zinc. Protein intake from soy milk can affect breast milk production because the isoflavone content contained in soy milk can increase the body's metabolism so that it can produce more breast milk.

The nutrients needed by breastfeeding mothers to ensure the formation of quality milk in sufficient quantities to meet the needs of their babies are calories. Calorie needs during breastfeeding is proportional to the amount of milk produced and higher during breastfeeding than during pregnancy. Protein is needed for growth and replacement of damaged or dead body cells that form the baby's body, brain development, and milk production from animal protein (eggs, meat, fish, shrimp, shellfish, milk, and cheese). Vegetable protein (tofu, tempeh, beans, and processed soy milk). Consume fluids in the form of water, milk and juice, minerals obtained from vegetables as lime, phosphorus, iodine and calcium, Iron (Fe) obtained from iron pills (Fe) at least taken for 40 days postpartum, vitamin A is useful for eye health, bone growth, vitamin D is important for dental health and bone growth, vitamin C babies do not get vitamin C other than breast milk, therefore postpartum mothers need to eat fresh foods folic acid, zinc iodine and fat are needed for postpartum mothers which are important
components for breast milk (Andina vita susanto, 2021).

Isoflavones with higher levels in infants were found in mothers who regularly consumed soy. Isoflavones in soy are believed to increase breast milk production and reduce the risk of breast cancer, increase the division of breast cells, suppress the growth of tumor cells and other mechanisms (Selin et al., 2010).

**Bivariate Analysis**

Based on the results of the bivariate analysis of the data that the authors did by comparing the values before and after with the average value before 3077 and the average value after 3633. from the average value it is known that the pretest value is 3077 < 3633 and it is known that the t-count value for the results of giving soy milk to postpartum mothers on increasing baby weight at UPTD Puskesmas Ulak Rengas is 21 with probability (sig.) 0.000. then it can be concluded that giving soy milk to postpartum mothers has a significant effect on increasing baby weight in UPTD Puskesmas Ulak Rengas. Because the probability (sig.) 0.000 > 0.005. it can be concluded that the provision of soy milk to postpartum mothers has a significant effect on increasing baby weight at UPTD Puskesmas Ulak Rengas in 2023.

This is in line with research (dewi aminasty siregar, 2022) that soy milk has isoflavone content contained in soy milk is an amino acid that has vitamins and nutrients in soybeans in the form of flavonoids. Flavonoids are pigments, such as green leaf substances that usually smell. Green leaf substances have many benefits for the health of the body. The benefits of isoflavones contained in soy milk are to increase metabolism in the body, are nutrients needed by the body, prevent constipation, improve the immune system, strengthen bones and teeth, control blood pressure, control cholesterol levels, prevent the risk of obesity and relieve symptoms of ulcer disease. Isoflavones or phytoestrogen hormones are estrogen hormones that are naturally produced by the body and can help the mammary glands of nursing mothers produce more milk. According to Safitri, higher isoflavone levels in infants are found in mothers who regularly consume soybeans, isoflavones in soybeans are believed to increase breast milk production and reduce the risk of breast cancer, increase breast cell division, suppress tumor cell growth, and other mechanisms. Mothers who consume soy-based foods in the form of soy milk and other soy preparations are believed to increase isoflavone levels in breast tissue. Soybeans if consumed regularly can have a good effect on health, namely preventing breast cancer. (Glycine max L. Merill), can increase breast milk, as WHO research has said that the most common reason for mothers to stop exclusive breastfeeding is because they feel their breast milk is not sufficient for the baby's needs, about 35% of mothers stop using breast milk exclusively in a few weeks postpartum because they feel the milk is lacking and the baby is not satisfied.

According to the researcher, there are results from research related to increasing baby weight and the effect of giving soy milk to postpartum mothers who breastfeed their babies exclusively influenced by various factors of maternal and infant characteristics, namely factors of maternal age / age, education, occupation, parity, child age spacing and baby gender. And it can be seen that the baby's weight gain in each baby is different - different from the results of research that has been carried out in May and June in the UPTD Puskesmas Ulak Rengas area, this is due to mothers with older age and more than one delivery there is 1 person who has a weight gain of only 350 grams. other than that all pregnant women meet the minimum baby weight gain standards.

A mother's age affects her milk production. Younger mothers produce more breast milk than older mothers. (Proveravati, 2017), said that in mothers who give birth more than once, breast milk production is much higher than mothers who give birth for the first time. The number of births the mother has experienced provides experience in providing breast milk to the baby. The more parity the mother has, the more experienced she will be in providing breast milk and knowing how to increase breast milk production (Hastuti, 2018).

There is a link between gender and nutritional status, where gender is an internal factor that determines the need for nutrients so that it will ultimately be related to the nutritional state, but it is not mentioned whether it affects breastfeeding patterns. It was revealed that local cultural influences can affect breastfeeding, where male infants are considered more valuable than female infants so exclusive breastfeeding is higher in male infants compared to female infants. There is an assumption in the community that male babies will suck more strongly than female babies so that male babies need more breast milk than female babies. With this assumption, it is possible that mothers who have male babies will have the perception that their breast milk is not sufficient for their baby's needs, or vice versa, with strong and frequent suction of male babies, it will affect the let down reflex so that milk
production increases and mothers have high confidence to breastfeed their babies.

Ignorance or knowledge factor, the benefits of breastfeeding need to be understood by a mother or parent but mothers who do not know this is due to the lack of concern from health workers in providing knowledge about the benefits of breastfeeding.

Work/career factors, nowadays more and more women are developing themselves in the economic field and society seems to realize that women's needs are not only physiological and reproductive needs (giving birth) but also the need to develop intellectually and socially.

CONCLUSION 
It is known that the results of the mean value of baby weight before postpartum mothers consume soy milk is 3077.

It is known that the results of the mean value of baby weight after mothers consume soy milk in postpartum women is 3633.

There is an effect of giving soy milk to postpartum mothers on increasing baby weight in the UPTD Puskesmas Ulak Rengas working area in 2023.

SUGGESTION
For postpartum mothers, it is expected to be able to utilize soy milk consumption as a non-facological alternative with a dose of 300 ml of soy milk per day consumed for at least 14 days to help increase baby weight.

For the Puskesmas, it is hoped that this research can be used as a guide to provide counseling in pregnant women's classes, toddler classes and posyandu about giving soy milk to postpartum mothers to increase baby weight.

For Health Workers It is necessary to conduct socialization in the community about the effect of soy milk in postpartum mothers on increasing baby weight. Health workers need to supervise the accuracy of the dose, the accuracy of the time of use, the accuracy of the method of use and the correct selection of ingredients.

For further researchers, the results of this study are expected to be used as reference material and empirical data in conducting further research, and it is also hoped that further researchers will be able to study / make a control group in further research.

REFERENCES
Astuti (2021).The Effect of Giving Soy Milk to Postpartum Mothers on Increasing Infant Weight in the Working Area of the Telaga Dewa Health Center, Bengkulu City.