



## Analysis of Risk Factors for Anemia in Pregnant Women in the Sebabi Health Center Working Area

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### Abstract

The prevalence rate of anemia among pregnant women in East Kotawaringin Regency in 2021 was 14%, in 2022 it decreased to 13.7% and in 2023 it increased to 16%. To determine the relationship between the incidence of anemia in pregnant women at Sebabi Health Center. The study was analytical observational using a cross sectional approach with a population of 300 people, 83 people were obtained as samples using proportionate random sampling technique. The research instrument was a questionnaire. The dependent variable: anemia. Independent variables: age, parity, knowledge, attitude, culture, education level and income. Bivariate analysis using chi square and multivariate using multiple logistic regression. The results showed there was a relationship between parity ( $p=0.000$ ), knowledge ( $p=0.000$ ), culture ( $p=0.004$ ), and education level ( $p=0.000$ ) while there was no relationship between age ( $p=0.174$ ) attitude ( $p=0.147$ ), and income ( $p=0.176$ ) with the incidence of anemia in pregnant women. Parity was most associated with the incidence of anemia among pregnant women ( $\exp(B)=10.061$ ). There is an association between culture, parity, knowledge, education level and no association between age, parity, and income with anemia incidence. The parity variable is the most associated with the incidence of anemia among pregnant women.

## Introduction

Anemia according to the World Health Organization (WHO) is a condition where the number of red blood cells is insufficient to meet the physiological needs of the body. Anemia is divided into 3 categories, namely normal ( $\geq 11$  gr/dl), mild anemia (8-9gr/dl), and severe anemia ( $< 8$  gr/dl). Anemia in pregnancy is a hemoglobin (Hb) level below 11gr/dl in the first and third trimester or below 10.5 gr/dl in the second trimester. Anemia is one of the five problems targeted by WHO in 2025. (Apriyanti, 2019). Meanwhile, based on WHO data in 2018 more than 40% of pregnant women in the world experience anemia, of which 35%-37% are in developing countries (WHO, 2019). Based on Riskesdas data (2018), the prevalence of pregnant women who experience anemia is 48.9%, this has increased compared to 2013 which was 37.1% (Government of Indonesia, 2018; WHO, 2018).

Based on Riskesdas data (2018), the percentage of anemia among pregnant women in Central Kalimantan is 14.7%. Furthermore, based on data from the Central Kalimantan Provincial Health Office, in 2022 the incidence of anemia in pregnant women was 12.9% and in 2023 it was 8.11%. From 2022 and 2023 the incidence of anemia in pregnant women in Central Kalimantan has decreased. Despite the decrease, of the 14 districts/cities in Central Kalimantan Province, the district that has a greater prevalence of anemia than the others is East

Kotawaringin District. The prevalence rate of anemia among pregnant women in East Kotawaringin Regency in 2021 was 14%, in 2022 it decreased by 13.7% and in 2023 it increased by 16% (East Kotawaringin District Health Office, 2023; Government of Indonesia, 2018).

East Kotawaringin Regency has 21 health centers spread across 17 sub-districts. Of the 21 puskesmas, the highest prevalence rate of anemia is Puskesmas Sebabi. There was a significant upward trend in the health center from 2021 at 7%, in 2022 at 12%, and in 2023 at 14.2% (East Kotawaringin District Health Office, 2023). Based on BPS data of East Kotawaringin Regency 2023, the average education of the community in the Sebabi Health Center working area is junior high school/equivalent, the average occupation of the Sebabi Health Center working area is working as a farmer and gardening (Ministry of Health RI, 2018).

The explanation above shows that the factors of age, knowledge, attitude, culture, parity, education level, and income have been researched in various regions and resulted in a significant relationship (Götmark & Andersson, 2020). However, these factors have never been studied at the East Kotawaringin Regency Health Office, especially at the Sebabi Health Center. Therefore, researchers are interested in taking research on the relationship between risk factors and the incidence of anemia in pregnant women in the Sebabi Health Center working area (Review of aspects of age, parity, knowledge, attitudes, culture, education level, and income).

## Methods

This type of research is analytical observational with a cross sectional survey approach with a sample of 83 people with proportionate random sampling technique. This research was conducted at Sebabi Health Center, East Kotawaringin Regency, Central Kalimantan. The research was conducted for 1 month. This research has obtained Ethical Clearance. Data collection was done directly to respondents. The independent variables in this study were age, parity, knowledge, attitude, culture, education level and income. The dependent variable in this study was the incidence of anemia in pregnant women. The test used was logistic regression test at 95% confidence level ( $\alpha = 0.05$ ). The instrument used was a questionnaire.

## Results and Discussion

### Univariate Analysis Results

Table 1. Univariate Analysis of Respondent Characteristics

| <b>Incidence of Anemia</b> | <b>Frequency</b> | <b>Percentage</b> |
|----------------------------|------------------|-------------------|
| Anemia                     | 46               | 55,4              |
| No Anemia                  | 37               | 44,6              |
| Total                      | 83               | 100,0             |
| <b>Age</b>                 | <b>Frequency</b> | <b>Percentage</b> |
| At Risk                    | 23               | 27,7              |
| Not at Risk                | 60               | 72,3              |
| Total                      | 83               | 100,0             |
| <b>Parity</b>              | <b>Frequency</b> | <b>Percentage</b> |
| At Risk                    | 23               | 27,7              |
| Not at Risk                | 60               | 72,3              |
| Total                      | 83               | 100,0             |
| <b>Knowledge</b>           | <b>Frequency</b> | <b>Percentage</b> |
| Less                       | 54               | 65,1              |

|                        |                  |                   |
|------------------------|------------------|-------------------|
| Good                   | 29               | 34,9              |
| Total                  | 83               | 100,0             |
| <b>Attitude</b>        | <b>Frequency</b> | <b>Percentage</b> |
| Not good               | 33               | 39,8              |
| Good                   | 50               | 60,2              |
| Total                  | 83               | 100,0             |
| <b>Culture</b>         | <b>Frequency</b> | <b>Percentage</b> |
| Less                   | 61               | 73,5              |
| Good                   | 22               | 26,5              |
| Total                  | 83               | 100,0             |
| <b>Education Level</b> | <b>Frequency</b> | <b>Percentage</b> |
| Low                    | 53               | 63,9              |
| High                   | 30               | 36,1              |
| Total                  | 83               | 100,0             |
| <b>Revenue</b>         | <b>Frequency</b> | <b>Percentage</b> |
| Low                    | 18               | 21,7              |
| High                   | 65               | 78,3              |
| Total                  | 83               | 100,0             |

Source: Primary Data, 2024

Based on Table 1, it is known that the incidence of anemia in pregnant women in the Sebabi Health Center working area, many of them experienced anemia (55.4%).

Table 2. Bivariate and Multivariate Age

| Age         | Incidence of Anemia |      |    |      | Total |       | P-value | OR    |
|-------------|---------------------|------|----|------|-------|-------|---------|-------|
|             | Anemia              |      | No |      |       |       |         |       |
|             | N                   | %    | N  | %    | N     | %     |         |       |
| At Risk     | 16                  | 69,6 | 7  | 30,4 | 23    | 100,0 | 0,174   | 2,286 |
| Not at Risk | 30                  | 50,0 | 30 | 50,0 | 60    | 100,0 |         |       |
| Total       | 46                  | 55,4 | 37 | 44,6 | 83    | 100,0 |         |       |

Source: Primary Data 2024

Table 2 shows the results of bivariate analysis showing that the age variable with a pvalue (0.174) > 0.05 so that there is no relationship between age and the incidence of anemia in pregnant women in the Sebabi Health Center working area.

Table 3. Bivariate and Multivariate Parity

| Parity      | Incidence of Anemia |      |        |      | Total |       | P-value | OR    |
|-------------|---------------------|------|--------|------|-------|-------|---------|-------|
|             | Anemia              |      | Anemia |      |       |       |         |       |
|             | N                   | %    | N      | %    | N     | %     |         |       |
| At Risk     | 24                  | 85,7 | 4      | 14,3 | 28    | 100,0 | 0,000   | 9,000 |
| Not at Risk | 22                  | 40,0 | 33     | 60,0 | 55    | 100,0 |         |       |
| Total       | 46                  | 55.4 | 37     | 44.6 | 83    | 100.0 |         |       |

Source: Primary Data 2024

Table 3 shows the results of the bivariate analysis showing that the parity variable is associated with the incidence of anemia in pregnant women in the Sebabi Health Center working area. Pregnant women with non-risk parity have a 9,000 times greater chance of not experiencing anemia than risky mothers.

Table 4. Bivariate and Multivariate Knowledge

| Knowledge | Incidence of Anemia |      |        |      | Total |       | P-value | OR    |
|-----------|---------------------|------|--------|------|-------|-------|---------|-------|
|           | Anemia              |      | Anemia |      |       |       |         |       |
|           | N                   | %    | N      | %    | N     | %     |         |       |
| Not good  | 39                  | 72,2 | 15     | 27,8 | 54    | 100,0 | 0,000   | 8,171 |
| Good      | 7                   | 24,1 | 22     | 75,9 | 29    | 100,0 |         |       |
| Total     | 46                  | 55,4 | 37     | 44,6 | 83    | 100,0 |         |       |

Source: Primary Data 2024

Table 4 shows that the results of bivariate analysis indicate that the knowledge variable is associated with the incidence of anemia in pregnant women in the Sebabi Health Center working area. Pregnant women with good knowledge have a 8.171 times greater chance of not experiencing anemia than mothers with poor knowledge.

Table 5. Bivariate and Multivariate Attitudes

| Attitude | Incidence of Anemia |      |           |      | Total |       | P-value | OR    |
|----------|---------------------|------|-----------|------|-------|-------|---------|-------|
|          | Anemia              |      | No Anemia |      |       |       |         |       |
|          | N                   | %    | N         | %    | N     | %     |         |       |
| Not good | 22                  | 66,7 | 11        | 33,3 | 33    | 100,0 | 0,147   | 2,167 |
| Good     | 24                  | 48,0 | 26        | 52,0 | 50    | 100,0 |         |       |
| Total    | 46                  | 55,4 | 37        | 44,6 | 83    | 100,0 |         |       |

Source: Primary Data 2024

Table 5 shows the results of bivariate analysis showing that the income variable with a pvalue (0.147) > 0.05 so that there is no relationship between attitude and the incidence of anemia in pregnant women in the Sebabi Health Center working area.

Table 6. Bivariate and Multivariate Culture

| Culture | Incidence of Anemia |      |    |      | Total |       | P-value | OR    |
|---------|---------------------|------|----|------|-------|-------|---------|-------|
|         | Anemia              |      | No |      |       |       |         |       |
|         | N                   | %    | N  | %    | N     | %     |         |       |
| Less    | 40                  | 65,6 | 21 | 34,4 | 61    | 100,0 | 0,004   | 5,079 |
| Good    | 6                   | 27,3 | 16 | 72,7 | 22    | 100,0 |         |       |
| Total   | 46                  | 55,4 | 37 | 44,6 | 83    | 100,0 |         |       |

Source: Primary Data 2024

Table 6 shows that the results of bivariate analysis indicate that cultural variables are associated with the incidence of anemia in pregnant women in the Sebabi Health Center working area. Pregnant women with poor culture have a 5.079 times greater chance of experiencing anemia than mothers with good culture.

Table 7. Bivariate and Multivariate Level of Education

| Education Level | Incidence of Anemia |      |           |      | Total |       | P-value | OR    |
|-----------------|---------------------|------|-----------|------|-------|-------|---------|-------|
|                 | Anemia              |      | No Anemia |      |       |       |         |       |
|                 | N                   | %    | N         | %    | N     | %     |         |       |
| Low             | 38                  | 71,7 | 15        | 28,3 | 53    | 100,0 | 0,000   | 6,967 |
| High            | 8                   | 26,7 | 22        | 73,3 | 30    | 100,0 |         |       |
| Total           | 46                  | 55.4 | 37        | 44.6 | 83    | 100.0 |         |       |

Source: Primary Data 2024

Table 7 shows the results of bivariate analysis that the education level variable is associated with the incidence of anemia among pregnant women in the Sebabi Health Center working area. Pregnant women with a high level of education have a 6.967 times greater chance of not experiencing anemia than mothers with a low level of education.

Table 8. Bivariate and Multivariate Income

| Revenue | Incidence of Anemia |      |           |      | Total |       | P-value | OR    |
|---------|---------------------|------|-----------|------|-------|-------|---------|-------|
|         | Anemia              |      | No Anemia |      |       |       |         |       |
|         | N                   | %    | N         | %    | N     | %     |         |       |
| Low     | 38                  | 71,7 | 15        | 28,3 | 53    | 100,0 | 0,000   | 6,967 |
| High    | 8                   | 26,7 | 22        | 73,3 | 30    | 100,0 |         |       |
| Total   | 46                  | 55.4 | 37        | 44.6 | 83    | 100.0 |         |       |

Source: Primary Data 2024

Table 8 shows the results of bivariate analysis showing that the income variable with a pvalue (0.176) > 0.05 so that there is no relationship with the incidence of anemia in pregnant women in the Sebabi Health Center working area.

### Multivariate Analysis Results

Table 9. Multivariate Analysis Results

| Variables       | B     | Wald  | Sig   | Exp(B) | 95% CI         |
|-----------------|-------|-------|-------|--------|----------------|
| Age             | 0,991 | 1,519 | 0,218 | 2,693  | 0,557 - 13,011 |
| Parity          | 2,309 | 7,667 | 0,006 | 10,061 | 1,963 - 51,560 |
| Knowledge       | 1,951 | 7,624 | 0,006 | 7,033  | 1,761 - 28,082 |
| Attitude        | 0,851 | 1,594 | 0,207 | 2,342  | 0,625 - 8,780  |
| Culture         | 1,713 | 4,033 | 0,045 | 5,547  | 1,042 - 29,528 |
| Education Level | 1,876 | 6,962 | 0,008 | 6,525  | 1,620 - 26,285 |
| Revenue         | 1,410 | 2,655 | 0,103 | 4,096  | 0,751 - 22,334 |

Source: Primary Data 2024

Multiple logistic regression analysis that has been carried out and presented in table 3.9 states that the variables of parity, knowledge, culture, education level and income have a significant relationship with the incidence of anemia in pregnant women in the Sebabi Health Center working area. When viewed from the B value indicated by the value of Epxonent Beta (EXP B), the variables of parity, knowledge, culture, education level and income have a relationship with the incidence of anemia in pregnant women in the Sebabi Health Center working area. The B value of age is 0.991 with age at risk for pregnant women experiencing anemia, parity is not at risk for pregnant women 2.309 times not experiencing anemia, lack of knowledge in pregnant women 1.951 times not experiencing anemia, lack of attitude in pregnant women 0.851 times experiencing anemia, high education level in pregnant women 1.876 times not experiencing anemia, and high income in pregnant women 1.410 times not experiencing anemia in the Sebabi Health Center working area. Based on this study, it can be seen that the most dominant variables associated with the incidence of anemia in the Sebabi Health Center working area in order from the most dominant are parity, knowledge, education level, culture, income, age, and attitude.

### Relationship between Age and the Incidence of Anemia in Pregnant Women in the Sebabi Health Center Working Area

From the regression test, it was found that the maternal outcome that was most influenced by SC time <75 minutes category II was the presence or absence of postoperative ICU care, P

value: 0.049 (Table 3.4). This is also in accordance with research conducted by Cut Meura Yeni et al in 2021 with the title Evaluation of Sectio Emergensis Response Time to Maternal and Neonatal Outcomes where it was found that what was strongly associated with response time on maternal outcomes was the need for postoperative NICU care.

Based on the results of the bivariate analysis seen from table 4.2, it shows that there is no relationship between the age factor and the incidence of anemia with a Pvalue (0.174) > 0.05. Some studies show similar results that age is not associated with the incidence of anemia, although the OR shows that pregnant women with an age of less than 20 years and or more than 35 years are at risk of increasing anemia. The results also did not show a trend that the older the age, the greater the risk of anemia. This is related to the fulfillment of pregnant women's nutrition and consumption patterns of iron supplementation.

This study is in line with research conducted by Marini et al. (2024), namely there is no relationship between age and the incidence of anemia in pregnant women in the Peukan Bada Puskesmas working area in Aceh Besar. This study is also in line with research conducted by Qomarasari & Pratiwi (2023) that there is no relationship between age and the incidence of anemia in pregnant women at the El 'Mozza Clinic, Depok City (Marini et al., 2024; Qomarasari & Pratiwi, 2023). The age classified as very young is under the age of 20 years and the age classified as too old is >35 years while the age considered safe for pregnancy is the age of 20 to 35 years because it is ready to become pregnant physically and psychologically. Mothers who become pregnant at the age of 35, have entered the early degenerative phase, so that the body's functions are not optimal and experience various health problems (Bria & Nur Rohmah, 2023; Sari et al., 2021). The younger and older the pregnant woman, the more nutrients she needs. Inadequate nutrition in pregnancy under the age of 20 years and over 35 years significantly increases the risk of anemia in pregnancy (Qomarasari & Pratiwi, 2023).

### **The Relationship between Parity and the Incidence of Anemia in Pregnant Women in the Sebabi Health Center Working Area**

Based on the results of research from bivariate analysis, seen from table 4.3, it shows that there is a relationship between parity and the incidence of anemia with a Pvalue (0.000) <0.05 and an OR value of 9.000. This study is supported by the theory put forward by Manuaba (2010), parity is one of the important factors in the incidence of iron anemia in pregnant women, women who often experience pregnancy and childbirth are increasingly anemic because they lose a lot of iron, this is because during pregnancy women use iron reserves in their bodies.

This study is in line with research conducted by Ni Made Ayu Yulia Raswati Teja, et al in 2021 with the title of the relationship between knowledge and parity with anemia in pregnant women. The chi square test shows that the pvalue = 0.002 means that there is a relationship between parity and anemia in pregnant women. Parity greatly affects the incidence of anemia because during pregnancy pregnant women really need additional iron to enlarge the total red blood cells in the mother and make these cells into the fetus, the more often women face pregnancy and childbirth, the more iron deficiency will result in anemia in the mother (Fitriani, 2023; Ramadhini & Dewi, 2021).

### **The Relationship between Knowledge and the Incidence of Anemia in Pregnant Women in the Sebabi Health Center Working Area**

Based on the results of research from bivariate analysis, seen from table 4.4, it shows that there is a relationship between knowledge and the incidence of anemia with a Pvalue (0.000) <0.05 and an OR value of 8.181. That referring to the spearman rank test, the coefficient value is 0.365, while the results of data analysis found a p-value of 0.037 so that  $H_0$  is rejected and  $H_1$  is accepted, which means that there is a relationship between the knowledge of pregnant women

about iron with the incidence of anemia in third trimester pregnancy at UPTD Puskesmas Sumobito, Jombang Regency, East Java Province with a low level of relationship.

Referring to the test results, it can be concluded that knowledge is directly proportional to the incidence of anemia, meaning that the lower the knowledge of pregnant women, the more at risk pregnant women have anemia. Vice versa, if knowledge is high, the risk of pregnant women developing anemia is reduced. This has also been explained from several research results conducted by others that the closeness of the relationship between knowledge and the incidence of anemia is very close during pregnancy (Ekasari et al., 2022; Sohara et al., 2021).

Knowledge is one of the factors that influence the formation of health behavior. If pregnant women know and understand the consequences of anemia and how to prevent anemia, they will have good health behavior so that they are expected to avoid various consequences or risks of pregnancy anemia (Khani Jeihooni et al., 2021; Pratiwi et al., 2022). Such behavior can affect the decrease in the incidence of anemia in pregnant women. Lack of knowledge about anemia has an influence on health behavior, especially in pregnant women, which will result in less than optimal health behavior of pregnant women to prevent pregnancy anemia. Pregnant women who have less knowledge about anemia can result in a lack of consumption of iron-containing foods during pregnancy due to ignorance, so knowledge about anemia is important for pregnant women to know (Teja et al., 2021; Akinajo et al., 2024).

### **The Relationship between Attitude and the Incidence of Anemia in Pregnant Women in the Sebabi Health Center Working Area**

Based on the results of research from bivariate analysis, seen from table 4.5, it shows that there is no relationship between attitude and the incidence of anemia with a Pvalue ( $0.147 > 0.05$ ). This is because attitude is a small part of the factors that influence the non-occurrence of anemia, while the factors that affect anemia are individual characteristics (age, ethnicity, religion, education, parity and nutrient consumption (adequate calorie consumption, adequate protein consumption, adequate consumption of Fe tablets)).

Attitude can be interpreted as the respondent's readiness / willingness to act but not yet carry out. This process does not occur immediately by itself, but there are several stages, one of which is the learning process. This learning process occurs because of a person's experience with a particular object, by connecting one experience with another (Fuster Guillen, 2019). With the many experiences gained, it can help a person to determine the attitude towards the actions he will take (Riza, 2023). The formation of responses to objects is a complex process within the individual involving the individual concerned, the situation in which the response is formed, and the objective characteristics possessed by the stimulus (Wyer & Srull, 2022; Li et al., 2021). To be the basis for attitude formation, personal experience occurs in situations that involve emotional factors. In situations that involve emotions, the appreciation of the experience will be deeper and longer lasting (Susilowati et al., 2021).

### **The Relationship between Culture and the Incidence of Anemia in Pregnant Women in the Sebabi Health Center Working Area**

Based on the results of research from bivariate analysis, it shows that there is a relationship between culture and the incidence of anemia with a Pvalue ( $0.004 < 0.05$ ) and an OR value of 5.079. This study is in line with the research of Dewi et al (2024) with the results of statistical tests obtained p value = 0.026 which means there is a relationship between culture and the incidence of anemia in pregnant women at PMB Ratna Dewi in 2023. The results of the analysis also obtained an OR value of 4.71 (1.36-16.29), respondents who have a culture of dietary restrictions have a 4.71 times chance of experiencing anemia.

The results of this study are in line with previous research that shows there is a cultural relationship with anemia in pregnant women. The myth of dietary restrictions during pregnancy

has a 4.5 times risk of anemia compared to mothers who do not have dietary restrictions. Pregnant women who have dietary restrictions will have a poor diet compared to mothers who do not have dietary restrictions (Gustanela & Pratomo, 2021). According to researchers, dietary restrictions in pregnant women that can potentially cause anemia can occur if they inhibit the intake of essential nutrients, such as iron, folic acid, and vitamin B12, which are important for the health of pregnant women and fetal development. Anemia in pregnant women is often caused by iron deficiency, which is necessary for the formation of hemoglobin, a protein in red blood cells that is responsible for transporting oxygen throughout the body (Riyani et al., 2020).

Culture has both positive and negative effects in people's lives to overcome health problems. The community is still strong on food taboos. Some respondents have dietary restrictions, such as not consuming shrimp, fish and mutton (Yakubu, 2019; Partelow et al., 2023). There were also those who did not consume vegetables, fruits, beef, duck and others. These foods are sources of nutrients that contain iron. In this study, there were pregnant women who did not take iron tablets and some only took iron tablets when they were sick. This is due to myths in the community, where iron tablets will make the baby big which results in difficulty during the delivery process. Whereas pregnancy is a time that requires nutrition, where nutrients must be properly fulfilled (Gustanela & Pratomo, 2021).

### **The Relationship between Education Level and the Incidence of Anemia in Pregnant Women in the Sebabu Health Center Working Area**

Based on the results of the bivariate analysis seen from table 4.7, there is a relationship between education level and the incidence of anemia with a Pvalue (0.000) <0.05 and an OR value of 6.967. According to Dewi et al. (2024), the higher the level of education, the easier it is to accept the concept of healthy living independently, creatively and sustainably (Dewi et al., 2024). Likewise, the opinion of Sasono et al. (2021) which states that gravida, pregnant women's education, and a poor obstetric history with anemia are associated with anemia (Balcha et al., 2023; Sasono et al., 2021).

Education has an important influence in shaping a person's behavior in a positive direction and is closely related to a person's knowledge about something he needs in life, especially for pregnant women, education is so important in increasing knowledge about proper clean and healthy living behavior so that family members are protected from disease. The higher the education, the higher the absorption of information so that the information obtained can be understood properly (Balakrishnan & Dwivedi, 2021). Educational factors can affect a person's anemia status in relation to the selection of food consumed. A higher level of education will affect knowledge and information about nutrition better than someone with a lower education. The level of education affects healthy living behavior (Chen et al., 2020; Wang & Geng, 2019). Higher education makes it easier for a person to absorb information and implement it in daily behavior and lifestyle, especially in terms of health and nutrition. The level of education, especially the level of education of women, affects health status (Raghupathi & Raghupathi, 2020). A person's level of education affects his knowledge and understanding of something and directs him to positive behavior, as well as health behavior, so it can be said that the higher a person's education, the better his level of knowledge about anemia. Conversely, the lower the level of education, the lower the mindset so that the absorption of information is also reduced (Hannen et al., 2019; Bachtiar et al., 2023).

The level of education also greatly affects the ability to receive nutritional information, determining or influencing whether or not a person receives knowledge, the higher the education, the easier it is for a person to receive nutritional information (Nurhayati & Hendar, 2020). In his research, it is stated that the mother's level of education greatly influences how a person acts and looks for causes and solutions in his life. A highly educated person will usually act more rationally. Therefore, educated people will more easily accept new ideas. Likewise,

the opinion of Education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have spiritual strength, religion, self-control, personality, intelligence, noble character, and skills needed by themselves, society, nation and state. Education is a learning process which means that in education there is a process of growth, development or change towards a more mature, better and more mature individual, group or society. The level of education can affect a person's level of knowledge because a person's ability to accept and understand something is determined by the level of education he has (Sasono et al., 2021).

### **Relationship between the Most Dominant Factors of Age, Parity, Knowledge, Attitude, Culture, Education Level, and Income with the Incidence of Anemia in Pregnant Women in the Sebabi Health Center Working Area**

The value of B is positive in the age variable. The magnitude of the relationship is indicated by the value of the Exponent Beta (EXP B) Age variable of 0.991, meaning that the incidence of anemia in pregnant women in the Sebabi Health Center working area with age will be 0.991 times more anemia. The value of B is positive in the parity variable. The magnitude of the relationship is indicated by the value of the Exponent Beta (EXP B) Satisfaction variable of 2.309, meaning that the incidence of anemia in pregnant women in the Sebabi Health Center working area with parity will be 2.309 times more likely to develop anemia compared to no parity.

The value of B is positive in the knowledge variable. The magnitude of the relationship is indicated by the value of the Exponent Beta (EXP B) Knowledge variable of 1.951, meaning that the incidence of anemia in pregnant women in the Sebabi Health Center working area in the presence of low knowledge will be 1.951 times more likely to occur anemia compared to high knowledge. The value of B is positive in the attitude variable. The magnitude of the relationship is indicated by the Exponent Beta (EXP B) value of the attitude variable of 0.851, meaning that the incidence of anemia in pregnant women in the Sebabi Health Center working area with a negative attitude will be 0.851 times more likely to develop anemia than with a positive attitude.

The value of B is positive on the culture variable. The magnitude of the relationship is indicated by the value of the Exponent Beta (EXP B) Culture variable of 1.713, meaning that the incidence of anemia in pregnant women in the Sebabi Health Center working area in the presence of culture will be 1.713 times more likely to occur anemia. The value of B is positive in the education level variable. The magnitude of the relationship is indicated by the value of the Exponent Beta (EXP B) of the education level variable of 1.876, meaning that the incidence of anemia in pregnant women in the Sebabi Health Center working area in the presence of a low level of education will be 1.876 times more likely to develop anemia compared to a high level of high education. The value of B is positive in the income variable. The magnitude of the relationship is indicated by the Exponent Beta (EXP B) value of the income variable of 1.410, meaning that the incidence of anemia in pregnant women in the Sebabi Health Center working area in the presence of low income will be 1.410 times more likely to develop anemia than high income.

Based on this study, it can be seen that the most dominant variables associated with the incidence of anemia in pregnant women in the Sebabi Health Center working area in order from the most dominant are parity (2.309), knowledge (1.951), education level (1.876), culture (1.713), income (1.410), age (0.991) and attitude (0.851). Parity is one of the important factors in the incidence of iron anemia in pregnant women. Women who experience frequent pregnancy and childbirth are increasingly anemic because they lose a lot of iron, this is because during pregnancy women use iron reserves in their body (Teja et al., 2021).

## Conclusion

There is no relationship between age factor, attitude factor, and income factor with the incidence of anemia among pregnant women in the Sebabi Health Center working area. There is a relationship between the parity factor, culture factor, knowledge factor, and education level factor with the incidence of anemia in pregnant women in the Sebabi Health Center working area. And among all independent variables, the parity factor is the factor most associated with the incidence of anemia in pregnant women in the Sebabi Health Center working area.

## Suggestion

This study is expected to plan pregnancy at an ideal age, namely at a productive age of 20-35 years, and provide a safe distance of 2-3 times the number of births (parity), and run a family planning program. In addition, it is necessary to increase the knowledge of pregnant women from health center officers by conducting counseling and counseling about pregnancy anemia and the impact of anemia on the fetus. It is also expected for pregnant women to increase the consumption of foods that contain a lot of iron and compliance with taking iron tablets/Fe tablets routinely and regularly during pregnancy. It can be a reference for other researchers who will conduct research on factors that affect the incidence of anemia in pregnant women and as material to continue research with different variables that have not been studied such as history of anemia and compliance with taking Fe tablets that can affect the symptoms of anemia in pregnant women.

## References

- Akinajo, O. R., Babah, O. A., Banke-Thomas, A., Beňová, L., Sam-Agudu, N. A., Balogun, M. R., ... & Annerstedt, K. S. (2024). Acceptability of IV iron treatment for iron deficiency anaemia in pregnancy in Nigeria: a qualitative study with pregnant women, domestic decision-makers, and health care providers. *Reproductive Health*, 21(1), 22. <https://doi.org/10.1186/s12978-024-01743-y>
- Apriyanti, F. (2019). Hubungan Status Gizi Dengan Kejadian Anemia Pada Remaja Putri Sman 1 Pangkalan Kerinci Kabupaten Pelalawan Tahun 2019. *Jurnal Doppler*, 3(2).
- Bachtiar, H., Haruna, N., & Delima, A. A. A. (2023). Hubungan Pendidikan dengan Kejadian Anemia pada Ibu Hamil di Puskesmas Pampang Kota Makassar. *Jurnal Midwifery*, 5(1), 47–52.
- Balakrishnan, J., & Dwivedi, Y. K. (2021). Role of cognitive absorption in building user trust and experience. *Psychology & Marketing*, 38(4), 643-668. <https://doi.org/10.1002/mar.21462>
- Balcha, W. F., Eteffa, T., Tesfu, A. A., Alemayehu, B. A., Chekole, F. A., Ayenew, A. A., ... & Nega, A. T. (2023). Factors associated with anemia among pregnant women attended antenatal care: a health facility-based cross-sectional study. *Annals of Medicine and Surgery*, 85(5), 1712-1721. <https://doi.org/10.1097/MS9.0000000000000608>
- Bria, G. E., & Nur Rohmah, F. (2023). Hubungan Status Gizi dan Usia dengan Kejadian Anemia pada Ibu Hamil. *KOSALA: Jurnal Ilmu Kesehatan*, 11(1), 23–29. <https://doi.org/10.37831/kjik.v11i1.259>
- Chen, L., Hong, J., Xiong, D., Zhang, L., Li, Y., Huang, S., & Hua, F. (2020). Are parents' education levels associated with either their oral health knowledge or their children's oral health behaviors? A survey of 8446 families in Wuhan. *BMC Oral Health*, 20, 1-12. <https://doi.org/10.1186/s12903-020-01186-4>

- Dewi, R., Dewi, M. K., & Mardiyah, M. S. (2024). Hubungan Dukungan Keluarga, Pola Makan dan Budaya dengan Kejadian Anemia pada Ibu Hamil. *Jurnal Penelitian Perawat Profesional*, 6(5).
- Ekasari, T., Natalia, M. S., & Zakiyyah, M. (2022). Knowledge and parity prevention of anemia in pregnancy. *Bali Medical Journal*, 11(3), 1095-1098.
- Fitriani, A. (2023). *Hubungan Pengetahuan Dan Pendapatan Dengan Kejadian Anemia Pada Ibu Hamil Di Puskesmas Padang Luas Tahun 2023*. Universitas Islam Kalimantan.
- Fuster Guillen, D. E. (2019). Qualitative research: Hermeneutical phenomenological method. *Journal of Educational Psychology-Propositos y Representaciones*, 7(1), 217-229.
- Götmark, F., & Andersson, M. (2020). Human fertility in relation to education, economy, religion, contraception, and family planning programs. *BMC Public Health*, 20, 1-17. <https://doi.org/10.1186/s12889-020-8331-7>
- Gustanela, O., & Pratomo, H. (2021). Faktor Sosial Budaya yang Berhubungan dengan Anemia pada Ibu Hamil (A Systematic Review). *Media Publikasi Promosi Kesehatan Indonesia (MPPKI)*, 5(1), 25–32. <https://doi.org/10.56338/mppki.v5i1.1894>
- Hannen, J., Antons, D., Piller, F., Salge, T. O., Coltman, T., & Devinney, T. M. (2019). Containing the Not-Invented-Here Syndrome in external knowledge absorption and open innovation: The role of indirect countermeasures. *Research Policy*, 48(9), 103822. <https://doi.org/10.1016/j.respol.2019.103822>
- Kementerian Kesehatan RI. (2018). *Profil Kesehatan Indonesia 2017*. Kemenkes RI.
- Khani Jeihooni, A., Rakhshani, T., Harsini, P. A., & Layeghiasi, M. (2021). Effect of educational program based on theory of planned behavior on promoting nutritional behaviors preventing Anemia in a sample of Iranian pregnant women. *BMC Public Health*, 21, 1-9. <https://doi.org/10.1186/s12889-021-12270-x>
- Li, X., Zhou, Y., Wong, Y. D., Wang, X., & Yuen, K. F. (2021). What influences panic buying behaviour? A model based on dual-system theory and stimulus-organism-response framework. *International Journal of Disaster Risk Reduction*, 64, 102484. <https://doi.org/10.1016/j.ijdrr.2021.102484>
- Marini, M., Kuswati, K., & Fatimah, J. (2024). Hubungan Sosial Budaya, Pola Makan, Pendapatan, dan Pengetahuan dengan Kejadian Anemia pada Ibu Hamil. *Indonesia Journal of Midwifery Sciences*, 3(1), 377–387. <https://doi.org/10.53801/ijms.v3i1.132>
- Nurhayati, T., & Hendar, H. (2020). Personal intrinsic religiosity and product knowledge on halal product purchase intention: Role of halal product awareness. *Journal of Islamic Marketing*, 11(3), 603-620. <https://doi.org/10.1108/JIMA-11-2018-0220>
- Partelow, S., Nagel, B., Paramita, A. O., & Buhari, N. (2023). Seafood consumption changes and COVID-19 impact index in West Nusa Tenggara, Indonesia. *PloS one*, 18(1), e0280134. <https://doi.org/10.1371/journal.pone.0280134>
- Pratiwi, S., Makiyah, S. N. N., & Kartini, F. (2022). The Effect of Health Promotion With Video Media on Knowledge and Behavior About Anemia in Pregnant Mothers. *Jurnal Health Sains*, 3(9), 1403-1408. <https://doi.org/10.46799/jhs.v3i9.594>
- Qomarasari, D., & Pratiwi, L. (2023). Hubungan Umur Kehamilan, Paritas, Status Kek, dan Tingkat Pendidikan Ibu Dengan Kejadian Anemia pada Ibu Hamil di Klinik El'mozza Kota Depok. *Jurnal Kesehatan Kusuma Husada*, 86–92. <https://doi.org/10.34035/jk.v14i2.1050>

- Raghupathi, V., & Raghupathi, W. (2020). The influence of education on health: an empirical assessment of OECD countries for the period 1995–2015. *Archives of Public Health*, 78, 1-18. <https://doi.org/10.1186/s13690-020-00402-5>
- Ramadhini, D., & Dewi, S. S. S. (2021). Hubungan Umur, Paritas dan Kepatuhan Konsumsi Tablet Tambah Darah Dengan Kejadian Anemia pada Ibu Hamil di Puskesmas Batunadua Kota Padangsidimpuan Tahun 2021. *Jurnal Kesehatan Ilmiah Indonesia (Indonesian Health Scientific Journal)*, 6(2), 148. <https://doi.org/10.51933/health.v6i2.600>
- Riyani, R., Marianna, S., & Hijriyati, Y. (2020). Hubungan Antara Usia dan Paritas dengan Kejadian Anemia pada Ibu Hamil. *BSJ: Binawan Student Journal*, 2(1), 178–184.
- Riza, N. (2023). Hubungan Pengetahuan dan Sikap Ibu Tentang Anemia dengan Kejadian Anemia dalam Kehamilan di Gampong Ceurih. *Getsempena Health Science Journal*, 2(1), 13–23. <https://doi.org/10.46244/ghsj.v2i1.2089>
- Sari, S. A., Fitri, N. L., & Dewi, N. R. (2021). Hubungan Usia dengan Kejadian Anemia pada Ibu Hamil di Kota Metro. *Jurnal Wacana Kesehatan*, 6(1), 23. <https://doi.org/10.52822/jwk.v6i1.169>
- Sasono, H. A., Husna, I., Zulfian, Z., & Mulyani, W. (2021). Hubungan Tingkat Pendidikan dengan Kejadian Anemia pada Ibu Hamil di Beberapa Wilayah Indonesia. *Jurnal Medika Malahayati*, 5(1), 59–66. <https://doi.org/10.33024/jmm.v5i1.3891>
- Sohora, S., Afriani, A., & S, Anita. (2021). Hubungan Pengetahuan dan Paritas terhadap Kejadian Anemia pada Ibu Hamil di Desa Kurma Kecamatan Mapilli. *Journal Peqquruang: Conference Series*, 3(2), 752. <https://doi.org/10.35329/jp.v3i2.2776>
- Susilowati, L., Sagita, Y. D., & Veronica, S. Y. (2021). Hubungan Pengetahuan dan sikap ibu Hamil dengan Kejadian Anemia di Wilayah Kerja UPTD Puskesmas Ngarip Kabupaten Tanggamus Tahun 2021. *Jaman Aisyah: Jurnal Maternitas Aisyah*, 2(2), 154–165.
- Teja, N. M. A. Y. R., Mastryagung, G. A. D., & Diyu, I. A. N. P. (2021). Hubungan Pengetahuan dan Paritas dengan Anemia pada Ibu Hamil. *Jurnal Menara Medika*, 3(2), 143–147.
- Wang, J., & Geng, L. (2019). Effects of socioeconomic status on physical and psychological health: lifestyle as a mediator. *International journal of environmental research and public health*, 16(2), 281. <https://doi.org/10.3390/ijerph16020281>
- WHO. (2024, April 26). *Maternal Mortality*. [Www.Who.Int](http://www.who.int).
- Wyer, R. S., & Srull, T. K. (2022). Category accessibility: Some theoretical and empirical issues concerning the processing of social stimulus information. In *Social cognition* (pp. 161-198). Routledge. <https://doi.org/10.4324/9781003311386>
- Yakubu, A. M. I. D. A. T. U. (2019). Food taboos and common beliefs associated with pregnant women in Kasoa Zongo community in the Central Region of Ghana.