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Factors Related To The Incidence Of Anemia Among Pregnant Women In The Working Area Of Kedokanbunder Public Health Center, Indramayu Regency

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Abstract.
Background. The global prevalence of anemia. According to estimates from the World Health Organization (WHO), around 40% of children aged 6-59 months, 37% of pregnant women, and 30% of women aged 15-49 worldwide experience anemia. In Indonesia, the prevalence of iron deficiency anemia among pregnant women was 37.1% in 2020 and 24.5% in 2021. The impact of anemia on pregnant women includes significant complications for both the mother and the fetus. Based on this data, Kedokanbunder Health Center is among the health centers with the highest anemia rates in Indramayu district, affecting 104 pregnant women.
Aims. This study aims to determine the relationship between the factors associated with anemia.
Methods: The research design is quantitative, correlational. The population consists of pregnant women in the working area of the Kedokanbunder Community Health Center, totaling 88 individuals, and the sampling method used is Accidental Sampling. The instrument used is a questionnaire, and the data analysis techniques are univariate and bivariate, with the Chi-square test used to analyze the data.
Result. The research results showed that among pregnant women, the majority (53, 60.2%) had no anemia. The Chi-square test results indicated a p-value of 0.978 for age ($p > 0.05$), a p-value of 0.006 for education ($p < 0.05$), a p-value of 0.019 for parity ($p < 0.05$), a p-value of 0.008 for knowledge ($p < 0.05$), and a p-value of 0.202 for economic status ($p < 0.05$).
Conclusion. Based on the results, it can be concluded that there is a relationship between education, knowledge, parity, and the occurrence of anemia. There is no relationship between age and economic status with the occurrence of anemia.
Implementation. It is recommended for health workers to carry out preventive measures by providing education about pregnant women through maternal classes and performing early detection of risk factors for anemia in pregnant women at Puskesmas Kedokanbunder, Indramayu regency, at 2025

Keywords: Knowledge, age, parity, education, anemia

INTRODUCTION

Anemia is a condition in which the body's red blood cells are insufficient to meet physiological needs. These physiological needs are different for each person, which can be influenced by gender, place of residence, smoking behavior, and the stage of pregnancy. Anemia in pregnant women that is not treated will have an impact on the non-optimal growth and development of the fetus in the womb and has the potential to cause pregnancy and childbirth complications and even result in death in the mother. Anemia in pregnant women is defined as a hemoglobin level of less than 11 g/dL (Kusumastuti E., Anemia in Pregnancy, 2022). According to estimates by the *World Health Organization* (WHO), around 40% of children aged 6-59 months, 37% of pregnant women, and 30% of women aged 15-49 years worldwide experience anemia (WHO, 2023). In Indonesia, the prevalence of iron deficiency anemia among pregnant women in 2020 was 37.1%, and in 2021, it was 24.5% (Djamil, 2023). From data from the Indramayu Regency Health Office in 2025, starting from January to May, there are 10 cases of maternal deaths, most of which are caused by hypertension, pre-eclampsia, and eclampsia. There are several infant mortality cases, 23 cases, the causes are asphyxia and Low Birth Weight (LBW). (Indramayu Regency Health Office, 2025)

Based on data from the Indramayu Health Office, in 2024, the prevalence of anemia among pregnant women in Indramayu is 1,366 cases, with the incidence of the first highest number of anemia, namely at the Haurgeulis Health Center as many as 166, pregnant women with anemia in the second order of the Patrol Health Center as many as 115, pregnant women with anemia in the third place of the Sukra Health Center as many as 106 pregnant women with anemia, and the Kedokanbunder Health Center is ranked in the top 10 as many as 104 pregnant women with anemia. Based on this data, the Kedokanbunder Health Center is one of the Centers with the highest anemia rate in the Indramayu Regency, with 104 pregnant women. Many efforts have been made at both the central/regional levels, but have not shown a significant decrease. It is hoped that by providing knowledge about anemia during pregnancy, pregnant women will recognize the importance of their own health and that of their fetuses, so that the incidence of anemia in pregnant women does not increase each year.

The impact of anemia on pregnant women has both a mild and a heavy impact. If the hemoglobin level is below 6 g/dL, significant complications can occur in both the mother and the fetus. Low hemoglobin levels cause a reduced supply of fetal oxygen and can lead to heart failure in the mother. In addition, anemia in pregnant women also causes obstacles to fetal growth, both body cells and brain cells, abortion, the length of partum time due to lack of

uterine thrust, and postpartum bleeding (Hasibuan, 2021).

Several factors can cause anemia in pregnant women, including gestational age, age of pregnant women, number of children/parity, pregnancy distance, nutritional status, occupation, socio-economic status, knowledge, and education. Factors, including maternal age and parity, cause anemia in pregnancy.

Age is a risk factor for anemia in pregnant women. A mother's age is related to the female reproductive organs. A healthy reproductive age is 20-35 years old. Pregnancy at the age of <20 years is not biologically optimal; her emotions tend to be unstable, her mentality is immature, so that she is prone to shock, which results in a lack of attention to the fulfillment of nutrients during pregnancy. Meanwhile, in individuals>35 years old, it is associated with decreased immunity. (Piliang, 2019).

A lack of nutritional intake, especially iron, can cause anemia in pregnant women, whose needs continue to increase as pregnancy progresses. Iron is an important nutrient for forming hemoglobin, a protein in red blood cells that carries oxygen to all tissues and organs of the body. If pregnant women do not get enough iron or other important nutrients, then the body will not be able to produce blood cells. Anemia not only affects the mother but also the baby. Babies born are most likely to have little or no iron reserves, which will result in anemia in the baby. The impact of anemia on pregnant women can be due to the large number of maternal illnesses and deaths. Increased fetal pain and mortality, as well as increased risk of low birth weight. (Kusumastuti, 2022)

Research conducted by Piliang (2020) found that the level of knowledge of pregnant women is associated with the incidence of anemia at the Tegal Sari Health Center, Medan City. Pregnant women need to get attention, especially in terms of their health so that in the future they can contribute to a good generation and can provide healthy and intelligent offspring as the successors to the noble ideals and hopes of the nation.

In the Qur'an, it is explained that Allah has created everything on this earth, including animal proteins, which are very beneficial for pregnant women to meet the nutritional needs of the fetus while it is still in the womb—an-Nahl verse 5.

وَالْاَنْعَامَ خَلَقَهَا لَكُمْ فِيْهَا دِفْءٌ وَّمَنَافِعُ وَمِنْهَا تَأْكُلُوْنَ

Allah said, "And He has created cattle (camels, cows, buffaloes, sheep, goats) for you; in it there are feathers that warm and have various benefits, and so on, you eat" (QS. An Nahl:5).

The verse explains that Allah created everything on earth in the form of livestock, which are rich in protein, vitamins, etc., and are very useful for pregnant women during fetal growth and development in the womb and after childbirth.

Insufficient nutritional intake during pregnancy will not only affect the baby's weight, but also affect pregnant women, which can lead to anemia in pregnant women. Nutritional status is an indicator of a pregnant woman's success in achieving adequate nutrition. Nutritional status is also defined as a state of health resulting from the balance between nutritional needs and intake. Nutrition for pregnant women is a healthy, balanced diet that mothers must consume during pregnancy and provides two meals for people who are not pregnant (Lubis, 2016). New data from the preliminary study conducted from January to May 2025 at the Kedokan Bunder Health Center, Kedokanbunder District, Indramayu Regency, showed that 136 pregnant women were enrolled, of whom 65 had anemia. Based on this background description, the author is interested in researching more about "Factors related to the incidence of anemia in pregnant women in the working area of the Kedokanbunder Health Center, Indramayu Regency in 2025".

LITERATURE REVIEW

Pregnancy

In a woman's life, there are many significant changes in her, both in her physical, mental, and social aspects. Some factors that affect pregnancy include physical, psychological, environmental, social, cultural, and economic factors. Each factor affects the others, as they are interrelated and can be cause and effect. (Gultom, 2020). Pregnancy is a natural process, but if it is not monitored correctly, early detection of complications in the mother and fetus is not possible, so the mother and family need to check the pregnancy at least 6 times during pregnancy to obtain health information. The philosophy of pregnancy care describes the beliefs held by midwives and serves as a trusted guide in providing obstetric care to clients during pregnancy. The pregnancy period starts from conception to the birth of the baby, with a duration of 280 days or 40 weeks, calculated from the first day of the last menstrual period (Nugrawati & Amriani, 2021). The division of pregnancy is divided into 3 trimesters: the 1st trimester, starting from conception to three months (0-12 weeks), the second trimester, starting from the fourth to six months (13-28 weeks), and the third trimester from seven to nine months (29-42 weeks).According to the Ministry of Health, the latest provisions of ANC (Antenatal Care) require pregnant women to undergo pregnancy

examinations at least 6 times during pregnancy, namely 2 in the first trimester, 1 in the second trimester, and 3 in the third trimester. This ANC visit is important for early detection of high-risk pregnancy and childbirth, as well as for monitoring maternal and fetal health (Tanjung, 2024).

Psychological Changes in Pregnant Women

First trimester. As soon as the hormones estrogen and progesterone increase in the body, the mother will experience various physiological discomforts, such as vomiting, fatigue, and breast enlargement. This will trigger psychological changes in the second trimester, including the following: During the second trimester, the mother is usually healthy, accustomed to high hormone levels, and the discomfort associated with pregnancy begins to decrease. In addition, the mother's stomach is not too big to make her feel heavy. After accepting her pregnancy, the mother can use her energy and mind more productively. In this trimester, the mother begins to feel her fetus move and to recognize her baby as a separate person. Many mothers experience an increase in libido after the first trimester. Third trimester. In the third trimester, mothers are very enthusiastic about the birth of their baby, as it marks the end of the waiting and vigilant period. The baby's enlarged belly and movements remind us of the moment of birth. This makes the mother pay attention to the signs and symptoms of childbirth. Mothers are often worried or afraid that the baby they are about to give birth to is abnormal. In addition, most mothers will act to protect their babies by avoiding anything they consider harmful. Mothers may start to worry about the pain and physical dangers that will come during childbirth. During the first trimester of pregnancy, she is also preparing for the birth of her baby and becoming a parent. Families began to question whether their babies were boys or girls and how they would look. In fact, they have started to decide on a name for their baby (Marjati et al, 2020).

Anemia

Anemia is a condition in which a person's body has a decreased number of red blood cells, or the number of red blood cells is below normal limits. This can occur due to a lack of hemoglobin in the body, thus affecting the number of red blood cells (Ministry of Health, 2023). Anemia is a condition in which the body's red blood cells are insufficient to meet physiological needs. These physiological needs are different for each person, which can be influenced by gender, place of residence, smoking behavior, and the stage of pregnancy.

According to the WHO, anemia in pregnancy is defined as a hemoglobin (Hb) level <11 g/dL. Meanwhile, the Centers for Disease Control and Prevention defines anemia as Hb levels of <11 g/dL in the first and third trimesters, <10.5 g/dL in the second trimester, and <10 g/dL in the postpartum period (Kusumastuti, Anemia in Pregnancy, 2022).

Anemia Classification

Table 1. Anemia Grouping

WHO recommendations on anaemia (g/dL) grouping

Population	No Anemia	Anemia		
		Lightweight	Medium	Weight
Children 6-59 months	11	10,0-10-9	7,0-9,9	<7.0
Children 5-11 years old	11,5	11,0-11,4	8,0-10,9	<8.0
Children 12-14 years old	12	11,0-11,9	8,0-10,9	<8.0
WUS is not pregnant	12	11,0-11,9	8,0-10,9	<8.0
Pregnant women	11	10,0-10,9	7,0-9,9	<7.0
Male ≥ 15 Years	13	11,0-12,9	8,0-10,9	<8.0

Source: WHO on the grouping of Anemia (g/dL)

Types of Anemia

1. Iron deficiency anemia. The most common type of anemia is caused by a lack of iron in the body. To produce hemoglobin, the spinal cord needs enough iron. Without enough iron, the body cannot produce hemoglobin to produce red blood cells. Iron deficiency anemia is often experienced by pregnant women, menstruation that does not bleed, cancer, regular use of over-the-counter pain relievers, such as aspirin.
2. Vitamin Deficiency Anemia. In addition to iron, the body needs vitamin B12 and folic acid to produce enough red blood cells. In people on a diet, it can cause both nutrients to decrease red blood cell production because their bodies cannot process these vitamins. This condition is known as pernicious anemia.
3. Anemia due to chronic diseases. Certain diseases, such as cancer, HIV/AIDS, kidney disease, rheumatoid arthritis, and several other inflammatory diseases, can interfere with the production of red blood cells.

4. Aplastic anemia. This anemia is rare; the causes of aplastic anemia include infections, certain medications, autoimmune diseases, and exposure to toxic chemicals. Anemia is associated with spinal cord diseases. Some diseases, such as leukemia and myelofibrosis, which can cause anemia, can affect red blood cell production in the spinal cord.
5. Hemolytic anemia. Hemolytic anemia occurs when red blood cells are destroyed faster than they are regenerated in the bone marrow. This condition can be inherited genetically or experienced in the future.
6. Sickle *cell anemia.* This type of anemia is inherited and is caused by a defect or damage to hemoglobin that results in red blood cells turning into sickle cells. This shape is abnormal. Abnormal cells will die prematurely, which can lead to chronic anemia.
7. Other anemias. Other types of anemia, such as Thallasemia, etc (Malikulsaleh, 2019).

Etiology of Anemia.

Weakness, tiredness, tiredness and lethargy; Dizziness, and flickering eyes; Paleness of the lips, tongue, eyelids, pale skin is caused by; by a lack of blood volume and Hb, vasoconcentration; Disadvantages; Folic acid, vitamin C, and elements needed for the formation of red blood cells; Menstrual blood that is severe in iron deficiency which can cause anemia; Pregnant women often have anemia because in the growth of the fetus it absorbs iron and vitamins.

Pathophysiology of Anemia.

Anemia is a disease characterized by decreased levels of hemoglobin (Hb) and red blood cells *(erythrocytes)* below normal. Men are said to be anemic when the hemoglobin level is less than 14 g/dL, and *the erythrocyte count is* less than 41%. Similarly, women with hemoglobin levels less than 12 g/dL and erythrocyte counts less than 37%. Anemia is not a disease; it is a disorder of body function in which hemoglobin, which transports oxygen, decreases. There are many types of anemia with various causes. So that there is a decrease in the capacity of blood cells to transport oxygen.

Anemia, according to Putri (2013), reflects marrow failure, excessive loss of red blood cells, or both. Sum failure can occur due to nutritional deficiencies, toxic exposure, tumor invasion, or primarily due to unknown causes. Red blood cells can be lost through *hemolysis or hemorrhage (construction), which can occur when red blood cells are not in accordance with the resistance of normal red blood cells, leading to red blood cell* extraction.

Lysis of red blood cells *(dissolved)* occurs mainly in *phagocytic* cells or in the *reticuloendothelial system*, especially in the liver and spleen. As a side effect of this process, *bilirubin* formed in *phagocytes* will enter the bloodstream. An increase in plasma bilirubin immediately reflects any increase in red blood cell production (hemolysis). The normal concentration is 1 mg/dL or less; levels above 1.5 mg/dL result in interplay in the sclera. (Andika, 2023).

Physiological Anemia in Pregnant Women

Physiological anemia that occurs during pregnancy disrupts the normal red blood cell count. Increased maternal blood volume mainly results from increased plasma volume, not from increased red blood cells. Although the number of red blood cells in circulation increases, it does not keep pace with the increase in plasma volume.

This imbalance will manifest as a decrease in Hb (hemoglobin) levels. For pregnant women, Hb levels are significant. Worldwide, the problem of low Hb levels that trigger anemia affects 56 million women, two-thirds of whom are from Asia. A pregnant woman is said to have anemia if her Hb level is less than 11 g/dL. The World Health Organization (WHO) states that Hb levels in pregnant women should be maintained above 11 g/dL. This increase in the number of erythrocytes is also one of the factors causing the increased need for iron during pregnancy, as well as for the fetus. Meanwhile, red blood cell production continues to increase. Anemia is defined as a decrease in the concentration of hemoglobin in the blood circulation (Putu, Low Hb Levels Impact on Fetal Development, 2022).

Signs of Anemia Symptoms

In general, some people do not show symptoms or signs. However, several symptoms of anemia can be experienced by pregnant women as follows, including: Looking very tired; Experiencing mood swings; Paler-looking skin; Frequent dizziness; Experiencing jaundice (the skin and eyes turn yellow); The heart rate beats faster than usual; Experiencing shortness of breath, restless legs syndrome, or swollen feet and hands when suffering from severe anemia. Knowing some of the symptoms of anemia above is hoped to increase vigilance and prevent it by meeting daily nutritional needs and intake. In addition, it is hoped that pregnant women will regularly consume Blood Supplement Tablets (TTD). Continue to apply clean and healthy living behaviors, and immediately examine the nearest health facility if you experience symptoms of anemia, so that you can get treatment quickly and appropriately from

health workers (Ministry of Health, Recognizing Symptoms of Anemia in Adolescents, 2023)

Factors Causing Anemia

According to (Syafira Elisa, 2023) The Factors Causing Anemia are:

1. Poor diet. Nutritious foods that contain iron are needed to support the formation of red blood cells, which increases the amount of hemoglobin (Hb) in the body.
2. The habit of consuming tea or coffee after a meal. The habit of drinking coffee, tea and consuming soybeans after meals can inhibit iron absorption because these foods and drinks contain caffeine, tannins, oxalate, and phytate.
3. Duration of sleep. The body needs sufficient sleep to restore energy and stamina, so that when you wake up, it will be in excellent condition.
4. Lack of vitamin C intake. Vitamin C is needed by the body to support the iron absorption process.
5. Economic factors. Those who are economically disadvantaged tend to rarely consume animal protein sources, such as red meat, which is one of the foods with high iron content, because of its high cost.
6. Consumption Patterns of Fe. Tablets. The cause of iron-deficiency anemia is a lack of dietary iron. Pregnant women's need for iron increases for the formation of the placenta and red blood cells by 200-300%. Of this amount, 200 mg of Fe is retained by the body during childbirth, and the remaining 840 mg is lost.
7. Antenatal care (ANC) visits. Antenatal *Care* (ANC) visits are appointments a pregnant woman has with a midwife or doctor as early as possible after she feels pregnant to receive antenatal care or services. With ANC, the mother's anemia condition will be detected earlier because in the early stages of anemia in pregnant women, it rarely causes meaningful complaints. Complaints arise after anemia has advanced (Padila, 2020).

Anemia Prevention

Efforts to prevent and control anemia are carried out by providing sufficient iron intake to increase hemoglobin production. Efforts that can be made are:

1. Increase the intake of iron-rich foods, with a balanced, nutritious diet, consisting of a variety of foods, especially animal food sources that are rich in iron (heme iron) in sufficient quantities in accordance with the AKG. In addition, it is also necessary to increase the source of plant foods rich in iron (non-heme iron), although the absorption is

lower than that of animals. Animal foods that are rich in iron, for example, liver, fish, meat, and poultry, while plant sources include dark green vegetables and nuts. To increase iron absorption from vegetable sources, it is necessary to consume fruits that contain vitamin C, such as oranges and guava. Iron absorption can be inhibited by other substances, such as tannins, phosphorus, fiber, calcium, and phylate, with a balanced nutritious diet, consisting of a variety of foods, especially animal food sources that are rich in iron (heme iron) in sufficient quantities in accordance with the AKG. In addition, it is also necessary to increase the source of plant foods rich in iron (non-heme iron), although the absorption is lower than that of animals. Animal foods that are rich in iron, for example, liver, fish, meat, and eggs, while plant sources include dark green vegetables and nuts. To increase the absorption of iron from vegetable sources, it is necessary to consume fruits that contain vitamin C, such as oranges and guava. Other substances, such as tannins, phosphorus, fiber, calcium, and phytate, can inhibit iron absorption.

2. Fortification of foodstuffs with iron. Fortification of foodstuffs is the addition of one or more nutrients to increase the nutritional value of the food. Nutrient addition is carried out in the food industry; therefore, it is recommended to read the packaging label to determine whether the food has been fortified with iron. Foods that have been fortified in Indonesia include wheat flour, rice, cooking oil, butter, and some snacks.
3. Iron supplementation. When dietary iron is insufficient to meet iron requirements, supplementation is necessary. Regular iron supplementation for a specific period of time aims to increase hemoglobin levels quickly and needs to be continued to increase iron stores in the body. Other substances, such as tannins, phosphorus, fiber, calcium, and folate can inhibit iron absorption

Factors that affect anemia in pregnant women

The following factors can influence anemia in pregnancy that occurs in the first to third trimester:

1. The age of the pregnant woman. According to Hasibuan (2022), Anemia in pregnancy is significantly related to the age of pregnant women; the younger or older the pregnant mother is, the greater the effect on nutritional needs. Pregnant women under the age of 20 years are at an age when it is known that the organs in their bodies are still in the process of maturation and development, one of which is the reproductive system. To support reproductive development, the body still needs an ample supply of various

nutrients, so if a pregnancy occurs at this age, the need for iron will increase compared to pregnant women over 20 years old. If the body's nutritional needs are not met, anemia will undoubtedly result. Pregnant women over the age of 35 are also at risk of anemia because the body's immune system has begun to decline and is at risk of experiencing various pregnancy problems, one of which is anemia. The pregnancy period is very susceptible to iron deficiency, which is needed more especially to supply the growing fetus and placenta, and to increase cell mass in the mother's red blood. In conditions that require a lot of iron, pregnant women who are very young or very old will be susceptible to anemia. The age that is classified as very young is under 20 years old, and the one that is classified as too old is >35 years old, while the age considered for pregnancy is 20 to 35 years old, because it is ready to get pregnant physically and psychologically. Pregnant mothers at the age of <20 years have an iron consumption divided by the fetus in the womb and their own biological growth, which, of course, still requires a lot of iron intake. Pregnant women >35 years old have entered the early stages of the degenerative phase, so that body functions are not optimal and they experience various health problems. Pregnancy under the age of 20 and 35 years is a pregnancy that has a risk of anemia (Atika et al., 2021).

2. Gestational Age. Gestational age is calculated using *the Naegle* formula, which is the period from the first day of the last menstrual period (LMP) to the day the gestational age is determined. Gestational age is expressed in weeks, and it can be categorized into: Trimester I: 0-12 weeks; Trimester II: 13-27 weeks; Trimester III: 28-40 weeks. Pregnant women in the first trimester are twice as likely to develop anemia as in the second trimester. Similarly, pregnant women in the third trimester are almost three times more likely to experience anemia than in the second trimester. Anemia in the first trimester can be caused by loss of appetite, *morning sickness*, and the onset of *hemolysis* in the weeks of pregnancy. In the third trimester, it can be caused by high nutritional requirements for fetal growth and the transfer of iron from the mother to the fetus, which can reduce the mother's iron reserves.
3. Number of children (Parity). The number of children is a woman's condition relative to the number of children she has borne. The more parity, the more experience and knowledge there will be, so that they can give better results, and experience affects learning. The parity rate has attracted the attention of researchers in maternal and child health. He said that there is a tendency for low-parity mothers' health to be better than that

of high-parity mothers, and that there is an association between parity level and certain pregnancy-related diseases, according to Notoatmodjo in Hasibuan (2022). The number of children can be divided into nullipara (0), primipara (1), multipara (2-4), and granmultipara (more than 4) (Prawirohardjo, 2018). Research by Hasibuan (2022) shows that mothers with two or more children are 2-3 times more at risk of anemia than mothers with fewer than two. This can be explained because women who have a high number of children can generally increase the risk for bleeding and maternal nutritional depletion. In a healthy pregnancy, hormonal changes increase plasma volume, leading to a decrease in hemoglobin levels, but not below a certain level (e.g., 11.0 g/dL), according to Hasibuan (2022). Parity is a woman's status relative to the number of children she has ever borne. Parity itself is included among the high-risk factors in pregnancy, including grand multipara (Bakri, 2021). Research by Adawiyah (2021) shows that high parity can affect anemia in pregnancy, which is related to a mother's biological condition and iron intake, so that parity is at higher risk when accompanied by close pregnancy intervals. If you have experienced anemia in previous pregnancies, your body's iron reserves naturally decrease. During pregnancy, the body can absorb more iron, leading to anemia.

4. Knowledge. According to Notoatmodjo in Naomi (2019), knowledge (Knowledge) is the result of "knowing," and this occurs after a person senses a particular object. Sense occurs through the five senses, namely: the senses of sight, hearing, smell, taste, and touch. Most human knowledge is acquired through the senses. The word "tahu" comes from the word "tahu", in the Great Dictionary of the Indonesian language, which has the meaning, among others, to understand after seeing (witnessing, experiencing, and so on), and to know and understand. Knowledge is everything that is known based on human experience, and it increases through the process of experience itself. According to Bloom, the measurement of knowledge. This instrument uses the *Multiple Choice* scale, according to Arikunto (2016), which is an objective test consisting of a description or notification about an incomplete understanding. Furthermore, to complete it, you have to choose one answer from the provided options (Afifah, 2021).

Hypothesis

1. There is a relationship between age and the incidence of anemia in pregnant women in the work area of the Kedokanbunder Health Center, Indramayu Regency, in 2025

2. There is a relationship between parity and the incidence of anemia in pregnant women in the working area of the Kedokanbunder Health Center, Indramayu Regency in 2025
3. There is a relationship between knowledge and the incidence of anemia in pregnant women in the working area of the Kedokanbunder Health Center, Indramayu Regency in 2025
4. There is a relationship between education and the incidence of anemia in pregnant women in the working area of the Kedokanbunder Health Center, Indramayu Regency in 2025
5. There is a relationship between economic status and the incidence of anemia in pregnant women in the work area of the Kedokanbunder Health Center, Indramayu Regency in 2025

METHODS

This type of research uses a Descriptive-Analytical research design and a cross-sectional approach. A cross-sectional study examines the dynamics of the correlation between risk factors and outcomes by approaching, observing, or collecting data at the same time. This study was conducted on July 16-22, 2025, on 88 pregnant women respondents at the Kedokanbunder Health Center, Indramayu Regency, with the title Factors related to the incidence of anemia in pregnant women in the working area of the Kedokanbunder Health Center, Indramayu Regency in 2025. The data collection process was carried out in the waiting room of KIA, where questionnaires were distributed to pregnant women who had completed their ANC examinations. This data analysis was carried out by univariate and bivariate analysis using computerization

DISCUSSION

The results of the study showed that less than half (39.8%) of pregnant women experienced anemia at the Kedokanbunder Health Center in Indramayu Regency. Several factors, such as age, parity, knowledge, education, and economic status, could influence pregnant women who experience anemia. The age of pregnant women is <20 and >35 years old. Multipara parity, lack of knowledge, basic education, and low economic status are at risk of anemia. In accordance with the research conducted by Pleret Health Center (2023), to find out the picture of the incidence of anemia in pregnant women using a quantitative research method with a cross-sectional design *during* period 1 of 2023, the subjects of the study were 207 pregnant women with anemia data taken from the Puskesmas Register Book and analyzed

descriptively. Of the 1941 pregnant women, 207 (10.67%) had anemia. Distribution of anemia: mild anemia (72.46%) and moderate anemia (27.54%).

According to Hasibuan (2022), factors that can affect anemia in pregnant women are gestational age, maternal age, parity, and, according to Safira Elisa (2023), factors that cause anemia are: diet, habits of consuming tea or coffee, sleep duration, lack of vitamin C intake, and economic factors. Anemia in pregnancy is one of them, caused by factors related to parity, knowledge, and education. The amount of parity is also one of the factors that cause anemia during pregnancy, as getting pregnant too often can affect the occurrence of anemia in pregnancy (Adawiyah, 2021) and increase susceptibility to bleeding (Hasibuan, 2022). As a result of anemia in pregnancy, it can cause abortion, premature partus, long partus, placental retention, postpartum bleeding due to uterine atonia, shock, intrapartum and postpartum infections. Anemia has a significant impact on babies who are raised and most likely have little or no iron reserves at all, so that it can result in anemia in the baby born and an increased risk of low birth weight. (Kusumastuti, 2022).

Table 1. Distribution of the Frequency of Anemia Incidence in Pregnant Women in the Working Area of the Kedokanbunder Health Center, Indramayu Regency in 2025.

Incidence of Anemia in Pregnant Women	Frequency (n)	Present (%)
No Anemia: > 11 g/dl	53	60,2
Anemia : < 11 g/dl	35	39,8
Total	**88**	**100**

Source: Secondary Data 2025

Based on Table 1, the majority of pregnant women who do not experience anemia are 53 people (60.2%) at the Kedokanbunder Health Center, Indramayu Regency. The researcher argues that based on the factors that affect the incidence of anemia in pregnant women, namely: age, parity, knowledge, education, and economic status. Pregnant women at risk or < 20 years and > 35 years need a lot of additional nutrition, because in addition to being used for their own growth and development, they also have to share with the fetus that is being conceived. People aged>35 years require greater energy and stronger organ function to work optimally. In addition, the level of iron nutritional adequacy and the incidence of anemia in pregnant women are affected by the foods consumed, which help absorb non-heme iron, such as vitamin C, meat, poultry, and other seafood. This means that poultry and fish meat not only directly contribute

a certain amount of heme iron but also help the absorption of non-heme iron contained in the food.

Age of pregnant women

Table 2. Distribution of Frequency of Age of Pregnant Women in the Working Area of the Kedokanbunder Regency Health Center Indramayu in 2025.

Age of Pregnant Women	Frequency (n)	Present (%)
Risky	25	28,4
No risk	63	71,6
Total	**88**	**100**

Source : Primary Data 2025

Based on Table 2, the majority of pregnant women in the non-risk category are 63 people (71.6%) at the Kedokanbunder Health Center, Indramayu Regency.

The relationship between the age of pregnant women and the incidence of anemia in pregnant women

Table 3. The Relationship between the Age of Pregnant Women and the Incidence of Anemia in Pregnant Women in the Working Area of the Kedokanbunder Health Center, Indramayu Regency in 2025.

	Incidence of Anemia in Pregnant Women						
Age	**No Anemia**		**Anemia**		**Total**		***p-Value***
	N	%	N	%	N	%	
Risky	15	60	10	40	25	25	0,978
No Risky	38	60,3	25	39,7	63	63	
Total	**35**	**39,8**	**53**	**60,2**	**88**	**100**	

Source: Primary Data 2025

Based on table 3, the results of the study were obtained from the relationship between age and the incidence of anemia in pregnant women, namely pregnant women who are not at risk, do not experience anemia as much as 60.3%, more than compared to pregnant women who are not at risk and experience anemia as much as 39.7% of pregnant women, with the results of statistics on the age variable with the results of the Chi-square test obtained a p value

of 0.978 (p value) > 0.050 so that Ha is rejected, So there is no relationship between age and the incidence of anemia in pregnant women.

The results of the study on the relationship between age and the incidence of anemia in pregnant women in the work area of the Kedokanbunder Health Center who are not at risk and do not experience anemia as many as 60.3% of respondents compared to respondents who have a risk age and who experience anemia as many as 40% of respondents with statistical results on the mother's age variable using the Chi-square test obtained a p-value of 0.978 (p-value)>0.050 so that Ha was rejected and it can be concluded that there is no relationship between the mother's age and the incidence of anemia in pregnant women in the work area of the Kedokanbunder Health Center.

Based on research conducted by Rismawati et al., 2018; Mutiarasari, 2019; Susmita and Octaviani Iqmy, 2023). The results of bivariate analysis of age variables with the incidence of anemia in pregnant women showed that age was not related to the incidence of anemia (p value = 0.119 > 0.05). Some studies have shown that age is not associated with anemia incidence, although the OR suggests that pregnant women aged less than 20 years and/or more than 35 years are at increased risk of developing anemia. The results of the study also do not show a tendency that the older the age, the greater the risk of anemia.

Based on research conducted by Desi Mailan Sari, (2020) explained that there is a relationship between maternal age and the incidence of anemia in pregnant women with a p value = 0.012 and OR: 2.38 (CI:1.19-4.76) in the working area of the Seputih Many Health Center in 2020 in line with the research of Aulia Amini, 2018 obtained from bivariate analysis research results showing that there is a meaningful relationship between maternal age and the incidence of anemia (p value 0.017< 0.05).

Respondents at risk (ages < 20 years and > 35 years) had fewer anemias. Mothers with < 20 years of age are physically and mentally not ready to face pregnancy and childbirth. Physically, there will be difficulties in childbirth because the mother's uterus and pelvis have not grown to adult size. From a mental standpoint, the mother is not ready to assume the duties and responsibilities of being a new parent. At age 35+, one will also experience physical difficulties. At that age, it will be easy to get sick due to aging uterine organs, and the birth canal will become stiffer, which can cause stuck labor and even bleeding. Mentally, at that age, most mothers have experienced childbirth before and do not want to have another pregnancy, so there is a burden for mothers because they have a lot of responsibility for their children,

which means the risk factors for anemia are greater in mothers >20 years old and multiparous. (R.Kusuma, 2019)

Based on the assumption of researchers, especially those under the age of 20, have a higher risk of anemia after childbirth. This is due to a variety of factors, such as a lack of experience in dealing with role changes, a lack of social support, and a lack of knowledge about mental well-being and older women, especially those over 35 years old, also have a higher risk of anemia after childbirth. This is due to a variety of factors, such as reduced reproductive function, reduced energy, and lack of social support. The results of this study show that there is no relationship between age and anemia incidence among pregnant women at the Kedokanbunder Health Center, as age is not a determining factor for mothers who experience anemia.

Parity of pregnant women

The results of the study on the relationship between parity and the incidence of anemia in pregnant women were that respondents who had more than one child (multipara) were not at risk of anemia as much as 60.9% more than respondents who had more than one child (multipara) and who had a risk of anemia as much as 39.1% of respondents with statistical results on the maternal parity variable with the results of the Chi-square test obtained a p-value of 0.019 (p-valeu) < 0.050 so that Ha was accepted, then there is a relationship between maternal parity and the incidence of anemia in pregnant women at the Kedokanbunder Health Center, Indramayu Regency. This is understandable because at multi-par parity, pregnant women already have different levels of anxiety from having given birth to children, more than one function of the reproductive organs has also undergone changes, and the focus is divided by taking care of the previous child, thus affecting poor daily nutrition fulfillment patterns, resulting in anemia in pregnancy.

Table 4. Frequency Distribution of Parity of Pregnant Women in the Working Area of the Kedokanbunder Regency Health Center Indramayu in 2025.

Parity of Pregnant Women	Frequency (n)	Present (%)
Multipara	69	78,4
Primipara	19	21,6
Total	**88**	**100**

Source: Primary Data 2025

Based on Table 4, the majority of pregnant women with children 2 - 5 (multipara) are 69 people (78.4%) at the Kedokanbunder Health Center, Indramayu Regency.

The Relationship Between Maternal Parity And The Incidence Of Anemia In Pregnant Women

Table 5. The Relationship of Parity of Pregnant Women with the Incidence of Anemia in Pregnant Women in the Working Area of the Kedokanbunder Health Center, Indramayu Regency in 2025

Parity	Incidence of Anemia in Pregnant Women						*p-Value*
	No Anemia		Anemia		Total		
	N	%	N	%	N	%	N
Primipara	11	57,9	8	42,1	19	100	0,019
Multipara	42	60,9	27	39,1	69	100	
Total	**53**	**60,2**	**35**	**39,8**	**88**	**100**	

Source: Primary Data 2025

Based on table 5, the results of the study were obtained from the relationship between parity and the incidence of anemia in pregnant women, namely pregnant women who are multipara, not anemia as much as 60.9%, more than pregnant women who are multipara and have anemia as many as 39.1% of pregnant women, with the results of statistics on the Parity variable with the results of the Chi-square test obtained a p value of 0.019 (p value) < 0.050 so that Ha is accepted, So there is a relationship between parity and the incidence of anemia in pregnant women.

The results of this study are consistent with Adawiyah's (2021) findings, which indicate a statistically significant relationship between parity and anemia incidence. This is in line with research (Purwati, 2022) on the Relationship between Parity Status and Employment with the Incidence of Anemia in Pregnant Women in the Second Trimester at PKM South Purwokerto, Banyumas Regency that, based on the results of the study, shows that there is a relationship between parity status and the incidence of anemia in pregnant women in the second trimester.

In Multipara parity, the more often women experience pregnancy and childbirth, the weaker the uterus will be, so that the risk of pregnancy complications at low parity can cause the mother's unpreparedness in facing childbirth, and pregnant women are unable to handle complications during pregnancy. The higher the parity, the higher the maternal mortality. The risk of primipara parity can be managed with better obstetric care, while the risk of multipara parity can be reduced or prevented with family planning. Some pregnancies in multiparous women are unplanned (Prawiroharjo, 2018).

The study assumes that there is a significant relationship between parity and the incidence of anemia in the Working Area of the Kedokanbunder Health Center, Indramayu Regency, the results of the study show that mothers who have 2-5 more paris than paris 1, this is because mothers ignore nutritional needs during pregnancy, mothers who have one parity amount do not guarantee that the mother will not experience anemia.

Health workers can try to educate pregnant women that there are risk factors associated with parity, such as the incidence of anemia in pregnancy, especially in pregnant women with multiparity. Pregnant women should cooperate with health workers in handling anemia in pregnancy, including both medical and non-medical treatment.

Knowledge of pregnant women

Based on Table 6, the majority of knowledgeable pregnant women are fewer than 49 (55.7%) at the Kedokanbunder Health Center, Indramayu Regency.

Table 6. Distribution of Knowledge Frequency of Pregnant Women with the Incidence of Anemia in Pregnant Women in the Working Area of the Kedokanbunder Regency Health Center Indramayu in 2025

Knowledge of Pregnant Women	Frequency (n)	Present (%)
Good	8	9,1
Enough	31	35,2
Less	49	55,7
Total		**100**

Source: Primary Data 2025

The results of the study on the relationship between knowledge and the incidence of anemia in pregnant women, namely respondents who have less knowledge do not have a

risk of anemia as much as 61.2% more compared to respondents who are less educated and who experience a risk of anemia as many as 38.8% of respondents with the results of statistics on maternal education variables with the Chi-square test obtained a p value of 0.008 (p *value)*<0.05 so that Ha is accepted, then there is a relationship between the mother's knowledge and the incidence of pregnant women at the Kedokanbunder Health Center, Indramayu Regency.

This aligns with research (Piliang, 2020) on factors associated with anemia among pregnant women at the Tegal Sari Health Center in Medan. Who said that the relationship between knowledge and the incidence factors of anemia in pregnant women (p = 0.08) at the Tegal Sari Medan Health Center showed that there was no relationship between knowledge and the incidence of anemia in pregnant women, because knowledge about anemia and nutrition in pregnant women is information stored in memory and cannot necessarily be practiced in daily life.

Knowledge is the result of what happens after people feel a particular object. Senses occur after the human senses, namely the senses of sight, hearing, smell, taste and touch. Most human knowledge is acquired through the senses (Notoadmodjo, 2015). Knowledge is the result of knowing after a person has a sense of an object, so that it can affect the intensity of attention to the object. The same happened in this study, which could bring respondents to increase their knowledge about reproductive health, especially about sexually transmitted infections. (Simanjutak, 2020).

Two factors affect it: internal and external. Internal Factors include Education and Human actions, especially their involvement in development, which their level of education can influence. Increased information retention and motivation to participate were associated with higher levels of education. External Factors, namely Environmental Factors, consist of all external factors and effects that can influence a person's or group's actions and changes (Wawan & Dewi, 2018).

The researcher assumes that there is a relationship between knowledge and the incidence of anemia in pregnant women in the work area of the Kedokanbunder health center, Indramayu Regency, because mothers who have less knowledge and do not experience anemia, and mothers who have less knowledge and experience anemia can apply the results of knowledge or information obtained about anemia in pregnancy. These results are consistent with a study (Piliang, 2020), which states that there is a significant relationship between knowledge and the incidence factors of anemia in pregnant women.

Table 7. The Relationship of Pregnant Women's Knowledge with the Incidence of Anemia in Pregnant Women in the Working Area of the Kedokanbunder Health Center, Indramayu Regency in 2025.

Knowledge	Incidence of Anemia in Pregnant Women						
	No Anemia		Anemia		Total		*p-Value*
	N	%	N	%	N	%	N
Good	3	37,5	5	62,5	8	100	
Enough	20	64,5	11	35,5	31	100	0,008
Less	30	61,2	19	38,8	49		
Total	**53**	**60,2**	**35**	**39,8**	**88**	**100**	

Source: Primary Data 2025

Based on table 7, the results of the study were obtained from the relationship between knowledge and the incidence of anemia in pregnant women, namely pregnant women who were less knowledgeable, not anaemia as much as 61.2%, more than pregnant women who had less knowledge and experienced anemia as many as 38.8% of pregnant women, with the results of statistics on the knowledge variable with the results of the Chi-square test obtained a p value of 0.008 (p value) < 0.050 so that Ha was accepted, So there is a relationship between knowledge and the incidence of anemia in pregnant women.

Education of pregnant women

Table 8. Distribution of Frequency of Education for Pregnant Women in the Working Area of the Kedokanbunder Health Center, Indramayu Regency in 2025.

Education of Pregnant Women	Frequency (n)	Present (%)
Basics	67	76,1
Height	21	23,9
Total	**56**	**100%**

Source: Primary Data 2025

Based on table 8, it shows that the majority of pregnant women with basic education are 67

people (76.1%) at the Kedokanbunder Health Center, Indramayu Regency.

Based on table 9, the results of the study were obtained from the relationship between education and the incidence of anemia in pregnant women, namely pregnant women who have basic education, not anemia as much as 52.2%, more than pregnant women who have basic education and experience anemia as many as 47.8% of pregnant women, with the results of statistics on educational variables with the results of the Chi-square test obtained a p value of 0.006 (p value) < 0.050 so that Ha is accepted, So there is a relationship between education and the incidence of anemia in pregnant women.

Table 9. The Relationship of Pregnant Women's Education to the Incidence of Anemia in Pregnant Women in the Work Area of the Health Center Kedokanbunder Indramayu Regency Year 2025

Education	**Incidence of Anemia in Pregnant Women**						
	No Anemia		**Anemia**		**Total**		***p-Value***
	N	%	N	%	N	%	N
Basics	35	52,2	32	47,8	67	100	0,006
Height	3	85,7	3	14,3	21	100	
Total	**53**	**60,2**	**35**	**39,8**	**88**	**100**	

Source: Primary Data 2025

The results of the study on the relationship between education and the incidence of anemia in pregnant women showed that respondents with basic education were 52.2% less likely to experience anemia than those with basic education who did experience anemia (47.8%). The results of the Chi-square test for the maternal education variable showed a p-value of 0.006 (<0.05), indicating that Ha was accepted and that there was a relationship between maternal education and the incidence of anemia in pregnant women at the Kedokanbunder Health Center, Indramayu Regency.

According to Edison's (2019) research, there is a relationship between education level and the incidence of anemia in pregnant women. This is due to limited understanding among mothers of maternal and fetal health and of the balance of nutritional values. The level of education can determine a person's insight, as their ability to master and accept something is influenced by their level of education. The understanding and acceptance of information obtained by a person with higher education is more optimal than that of a person with low education.

According to Mantra in Wawan and Dewi (2010), education can affect a person, including one's behavior and lifestyle, especially in shaping attitudes and motivation for development. The higher the level of education, the easier it is to access information.

Researchers argue that the basic education factor can have a significant influence on the condition of pregnant women with anemia. This is because mothers with a basic education do not understand the importance of maintaining a healthy lifestyle during pregnancy, such as taking blood pressure tablets regularly, which can affect a pregnant woman's behavior and lifestyle, especially in shaping attitudes and development during pregnancy. The more basic the education, the harder it is to access information. This causes pregnant women with basic education to be susceptible to anemia.

Economic status of pregnant women

Table 10 shows that the majority of pregnant women's economic status is low, with as many as 68 people (77.3%) in the Health Center. Based on table 11, the results of the study were obtained from the relationship between economic status and the incidence of anemia in pregnant women, namely pregnant women with low economic status, not anemia as much as 63.2%, more than pregnant women with low economic status and anemia as many as 36.8% of pregnant women, with the results of statistics on economic status variables with Chi-square test results obtained a p value of 0.202 (p value) >0.050 so that Ha was rejected, So there is no relationship between economic status and the incidence of anemia in pregnant women.

Table 10. Frequency Distribution of Economic Status of Pregnant Women in the Working Area of the Kedokanbunder Health Center, Indramayu Regency in 2025.

Overview of economic status	Frequency (n)	Present (%)
Low	68	77,3
Medium	13	14,8
Height	7	8
Total	**88**	**100**

Source: Primary Data 2025

The results of the study on the relationship between economic status and the incidence of anemia in pregnant women, namely respondents who have low economic status do not have a risk of anemia as much as 63.2% more compared to respondents with low economic status and who have a risk of anemia as many as 36.8% of respondents with the

results of statistics on the economic status variables of pregnant women with the results of the Chi-square test obtained a p value of 0.202 (p value) > 0.05 so that Ha is rejected, then there is no relationship between economic status support and the incidence of anemia in pregnant women at the Kedokanbunder Health Center, Indramayu Regency.

Table 11. The Relationship of Pregnant Women's Economic Status to the Incidence of Anemia in Pregnant Women in the Working Area of the Kedokanbunder Health Center, Indramayu Regency in 2025

Economic Status	**Incidence of Anemia in Pregnant Women**						
	No Anemia		**Anemia**		**Total**		***p-Value***
	N	%	N	%	N	%	N
Low	43	63,2	25	36,8	68	100	0,202
Medium	8	6,5	5	38,5	13	100	
Height	2	28,6	5	71,4	7	100	
Total	**53**	**60,2**	**35**	**39,8**	**88**	**100**	

Source : Primary Data 2025

In accordance with the research conducted by Irwan (2020), the results of the Chi-Square test obtained a value ρ = 0.001. obtained a value of p = 0.030 < α = 0.05, then Ha is rejected, and Ha is accepted, meaning that there is a relationship between economic status and the incidence of anemia in pregnant women. According to Garno et al. (2020), the results of multivariate analysis showed that there was a significant relationship between infectious diseases and the incidence of anemia in pregnant women after controlling for age, nutritional status, and gestational age (PR: 4,065 95%CI (1,310 -12,616).

This study aligns with Oktaviani (2018). Based on the study results, the chi-square test of family income variables showed no meaningful relationship with anemia incidence (p=0.668). Pregnant women who suffer from anemia have the lowest income. The family income variable also shows that there is no difference in the incidence of anemia between family income levels < UMR and > UMR. The results of this study show that pregnant women who experience the most anemia are mothers whose family income is below < UMR. Family income also determines the family's economic status. Women with low incomes are more likely to experience anemia (Campagito et al., 2015).

Anemia in pregnant women is more common in women with low family income. This shows that poverty rates and their effect on pregnancy are due to iron deficiency. The higher the family income, the greater its purchasing power to meet the family's nutritional needs,

including those of pregnant women, who are one of the family members with higher nutritional needs (Liow et al., 2016).

The researcher argues that, based on the results obtained, there is no relationship between economic status and the incidence of anemia in pregnant women, because mothers can buy good nutritional needs, there are people who plant fruits and vegetables in their yards, so that mothers do not experience anemia because they get nutritional needs from these fruits and vegetables.

Research Limitations

This research itself certainly has shortcomings that need to be continuously improved in future research. Some of the limitations in this study include:

1. The information provided by respondents through questionnaires sometimes does not show the genuine opinion of the respondents. This happens because respondents sometimes have different thoughts, assumptions, and understandings, as well as other factors, such as honesty in reporting their opinions in their questionnaires. However, to deepen it, the next phase used an in-depth interview method to obtain more complete data.
2. The shortcomings of the method used in this study are one of the difficulties experienced by the author in determining the relationship, so that it cannot determine whether the observed differences are statistically significant

CONCLUSION

Based on the results of research and discussion of factors related to the incidence of anemia in pregnant women in the working area of the Kedoaknbunder Health Center of Indramayu Regency 2025, it can be explained that: The majority of pregnant women do not experience anemia at the Kedokanbuder Health Center, Indramayu Regency; The majority of pregnant women are not at risk at the Kedokanbuder Health Center, Indramayu Regency; The majority of pregnant women with multipara parity at the Kedokanbuder Health Center, Indramayu Regency; The majority of pregnant women lack knowledge at the Kedokanbuder Health Center, Indramayu Regency; The majority of pregnant women have basic education at the Kedokanbuder Health Center, Indramayu Regency; The majority of pregnant women with low economic status at the Kedokanbuder Health Center, Indramayu Regency; There was no relationship between age and the incidence of anemia in pregnant women at the Kedokanbuder Health Center, Indramayu Regency; There is a relationship between parity and the incidence

of anemia in pregnant women at the Kedokanbuder Health Center, Indramayu Regency; There is a relationship between knowledge and the incidence of anemia in pregnant women at the Kedokanbuder Health Center, Indramayu Regency; There is a relationship between education and the incidence of anemia in pregnant women at the Kedokanbuder Health Center, Indramayu Regency; There was no relationship between economic status and the incidence of anemia in pregnant women at the Kedokanbuder Health Center, Indramayu Regency; There is the most related factor, namely parity and the incidence of anemia in pregnant women at the Kedokanbuder Health Center, Indramayu Regency.

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