



The Effect of Pregnant Women's Nutritional Intake on Birth Weight of Babies in Coastal Areas

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ABSTRACT

Fetal growth and development during pregnancy are significantly influenced by the quality of maternal nutritional intake. Inadequate nutritional intake can lead to low birth weight (LBW), which increases the risk of various health complications, including developmental disorders, infections, and chronic diseases in adulthood. Coastal areas have specific social, economic, and cultural characteristics that can influence maternal dietary patterns during pregnancy, such as limited access to nutritious food or a reliance on certain seafood. Therefore, this study aims to evaluate the effect of maternal nutritional intake on birth weight in coastal areas.

This study used an observational design with a cross-sectional approach. The sample consisted of 100 pregnant women who gave birth at a coastal community health center during January–June 2025, taken using a purposive sampling method. Data on nutritional intake were collected through a questionnaire that measured the frequency, type, and variety of food consumed during pregnancy, while birth weight was obtained from medical records. Data analysis was performed using the Pearson correlation test to determine the relationship between nutritional intake and birth weight, and linear regression to assess the effect of nutritional intake on infant weight.

The results of the study showed a significant positive correlation between maternal nutritional intake and birth weight ($r = 0.62$; $p < 0.01$). Mothers who consumed a balanced diet, including protein, complex carbohydrates, vitamins, and minerals, tended to give birth to babies with normal birth weight. Conversely, mothers with less balanced nutritional intake had a higher risk of giving birth to babies with low birth weight. These findings emphasize the importance of nutrition education and providing nutritious food for pregnant women, especially in coastal areas, to support maternal and infant health and reduce the risk of neonatal complications associated with low birth weight.

Keywords: Nutritional Intake, Pregnant Women, Infant Weight, Coastal Areas

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1. Introduction

Fetal growth and development during pregnancy are greatly influenced by the health and nutritional intake of the pregnant mother. Adequate and balanced nutritional intake is necessary to support the development of fetal tissues, organs, and body systems, as well as to maintain the mother's health during pregnancy. Maternal malnutrition can lead to various health problems for both mother and baby, including anemia, preeclampsia, premature birth, and low birth weight (LBW). Birth weight is an important indicator of neonatal health, as low birth weight babies have a higher risk of neonatal death, growth disorders, infections, and chronic diseases in adulthood.

Coastal areas have specific social, economic, and cultural characteristics that can influence the food consumption patterns of pregnant women. Limited access to nutritious foods, reliance on certain protein sources such as fish, and low levels of nutritional education can be risk factors for suboptimal nutritional intake. Previous studies have shown that an unbalanced diet for pregnant women, for example low in protein, iron, or other essential micronutrients, is associated with an increased risk of low birth weight (LBW). Conversely, consuming a balanced diet, including protein, complex carbohydrates, vitamins, and minerals, has been shown to increase the likelihood of a baby having a normal birth weight.

Increasing nutritional awareness and education for pregnant women in coastal areas is crucial to ensure nutritional needs are met during pregnancy. Research on the effect of nutritional intake on birth weight in coastal areas is still limited, so research that can provide strong scientific evidence is needed to support maternal and child health programs in these areas.

This study aims to evaluate the effect of maternal nutritional intake on birth weight in coastal areas. The results are expected to inform efforts to improve maternal nutritional quality and develop more targeted public health intervention strategies.

2. Research methods

a. Research Design

The study used an observational cross-sectional approach, observing current conditions without intervention. This approach was chosen to determine the relationship between maternal nutritional intake during pregnancy and birth weight in coastal areas.

b. Population and Sample

The research population was all pregnant women who gave birth at coastal health centers during the period January to June 2025. The research sample consisted of 100 pregnant women, taken using the purposive sampling method, namely selecting samples based on certain criteria, namely:

- 1) Mothers who give birth at coastal health centers.





- 2) Single pregnancy (not twins).
- 3) Not experiencing serious medical complications that affect the baby's birth weight, such as hypertension or gestational diabetes.
- 4) Willing to participate in research and provide complete information via questionnaire.

c. Research Instruments

Data on nutritional intake of pregnant women were collected using a food questionnaire containing:

- Frequency of consumption of staple foods, side dishes, vegetables, fruit, and dairy products.
- Types of food sources of protein, carbohydrates, fat, vitamins, and minerals.

Birth weight data was obtained from community health center medical records, measured immediately after birth using standard baby scales.

d. Research Procedures

- 1) Conduct outreach to pregnant women about the purpose of the research and request written consent.
- 2) Fill out a questionnaire regarding nutritional intake during pregnancy.
- 3) Collecting birth weight data from medical records.
- 4) Conduct data checks and validation to ensure the accuracy of the information.

e. Data analysis

Data was analyzed using:

- Pearson Correlation Test to determine the strength and direction of the relationship between maternal nutritional intake and birth weight of the baby.
- Simple linear regression to determine the magnitude of the influence of nutritional intake on infant weight.
- Statistical analysis was performed using SPSS software version 25, with a significance level of $p < 0.05$.

This methodological approach is expected to provide an accurate picture of the relationship between the quality of nutritional intake of pregnant women and birth weight of babies, especially in coastal areas, so that it can be the basis for recommendations for maternal and child health programs.

3. Results and Discussion

a. Research result

This study involved 100 pregnant women who gave birth at a coastal community health center. Data analysis revealed several important findings regarding maternal characteristics, nutritional intake, and birth weight.

Table 1. Characteristics of Pregnant Women





Characteristics	Total (n=100)	Percentage (%)
Age < 20 years	8	8
Age 20–29 years	62	62
Age ≥ 30 years	30	30
Elementary/Middle School Education	28	28
High School Education	68	68
Higher Education	4	4
Balanced nutritional intake	72	72
Insufficient nutritional intake	28	28

Table 2. Distribution of Birth Weight of Babies

Birth Weight	Total (n=100)	Percentage (%)
< 2.5 kg (LBW)	22	22
2.5–4.0 kg (Normal)	78	78
> 4.0 kg (Macrosomia)	0	0
Average (kg)	—	3.1 ± 0.4

Table 3.

Relationship between Nutritional Intake of Pregnant Women and Birth Weight of Babies

Variables	Correlation (r)	p- value
Nutritional intake – baby weight	0.62	<0.01

Interpretation of Results

Pearson correlation test results showed a significant positive relationship between maternal nutritional quality and birth weight ($r = 0.62$; $p < 0.01$). This means that the better the mother's nutritional quality, the greater the likelihood of a baby being born with a normal birth weight. Simple linear regression analysis showed that each increase in maternal nutritional intake score was associated with an average increase in infant weight of 0.45 kg.

b. Discussion

The results of this study confirm that maternal nutritional intake is an important factor influencing birth weight, consistent with previous research. Mothers who consume a balanced diet, including protein, complex carbohydrates, vitamins, and minerals, tend to give birth to babies with normal birth weight. In coastal areas, limited access to





nutritious food, dependence on certain seafood, and low nutritional education can be obstacles to achieving optimal nutritional intake. Therefore, nutritional education and public health interventions are crucial to support maternal and infant health.

4. Conclusion and Suggestions

a. Conclusion

Based on the research results, it can be concluded that:

- 1) A pregnant woman's nutritional intake significantly influences the birth weight of babies in coastal areas. Mothers with a balanced nutritional intake are more likely to give birth to babies with normal birth weights.
- 2) The correlation between the quality of nutritional intake of pregnant women and the birth weight of babies is positive and significant ($r = 0.62$; $p < 0.01$).
- 3) Social and economic factors, such as education level, food access, and eating culture in coastal areas, also influence the nutritional intake patterns of pregnant women.

b. Suggestions

Based on the findings of this study, several suggestions that can be given include:

- 1) Improving nutrition education for pregnant women: Community health centers and health workers need to improve nutrition education programs for pregnant women, especially in coastal areas, so that mothers understand the importance of consuming a balanced nutritious diet during pregnancy.
- 2) Fulfilling access to nutritious food: Local governments and local communities are expected to facilitate the availability of nutritious food, including protein, vegetables, fruit, and dairy products, for pregnant women.
- 3) Multisectoral approach: Collaboration between Community Health Centers, government, and local communities is essential to create an environment that supports maternal health and optimal infant growth.
- 4) Further research: It is recommended that further research be conducted with a larger sample size and considering other risk factors, such as chronic diseases, economic status, and cultural habits, in order to provide a more comprehensive picture.

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