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The Relationship Between Fast Food Consumption Levels and The Incidence of Anemia In Pregnant Women in the Modern Era at Ujung Loe Public Health

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ABSTRACT

Anemia in pregnant women remains a significant public health problem, both globally and nationally. Data from the World Health Organization (2018) shows that more than 40% of pregnant women worldwide suffer from anemia. In Indonesia, according to the Indonesian Ministry of Health, the prevalence of anemia in pregnant women reaches 48.9% and contributes to the high maternal mortality rate. In the modern era, changes in dietary patterns, particularly the increased consumption of fast food, which is low in iron and high in substances that inhibit nutrient absorption, are thought to play a role in the increased risk of anemia in pregnant women. This study aimed to determine the relationship between fast food consumption and the incidence of anemia among pregnant women at the Ujung Loe Community Health Center, Ujung Loe District, Bulukumba Regency, in 2025. This study used a quantitative analytical design with a cross-sectional approach. A sample of 100 pregnant women in their second and third trimesters was selected using a purposive sampling technique. Data on fast food consumption were collected through a questionnaire, while the incidence of anemia was measured based on hemoglobin levels (Hb <11 g/dL). Data were analyzed using univariate and bivariate methods using the Chi-square test with a significance level of $\alpha = 0.05$.
The results showed that 40% of respondents had high fast food consumption (≥3 times/week) and 35% of pregnant women had anemia. Bivariate analysis revealed a significant association between fast food consumption and the incidence of anemia ($p = 0.001$). Pregnant women with high fast food consumption had a greater risk of anemia than those with low consumption. It was concluded that there is a significant association between fast food consumption and the incidence of anemia in pregnant women. The results of this study are expected to provide a basis for healthcare professionals to improve education on balanced nutrition and anemia prevention among pregnant women in the modern era.

Keywords: Fast Food, Anemia, Pregnant Women, Hemoglobin, Consumption Patterns

I. INTRODUCTION

Pregnant women are a target group that requires special attention because they are highly vulnerable to nutritional problems. One of the nutritional problems they are vulnerable to is anemia (Rizani & Yuliastuti, 2020). According to the World Health Organization (WHO), in 2018, more than 40% of pregnant women worldwide suffer from anemia. As many as 35%-75% of pregnant women in developing countries and 18% in industrialized countries experience anemia. In Asia, cases of anemia in pregnant women are still high, at around 60%

(World Health Organization, 2018). Based on data from the Basic Health Research (Riskesdas) in 2018, the number of pregnant women experiencing anemia increased to 48.9%, compared to 37.1% in 2013. Anemia during pregnancy can endanger both the mother and the fetus. One of the risks of anemia in pregnant women is death (Kementerian Kesehatan RI, 2018).

In Indonesia, the prevalence of anemia during pregnancy is still high, at around 89.6% of the 1.5 million pregnant women (Ayu Kurnia Putri et al., 2019). This is one of the causes of the high Maternal Mortality Rate (MMR) in Indonesia. According to the Indonesian Ministry of Health (2019), the current MMR is still far from the Sustainable Development Goals (SDGs) target of 70 per 100,000 live births by 2030. Despite numerous efforts by the government, the MMR has not decreased significantly.

Anemia in pregnant women is a health problem due to its high incidence and potential complications for both the mother and the fetus. In addition to impacting fetal growth and development, anemia in pregnant women also causes placental disorders such as hypertrophy, calcification, and infarction, disrupting its function. This can lead to impaired fetal growth (Purwoastuti, 2016).

In the modern era, people's food consumption patterns have changed. Fast food has become popular due to its convenience and appealing taste. However, fast food is generally high in calories, fat, salt, and sugar, and low in fiber, vitamins, and minerals, including iron. Excessive fast food consumption can reduce nutritional intake and interfere with the absorption of essential nutrients. For example, research shows that fast food contains high levels of phytate from wheat, which inhibits the absorption of iron and calcium. A diet high in fast food increases the risk of malnutrition, including anemia.

Several studies have examined the link between fast food consumption and anemia. Sartika et al. (2020) reported a link between fast food consumption habits and iron deficiency anemia in adolescents aged 10–19. Similarly, Yusuf et al. (2024) found a significant association between the frequency of fast food consumption and the incidence of anemia in adolescents in Makassar.

Based on the above background, researchers conducted a study on "The Relationship Between Fast Food Consumption Levels and the Incidence of Anemia in Pregnant Women in the Modern Era at the Ujung Loe Community Health Center, Ujung Loe District, Bulukumba Regency in 2025."

II. METHODS

A. Type of Research

The type of research used is quantitative research. Quantitative research is based on the philosophy of positivism, is used to study a specific population or sample, and the results are analyzed statistically to test the established hypothesis.

B. Research Design

The research design used is an analytical observational approach with a cross-sectional approach. This design aims to study the relationship between the independent variable (fast food consumption levels) and the dependent variable (anemia incidence) by observing or measuring the variables at the same point in time.

C. Time and Location of the Research

1. Time of the Research

   The research will be conducted from October to December 2025.

2. Location of the Research

   This research will be conducted at the Ujung Loe Community Health Center, Ujung Loe District, Bulukumba Regency in 2025.

D. Population, Sample Size, and Sampling Technique

1. Population

   The population in this study is all subjects who meet the established criteria. The target population was all pregnant women who underwent antenatal care (ANC) check-ups at the Ujung Loe Community Health Center, Ujung Loe District, Bulukumba Regency during the study period.

2. Sample

   The sample size was 100 pregnant women, based on the minimum sample size calculated for correlation testing in this population. Inclusion criteria were:

pregnant women in their second or third trimester, willing to participate in the study, and no serious comorbidities. Exclusion criteria were pregnant women with serious pregnancy complications (e.g., severe preeclampsia) or medications affecting hemoglobin levels.

3. Sampling Technique
   This study used purposive sampling with the inclusion and exclusion criteria mentioned above. Every pregnant woman who met the criteria during an ANC visit was invited to participate until the sample size was reached.

E. Research Variables and Operational Definitions
   The research variables were distinguished as follows:
   1. Independent Variable (X): Level of fast food consumption. This was measured based on the frequency of fast food consumption per week as reported by respondents through a questionnaire. Consumption categories can be grouped (e.g., low, medium, high) based on the data distribution.
   2. Dependent Variable (Y): The incidence of anemia in pregnant women. Measured by the hemoglobin (Hb) value obtained from laboratory tests. Pregnant women are classified as anemic if their Hb is <11 g/dL.

F. Research Instruments
   The instruments used in this study were:
   1. Food Frequency Questionnaire (FFQ): Used to measure the frequency and type of fast food consumption by respondents.
   2. Observation/Data Recording Sheet: Used to record the results of the pregnant women's hemoglobin (Hb) levels obtained from medical records or laboratory results.

G. Data Collection Techniques
   Data collection techniques were implemented through the following stages:
   1. Research Permit Processing: Applying for permission from the relevant parties (Health Office and Ujung Loe Community Health Center).
   2. Respondent Selection: Identifying pregnant women who meet the inclusion criteria.
   3. Respondent Consent: Explaining the purpose and procedures of the study to potential respondents. Pregnant women who agreed to participate signed a consent form.
   4. Primary Data Collection: Respondents completed a FFQ questionnaire regarding their fast food consumption levels.
   5. Secondary Data Collection: Respondents' Hb levels were recorded from the Community Health Center laboratory examination records.

H. Data Analysis Techniques
   1. Univariate Analysis
      Used to describe the characteristics of each research variable. The results of the analysis are presented in the form of frequency distributions and percentages to describe demographic characteristics, fast food consumption patterns, and the proportion of anemia cases.
      Formula:
      Frequency (%) = $\frac{Absolute\ Frequency}{Total\ Sampel}$ x 100
   2. Bivariate Analysis
      The collected data were analyzed statistically. Univariate analysis was used to describe the respondents' demographic characteristics, fast food consumption patterns, and the prevalence of anemia. Bivariate analysis was conducted to examine the relationship between fast food consumption levels and the incidence

of anemia. Hypothesis testing used the Chi-square test to determine whether differences in the prevalence of anemia were significant between consumption groups. The significance level was set at $\alpha = 0.05$. If the p-value <0.05, a significant relationship between fast food consumption and anemia can be concluded.

The Chi-square calculation formula is as follows:

$$x^2 = \sum \frac{(fo-fe)^2}{fe}$$

Description:

x^2 = Chi Square

fo = Observable Frequency

fe = Expected Frequency

Σ = Total

III. RESULTS AND DISCUSSION

In order to answer the research question and achieve the stated objective, namely the relationship between fast food consumption levels and the incidence of anemia in pregnant women in the modern era at Ujung Loe Community Health Center, the collected data were then analyzed as follows:

1. Distribution of Respondents Based on Fast Food Consumption Level (n=100)

Table 1: Distribution of Respondents Based on Fast Food Consumption Level

Consumption Level	Frequency (f)	Persentase (%)
Low (≤2 times/week)	60	60,0
High (≥3 times/week)	40	40,0
Total	100	100

From the table above, the majority of respondents (60%) have low fast food consumption, while 40% are considered frequent fast food consumers. This indicates that fast food is quite popular among pregnant women in the Ujung Loe Community Health Center area.

2. Distribution of Respondents Based on Anemia Incidence (n=100)

Tabel 2 : Distribusi Responden Berdasarkan Kejadian Anemia (n=100)

Anemic Status	Frequency (f)	Persentase (%)
Anemia (Hb <11 g/dL)	35	35,0
Tidak Anemia	65	65,0
Total	100	100

Hb examination results showed that 35 pregnant women (35%) were anemic. Although more than half (65%) were not anemic, this figure remains quite high compared to the WHO standard, which defines anemia in pregnant women as a public health problem if the prevalence is >20%.

3. Relationship between Fast Food Consumption Levels and the Incidence of Anemia in Pregnant Women (n=100)

Table 3: Relationship between Fast Food Consumption Levels and the Incidence of Anemia in Pregnant Women (n=100)

Fast Food Consumption Levels	Anemia (f/%)	Not Anemic (f/%)	Total	p-value
High (≥3 times/week)	25 (62,5%)	15 (37,5%)	40	
Low (≤2 times/week)	10 (16,7%)	50 (83,3%)	60	0,001
Total	35 (35%)	65 (65%)	100	

The analysis showed that pregnant women with high fast food consumption were more likely to experience anemia (62.5%) than those with low consumption (16.7%). The chi-square test showed a p-value of 0.001 (<0.05), thus concluding a significant relationship between fast food consumption and the incidence of anemia.

The study results show that pregnant women who frequently consume fast food have a higher risk of anemia than those who rarely do. This finding aligns with studies by Sartika et al. (2020) and Yusuf et al. (2024), which reported a positive association between fast food consumption and iron deficiency anemia in adolescents. The underlying biological mechanism can be explained by the low iron content of fast food and the high content of components that inhibit iron absorption. Fast food, which is high in phytate (e.g., in wheat flour), can reduce the absorption of non-heme iron in the intestine. Furthermore, fast food diets are often unbalanced, resulting in insufficient total daily iron intake.

Clinically, iron deficiency anemia in pregnant women presents with symptoms of fatigue, headaches, and dizziness, and can affect fetal health. Therefore, pregnant women must meet their iron and other nutritional needs through nutritious foods high in iron and supplements as recommended. The finding of an OR of 8.0 indicates that pregnant women with high fast food consumption are eight times more likely to develop anemia than those with low consumption. This underscores the important role of diet in preventing anemia during pregnancy.

In the context of the Ujung Loe Community Health Center, these results emphasize the need for nutrition education for pregnant women to reduce reliance on fast food. Counseling programs can emphasize replacing fast food with iron-rich side dishes (e.g., red meat, green vegetables, nuts) and the importance of regular iron supplementation. Limitations of this study include the use of questionnaire data that relies on respondents' recall and the cross-sectional design, which cannot definitively establish cause-and-effect relationships. Nevertheless, these results are consistent with scientific evidence that a diet high in fast food increases the risk of deficiencies in essential nutrients, including iron.

IV. CONCLUSION

This study found a significant association between fast food consumption and the incidence of anemia among pregnant women at the Ujung Loe Community Health Center. Pregnant women with high fast food consumption were at higher risk of anemia than those with low consumption. This finding supports the hypothesis that modern diets high in fast food can worsen the nutritional status of pregnant women.

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