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Risk Factors for Anemia in Pregnant Women (Case Study in the Manggari Community Health Center Working Area, West Java)

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ABSTRACT

Introduction: In pregnancy, anemia can have adverse effects on both the mother and the fetus, including the risk of low birth weight (BBLR), stunting, miscarriage, and even maternal death. The prevalence of anemia in pregnant women at Manggari Community Health Center is 42.3%, indicating a serious health problem. The purpose of this study is to identify the risk factors for the occurrence of anemia in pregnant women in the Manggari Community Health Center area. **Method**: The type of research is an analytical quantitative study with a case-control study approach. The population in this study consists of a group of pregnant women who visited the Manggari Community Health Center in Kuningan Regency, West Java at 2022. The sampling technique used in this study is purposive sampling, and 37 cases and 37 controls were obtained based on the Lemeshow formula. **Results:** The analysis shows that there is a relationship between the mother's age, parity, pregnancy spacing, compliance with iron tablet consumption, nutritional status (KEK), average iron intake, and the habit of consuming tea/coffee after meals with the occurrence of anemia in pregnant women at the Manggari Community Health Center in Kuningan Regency. **Conclusion:** The strongest relationship influencing the occurrence of anemia in pregnant women at the Manggari Community Health Center in Kuningan Regency is the compliance with iron tablet consumption with an odds ratio (OR) value of 42.9.

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INTRODUCTION

Anemia is a common condition in pregnant women throughout the world, especially in developing countries (Aboud dkk 2019; Sjahriani and Vera 2019). Iron deficiency anemia is a condition or condition characterized by decreased levels of hemoglobin (Hb), hematocrit, or red blood cells (Fikri & Arifin, 2022; Sjahriani & Vera, 2019). Anemia is said to be an indirect factor in maternal death (Rustandi dkk., 2020). Maternal Mortality Rate

(MMR), in English, is called Maternal Mortality Rate (MMR) and is an indicator of the success of maternal health efforts (Dewi dan Mardiana, 2021).

The prevalence of anemia in pregnant women in the world is 41.8% (Muxiddinovna dan Sobirovna, 2022). Based on Riskesdas data in 2018, the prevalence of anemia in Indonesia is still high, reaching 48.9%; this percentage shows that many pregnant women in Indonesia experience iron deficiency anemia (Kemenkes RI, 2018). This condition indicates a severe public health problem category, as indicated by the anemia prevalence limit of more than 40% (Dirjen Pelayanan Kesehatan Kemenkes RI, 2022). In West Java Province, the prevalence of anemia in pregnant women reached 37.1% (Srimulyawati dkk., 2020). Of the 18 districts and nine cities in West Java, Kuningan Regency is ranked 3rd highest for anemia in pregnant women, with the figure reaching 15.2% (Dinkes, 2023). The WHO threshold for public health problems for pregnant women who experience anemia is less than 5%. In the working area of the Manggari Community Health Center in 2022, the prevalence of pregnant women experiencing anemia in 2022 was 42.3%. The prevalence rate has increased since 2018, when it was previously only 33.8%.

Manggari Community Health Center is one of the community health centers in Kuningan Regency. Manggari Community Health Center is ranked first for the highest percentage of anemia in pregnant women in Kuningan Regency. The Manggari Community Health Center is also the only community health center that is included in the category of severe public health problems based on the prevalence of anemia, with a figure of ≥40% of cases in 2022. In the working area of the Manggari Community Health Center in 2022, the recorded prevalence of pregnant women experiencing anemia in 2022 was 42.3%. The prevalence rate has increased since 2018, when it was previously only 33.8%.

Anemia not only poses risks such as death for the mother but also the baby being born(Stephen dkk 2018). The impact of anemia in pregnancy can be seen from the high number of maternal deaths and morbidity rates, the increasing number of fetal deaths and morbidity rates, as well as the increased risk of LBW (Kusumastuti, 2022). In 2018, the prevalence of LBW in Kuningan Regency was dominated by the Manggari Community Health Center UPTD work area at 11.8% (Rusependhi dan Utari, 2020).

Pregnant women need at least 800 mg of iron, with details of 300 mg for the baby in the womb and 500 mg more to increase the mother's hemoglobin mass (Royadi dan Manoe, 2022). Per-day, pregnant women need 27 mg of iron (Savitrie, 2022). Mothers need iron to produce hemoglobin, which is a protein in red blood cells to deliver oxygen to tissues (Savitrie, 2022). With this increasing need, anemia can be prevented if the food eaten every day contains adequate iron, such as liver, fish, and meat, as well as other animal food sources that contain high levels of iron (Kusumastuti, 2022).

Apart from consuming foods high in iron, factors that prevent iron from being absorbed also need to be avoided, such as drinking tea and coffee. Tea is a drink that has a number of benefits for the body's health, but on the other hand, tea has also been researched to inhibit the absorption of non-heme iron(Mustika dan Deapati, 2019). Tea can impede iron absorption because it contains tannin compounds (Septiawan dan Sugerta, 2015). Tannins can bind metals, including iron, aluminum, and calcium, and then chemically form complex bonds. This bound condition makes it difficult for iron compounds to be absorbed by the body, resulting in a decrease in iron levels in the body (Pratama, 2019). Likewise, with coffee, the caffeine in coffee is able to bind iron in the blood so that the iron cannot be absorbed by the body and is excreted through feces (Hidayat & Widhiyastuti, 2020). Based on this description, the researcher aims to determine the risk factors for anemia in pregnant women in the Manggari Community Health Center working area.

LITERATURE REVIEW

Anemia is taken from the Greek Anaimia, which means "without blood." Anemia is a condition where the number of red blood cells is less than usual or the capacity to carry oxygen decreases so that the body's normal physiological functions are not fulfilled (Shams dkk., 2017). WHO defines anemia as a condition where the hemoglobin level in pregnant women is less than 11 g/dl. The threshold for pregnant women experiencing anemia from the hematocrit level is 0.33 g/l, while the erythrocyte level is considered normal if the ferritin level is 12-24 mg/l. Based on research conducted by the Riskesdas Agency in 2018, the prevalence of anemia in Indonesia was recorded as still high, reaching 48.9% (Kemenkes RI, 2018). This condition is included in the category of severe public health problems, which can be demonstrated by the prevalence rate of anemia cases being more than 40% (Dirjen Pelayanan Kesehatan Kemenkes RI, 2022).

The government has made various efforts to prevent anemia in pregnancy. One of them is stated in Minister of Health Regulation number 51 of 2016 concerning nutritional supplementation product standards article 1, paragraph 4. This paragraph briefly states that TTD supplementation containing iron and folic acid is given to WUS and pregnant women. Not only from the government pregnant women also need to be aware of themselves and help prevent anemia, for example, by consuming foods high in iron, such as liver, fish, and meat (Kemenkes RI, 2020). The most common mineral found in the human body is iron; it is 3-5 grams in the adult human body. There are several functions of iron in the body, including transporting oxygen from the lungs into the tissues, transporting electrons in cells, and helping to be part of enzyme reactions in the body (Almatsier, 2010).

Pregnant women are a group that is vulnerable to the problem of iron deficiency anemia (Suratiah dkk., 2018). Changes in body functions and processes during pregnancy combined with malnutrition are common causes of anemia during pregnancy. The amount of iron needed by pregnant women increases along with the supply needs of the fetus and placenta for tissue growth and erythrocyte mass (Dewi dan Mardiana, 2021). It is believed that erythrocytes will increase in number during pregnancy, but there will be blood thinning (Royadi dan Manoe, 2022). Blood thinning can occur during pregnancy as a result of the increase in plasma, which is not proportional to the increase in blood cells (Dai, 2021).

However, several risk factors have been found to cause anemia in pregnant women. These risk factors include the nutritional status of pregnant women, compliance with the consumption of Fe tablets, diversity of food consumption, gestational age, education level, dietary restrictions, and economic status (Dewi dan Mardiana, 2021). Not only that, in the book written by Almatsier, it is said that there is a compound called tannin, which is an inhibiting factor in the absorption of iron. This compound is usually found in drinks such as tea and coffee. According to Nurhidayati (2013), direct risk factors such as infectious diseases are believed to be the cause of anemia (Sutihati dkk., 2021). Other factors, such as age and parity, are also considered to be at risk for anemia in pregnant women (Fatkhiyah, 2018). Wijaya and Nur (2021) also mention several factors that cause the risk of anemia in pregnancy, including income, pregnancy spacing, and consumption of iron tablets.

METHOD

This research used a quantitative analysis method with a case-control study approach. The population studied in this research was a group of pregnant women who visited the Manggari Community Health Center, Kuningan Regency, West Java. The sampling technique applied in this research is purposive sampling. The minimum sample size in this study was determined using the Lemeshow formula (80% test power, α=0.05), and the case size was OR 3.75, namely research conducted by Arnianti in 2022. Based on sample calculations, a sample of 32.95 respondents was rounded up to 33 respondents. To

avoid dropout among research respondents, the sample size needs to be added to a standard error of 10% from 33, namely 3.3 respondents. Thus, the number of respondents was 37 cases and 37 controls. The case group is pregnant women in 2022 who experience anemia, while the control group is pregnant women in 2022 who do not experience anemia.

The inclusion criteria for the case sample were anemic pregnant women who visited the Manggari Community Health Center in 2022, had complete data from medical records such as the KIA (Maternal and Child Health) book, and were willing to take part in the research. Meanwhile, the control sample inclusion criteria were non-anemic pregnant women who visited the Manggari Community Health Center in 2022, had complete data from medical records such as the KIA (Maternal and Child Health) book, and were willing to take part in the research. The exclusion criteria for the case and control samples in this study were pregnant women who were unable to communicate well (sick or unable to speak) and did not have medical records, such as an MCH book with complete data.

Primary data collection was carried out using mass collection techniques; where when there was an event gathering pregnant women in several villages organized by the Manggari Community Health Center, researchers took part in collecting data and conducting interviews at the same time. The instruments used in this research were questionnaires, KIA books, and SQ-FFQ sheets. Data analysis was carried out in stages, including univariate, bivariate, and multivariate analysis. Bivariate analysis uses the chi-square statistical test because the independent variables and dependent variables are on a categorical scale. Meanwhile, the multivariate analysis used is the logistic regression test. The confidence level was set at 95% (α= 0.05). This research has received ethical approval number 433/KEPK/EC/2023.

The variables in this research include independent variables and dependent variables. Independent variables include maternal age, parity, pregnancy spacing, maternal education, family income, compliance with Fe tablet consumption, CED status, iron intake, dietary restrictions, tea/coffee consumption habits, and history of disease (TB, malaria, worms). The dependent variable in this study is the incidence of anemia in pregnant women. Data on maternal age, parity, pregnancy interval, maternal education, income, dietary restrictions, tea/coffee consumption habits, and disease history were obtained by filling in a questionnaire. Data on CED status and the incidence of anemia were obtained from the MCH book for each pregnant woman. Data on iron intake was obtained using the Food Frequency Questionnaire (FFQ) form, and then data on the average daily iron intake was taken using the Nutrisurvey application.

RESULT AND DISCUSSION

Manggari Community Health Center is one of the community health centers located in Lebakwangi District, Kuningan Regency. The Manggari Health Center houses the communities of six villages in Lebakwangi District, including Manggari Village, Pagundan Village, Pasayangan Village, Sindang Village, Bendungan Village, and Kliwon Village.

The parameters used for each variable in this study are the maternal age variable at risk (<20 years or >35 years) and not at risk (20-35 years), the parity variable at risk (> two children) and not at risk (≤2 children), variable distance between risky (<2 years) and non-risk pregnancies (≥ two years), essential maternal education variable (≤Junior High School) and upper (>Junior High School), variable family income sufficient (<Rp. 1,908,102.17) and high (≥Rp. 1,908,102.17), compliance variable for consumption of Fe tablets non-compliant (<90 tablets) and compliant (≥90 tablets), variable KEK status, KEK (LiLA <23.5 cm) and not KEK (LiLA ≥23.5 cm), variable iron intake is poor (<27 mg) and good (≥27mg), variable food restrictions (presence and absence of dietary restrictions), variable habit of consuming tea/coffee after eating (presence and absence of habit), variable history infectious disease

(with history or no history of disease), variable incidence of anemia (anemia Hb<11g/dl) and (no anemia Hb≥11g/dl).

Table 1. Univariate Analysis

Variables	Category	n	(%)
Maternal age	High risk (<20 years atau >35 years)	16	21.6
	Low risk (20 – 35 years)	58	78.3
Parity	High risk (>2 children)	24	33.7
	Low risk (≤2 children)	50	67.5
Pregnancy Spacing	High risk (<2 years)	29	39.1
	Low risk (≥2 years)	45	60.8
Maternal education	Low education (≤Junior High School)	41	55.4
	High education (>Junior High School)	33	44.5
Family income	Low (<Rp1,908,102.17)	46	62.1
	High (≥Rp1,908,102.17)	28	37.8
Compliance with blood supplement (Fe) tablet consumption	Non-Compliant (<90 tablets)	19	25.6
	Compliant (≥90 tablets)	55	74.3
Chronic energy deficiency status	Positive (upper arm circumference <23,5 cm)	15	20.2
	Negative (upper arm circumference ≥23,5 cm)	59	79.7
Iron Intake	Low (<27 mg)	59	79.7
	High (≥27mg)	15	20.2
Food Restrictions	Yes	11	14.8
	No	63	85.1
Habit of Consuming Tea/Coffee After Meals	Yes	26	35.1
	No	48	64.8
History of Infectious Diseases (TB, Intestinal Worms, Malaria)	Yes	3	4.0
	No	71	95.9

The results of the univariate analysis showed that of the 74 respondents, 16 people (21.6%) in the risk age category (<20 years or >35 years) experienced anemia, and 58 people (78.3%) in the no-risk age category (20 – 35 years) do not experience anemia. Respondents in the parity category at risk (> two children) were 24 people (33.7%), while respondents in the parity category not at risk (≤ 2 children) were 50 people (67.5%). Respondents with a pregnancy distance in the risk category (<2 years) were 29 people (39.1%), while respondents with a pregnancy distance in the no-risk category (≥ two years) were 45 people (60.8%). Respondents with primary education (≤Junior High School) were 41 people (55.4%), while respondents with higher education (>Junior High School) were 33 people (44.5%). Respondents with low category income (<Rp. 1,908,102.17) were 46 people (62.1%), while respondents with high category income (≥Rp. 1,908,102.17) were 28 people (37.8%) (Table 1).

Nineteen respondents adhered to Fe tablet consumption in the non-compliant category (<90 tablets), while 55 respondents who adhered to Fe tablet consumption in the compliant category (≥90 tablets) were 55 people (74.3%). Respondents with chronic energy deficiency (with the upper arm circumference <23.5 cm) were 15 people (20.2%), while respondents with chronic energy deficiency status in the non-SEZ category (upper arm circumference ≥23.5 cm) were 59 people (79.7%). Respondents with an average iron intake in the poor category (<27 mg) were 59 people (79.7%), while respondents with an average iron intake in the excellent category (≥27 mg) were 15 people (20.2%). There were 11 respondents (14.8%) who had dietary restrictions, while 63 respondents (85.1%) had no

dietary restrictions. Twenty-six respondents had the habit of consuming tea/coffee drinks after eating, while 48 respondents did not have the habit of consuming tea/coffee drinks after eating, which was 48 people (64.8%). There were three respondents (4%) who had a history of infectious disease, while 48 respondents (95.9%) had no history of infectious disease (Table 1).

Table 2. Bivariate Analysis (N=74)

Variable	Anemia		Non-Anemia		Total		P-value
	n	%	n	%	n	%	
Maternal age							
High risk	12	32.4	4	10.8	16	21.6	0.048
Low risk	25	67.5	33	89.1	58	78.3	
Parity							
High risk	17	45.9	7	18.9	24	33.7	0.025
Low risk	20	54.0	30	81.0	50	67.5	
Pregnancy spacing							
High risk	20	54.0	9	24.3	29	39.1	0.017
Low risk	17	45.9	28	75.6	45	60.8	
Maternal education							
Low education	22	59.4	19	51.3	41	55.4	0.640
High education	15	40.5	18	48.6	33	44.5	
Family income							
Low	25	67.5	21	56.7	46	62.1	0.472
High	12	32.4	16	43.2	28	37.8	
Compliance with blood supplement (Fe) tablet consumption							
Non-Compliant	17	45.9	2	5.40	19	25.6	0.001
Compliant	20	54.0	35	96.5	55	74.3	
Chronic energy deficiency status							
Positive	12	32.4	3	8.10	15	20.2	0.048
Negative	25	67.5	34	91.8	59	79.7	
Iron Intake							
Low	35	96.5	24	64.8	59	79.7	0.004
High	2	5.40	13	35.1	15	20.2	
Food Restrictions							
Yes	8	21.6	3	5.40	11	14.8	0.191
No	29	78.3	35	96.5	63	85.1	
Habit of Consuming Tea/Coffee After Meals							
Yes	19	51.3	7	18.9	26	35.1	0.003
No	18	48.6	30	81.0	48	64.8	
History of Infectious Diseases (TB, Intestinal Worms, Malaria)							
Yes	2	5.40	1	2.70	3	4.0	0.500
No	35	94.5	36	97.2	71	95.9	

The bivariate analysis shows that the variables that have a significant relationship ($p<0.05$) include maternal age (0.048), parity (0.025), pregnancy distance (0.017), adherence to consuming Fe tablets (0.001), CED status. (0.048), iron intake (0.004), and the habit of consuming tea/coffee after meals (0.003). Meanwhile, variables that did not have a significant relationship included maternal education (0.640), family income (0.472), dietary restrictions (0.191), and history of infectious diseases (0.500) (Table 2).

The results of the analysis in Table 2 above show that of the 37 cases of anemic pregnant women, 12 people (32.4%) had an age range at risk, namely <20 years or >35 years. Meanwhile, of the 37 control pregnant women who were not anemic, 33 (89.1%) had an age range that was not at risk (20–35 years). The statistical test results obtained a value of p=0.048 (p>0.05), and it can be interpreted that there is a relationship between maternal age and the incidence of anemia in pregnant women at the Manggari Community Health Center, Kuningan Regency. In accordance with research conducted by Fatkhiyah (2018) and Astriana (2017), which was written in their scientific article, there is a relationship between maternal age and the incidence of anemia. Ideally, pregnant women should be no less than 20 years old and no more than 35 years old (Sjahriani dan Vera, 2019). Anemia is a condition where the number of erythrocytes or hemoglobin (Hb) levels is lower than the standard category (Arnianti dkk., 2022). According to WHO (2011), pregnant women can be categorized as frail if they have a hemoglobin level of less than 11 g/dl. Pregnancy that occurs when the mother is under 20 years of age can be at risk of experiencing anemia; this happens because biologically, the mother's body is not yet optimal, and emotions still tend to be unstable, this can cause a lack of attention in meeting nutritional need. Meanwhile, pregnancy, when the mother is more than 35 years old, can cause anemia, which is caused by a decreased immune system, so infectious diseases can quickly attack during pregnancy (Fatkhiyah, 2018).

The results of the analysis in Table 2 above show that of the 37 cases of anemic pregnant women, 17 (45.9%) of them had parities at risk (> 2 children). Meanwhile, of the 37 control pregnant women who were not anemic, 30 people (81.0%) had parity who were not at risk (≤2 children). The statistical test results obtained a value of p=0.025 (p>0.05), and it can be interpreted that there is a relationship between parity and the incidence of anemia in pregnant women at the Manggari Community Health Center, Kuningan Regency. In accordance with research conducted by Astriana (2017), who in her scientific article stated that pregnant women with high parity are at higher risk of experiencing anemia compared to pregnant women with low parity. Parity is the number of babies born to a mother, both live births and stillbirths(Fatkhiyah, 2018). The greater the frequency of a woman getting pregnant and giving birth, the greater the potential for pregnant women to lose iron (Safitri dan Sudiman, 2017). Iron supplies in the body are low, resulting in the depletion of these supplies and can cause anemia Pregnant women with parity (>2) are at risk of experiencing anemia, but this is also triggered by the spacing of pregnancies (Safitri dan Sudiman, 2017).

The results of the analysis in Table 2 shows that of the 37 cases of anemic pregnant women, 20 (5.40%) of them had a risky pregnancy interval (<2 years). Meanwhile, of the 37 control pregnant women who were not anemic, 28 people (75.6%) had a pregnancy interval that was not at risk (≥ two years). From the test results, the value of p=0.017 (p>0.05) was obtained, and it can be interpreted that there is a relationship between the distance between pregnancies and the incidence of anemia in pregnant women at the Manggari Community Health Center, Kuningan Regency. This data is in accordance with the scientific article written by Syarfaini dkk. (2019), who stated that the risk of pregnancy spacing resulting in anemia was 2.7 times greater than that of pregnant women whose pregnancy spacing was not at risk. A pregnant woman's pregnancy interval that is too short or under two years is at significant risk of experiencing anemia. This result is because the body of a pregnant woman who has a pregnancy gap of less than two years does not have sufficient nutritional reserves for the subsequent pregnancy (Arnianti dkk., 2022).

Short pregnancy intervals accelerate the occurrence of anemia. This condition occurs because the mother is still recovering from incomplete nutritional adequacy, but she must ensure adequate nutrition for the baby she is carrying (Sjahriani dan Vera, 2019). Therefore, to restore iron reserves to normal levels, it takes a minimum of 2 years with the

condition of consuming foods high in iron and protein; not only that but this period can also be used by pregnant women to restore their anatomical and physiological functions (Arnianti dkk., 2022).

The results of data analysis in Table 2 show that of the 37 cases of anemic pregnant women, 22 people (59.4%) of them had education up to junior high school. Meanwhile, of the 37 control pregnant women who were not anemic, 18 people (48.6%) had education up to high school. Based on the test results, the value of p=0.640 (p>0.05) was obtained, which means there is no relationship between maternal education and the incidence of anemia in pregnant women at the Manggari Community Health Center, Kuningan Regency. However, this is different from the scientific article written by Purba, which states that maternal education is related to the incidence of anemia in pregnant women. Mothers with higher education will be more tolerant of all new knowledge, which will affect nutrition during pregnancy. However, there is no complete guarantee that by getting information related to nutrition, pregnant women will avoid anemia. This condition can only happen if the mother correctly applies the nutritional information so that her health condition can change for the better. This research shows that maternal education is not a risk factor for anemia because a high level of education does not necessarily determine a mother's level of knowledge and understanding in meeting her nutritional needs during pregnancy. Education is very influential in a person's life, as it helps them take action and find solutions to overcome their problems. Educated people generally find it easy to obtain information related to nutrition and healthy living so they can prevent anemia (Purba dan Tanjung, 2018). Education is also closely related to knowledge, where new information tends to be more readily accepted if someone has higher education, has broad insight, and is likely to be able to prevent disease better (Dewi dan Mardiana, 2021).

The results of data analysis in Table 2 show that of the 37 cases of anemic pregnant women, 25 people (67.5%) had incomes below the UMK for Kuningan Regency (Rp. 1,908,102.17). Meanwhile, of the 37 control pregnant women who were not anemic, 16 people (43.2%) had incomes above the minimum wage. Based on the test results, the value obtained was p=0.472 (p<0.05), and it can be interpreted that there is no relationship between income and the incidence of anemia in pregnant women at the Manggari Community Health Center, Kuningan Regency. This result is different from research conducted by Purba (2018), which concluded that there was a relationship between economic income and the incidence of anemia in pregnant women. The diet of pregnant women can be influenced by low financial status. Unequal distribution of food due to the large number of family members can result in pregnant women not being able to get the proper nutrition they should, causing anemia(Dewi dan Mardiana, 2021). However, even high income can still cause anemia if the income generated is not allocated to buying food (Afriyanti, 2020). Everyone needs income to fulfill various aspects of their life, such as primary needs and secondary needs. The amount of income generated will affect purchasing power and the ability to provide food stocks, which, as a result, can affect pregnancy, which can cause the risk of anemia (Mardha dan Syafitri, 2021).

The results of the analysis in Table 2 indicate that of the 37 cases of anemic pregnant women, 17 people (45.9%) were not compliant in taking blood supplement tablets (Fe tablets). Meanwhile, of the 37 control pregnant women who were not anemic, 35 people (96.5%) were compliant in taking TTD (Fe tablets). The test results showed a value of p=0.000 (p<0.05), which means there is a relationship between compliance with the consumption of Fe tablets and the incidence of anemia in pregnant women at the Manggari Community Health Center, Kuningan Regency. This research is in accordance with research written by Puspitasari dkk. (2020), who in their writing concluded that there is a relationship between the level of compliance with the consumption of Fe tablets and the

incidence of anemia in pregnant women. Research conducted by Miarti dkk. (2020) also came to the same conclusion, namely that there is a relationship between compliance with the consumption of Fe tablets and the incidence of anemia in pregnant women. WHO determines that consuming Fe tablets is sufficient during pregnancy if a minimum of 90 tablets are consumed. During pregnancy, additional iron is considered very important to give to pregnant women. According to Syarfaini dkk. (2019) pregnant women who have a high level of compliance in consuming Fe tablets have a lower risk of experiencing anemia. This condition happens because the more significant the frequency of consuming Fe tablets during pregnancy, the lower the risk of anemia.

The results of the analysis in Table 2 show that of the 37 cases of anemic pregnant women, 12 people (32.4%) experienced CED with a LiLA size <23.5 cm. Meanwhile, of the 37 control pregnant women who were not anemic, 34 people (91.8%) did not experience CED with a LiLA size of ≥23.5 cm. The statistical test results show a value of p=0.048 (p<0.05), which means there is a relationship between KEK status and the incidence of anemia in pregnant women at the Manggari Community Health Center, Kuningan Regency. In accordance with research written in a scientific article by Aminin dkk., (2014), they concluded that there is a relationship between KEK status and the incidence of anemia in pregnant women. This condition is similar to research conducted by Arnianti et al (2022), which also concluded the same results that the incidence of CED factors significantly influenced the incidence of anemia. WHO explains that around 40% of the causes of death of pregnant women in developing countries are related to the incidence of anemia in pregnancy, and the majority are caused by acute bleeding and poor nutritional status (Aminin dkk., 2014). Malnutrition during pregnancy is closely related to Chronic Energy Deficiency (CED), which can be determined by measuring Upper Arm Circumference (LiLA). LiLA is included in the normal category, namely ≥23.5 cm. CED in pregnant women usually lasts a long time before pregnancy. Women who experience CED during pregnancy can also be caused by unbalanced nutritional intake (Afriyanti, 2020).

The results of the analysis in Table 2 show that of the 37 cases of anemic pregnant women, 35 (96.5%) of them had an average iron intake that was deficient with a minimum iron intake of <27 mg. Meanwhile, of the 37 control pregnant women who were not anemic, 13 (35.1%) had adequate iron intake with an average Fe intake of ≥27 mg. The statistical test results showed a value of p=0.004 (p<0.05), and this means that there is a significant relationship between the average intake of Fe and the incidence of anemia in pregnant women at the Manggari Community Health Center, Kuningan Regency. This analysis is strengthened by research conducted by Utomo dkk. (2016), who explained the influence of iron intake on the incidence of anemia in pregnant women with p = 0.001. Pregnant women really need iron to prevent anemia and maintain optimal fetal growth (Syarfaini dkk., 2019). Apart from the growing blood volume during pregnancy, the demands of the ever increasing fetus also put pregnant women in a position with a higher risk of experiencing anemia. Therefore, iron intake in pregnant women must increase because if pregnant women are deficient in Fe, this will increase the risk of anemia (Syarfaini dkk., 2019).

The results of the analysis in Table 2 show that of the 37 cases of anemic pregnant women, 8 (21.6%) of them had dietary restrictions. Meanwhile, of the 37 control pregnant women who were not anemic, there were 35 people (96.5%) who had no dietary restrictions. The test results show a value of p=0.191 (p<0.05), and it can be interpreted that there is no relationship between beliefs about food taboos and the incidence of anemia in pregnant women in the Manggari Health Center working area, Kuningan Regency. However, this is different from the analysis carried out by Dewi and Mardiana (2021), who, in their scientific article, stated that there is a relationship between dietary restrictions and the incidence of anemia in pregnant women. The differences in the results of this research are based on

several things, including the sample size, as in the scientific article written by Andriani et al. (2016), which numbered 100 respondents (Puspitasari dkk., 2020). Food taboos or prohibitions for pregnant women are still common in several developing countries. Food taboos occur because of the belief that these foods will have a harmful impact on anyone who violates them. Food taboos are usually passed down from generation to generation. The existence of food restrictions can result in a lack of variety in the types of food consumed by pregnant women, resulting in less-than-perfect nutritional adequacy for pregnant women (Dewi dan Mardiana, 2021).

The results of the analysis in Table 2 show that of the 37 cases of anemic pregnant women, 19 people (51.3%) had the habit of consuming tea/coffee after eating. Meanwhile, 30 of the 37 control pregnant women who were not anemic (81.0%) did not have the habit of consuming tea/coffee after eating. The test results show a value of p=0.003 (p<0.05), and it can be interpreted that there is a relationship between the habit of consuming tea/coffee after meals and the incidence of anemia in pregnant women at the Manggari Community Health Center, Kuningan Regency. The results of this study are in line with the scientific article written by Septiawan (2015) with a value of p = 0.044 (p<0.05), which can be interpreted as indicating that there is a relationship between the habit of drinking tea and the incidence of anemia in pregnant women. This research was confirmed by Iriani and Ulfah (2019), who, in their study, stated that there was a relationship between the habit of drinking tea and coffee and the incidence of anemia in pregnant women. The combination of foods absorbed when eating certain foods influences the absorption of iron; powerful tea can have a natural inhibitory effect on the body's absorption of iron. Anemia that occurs during pregnancy has a harmful impact on the pregnant woman and the baby. One of the leading causes of anemia is low iron intake. Iron intake can be hampered by several substances, one of which is tannin. Tannins are polyphenols that can be found in drinks such as tea, coffee, and several types of vegetables and fruit. They are believed to inhibit the absorption of Fe by binding to iron(Septiawan dan Sugerta, 2015).

The results of the analysis in Table 2 show that of the 37 cases of anemic pregnant women, two people (5.4%) had a history of infectious diseases (TB, intestinal worms, malaria). Meanwhile, of the 37 control pregnant women who were not anemic, 36 (97.2%) had no history of infectious disease. The test results show a value of p=0.500 (p<0.05), and it can be interpreted that there is no relationship between disease history and the incidence of anemia in pregnant women in the Manggari Health Center working area, Kuningan Regency. In accordance with the scientific article written by Sutihati et al. (2021) states that a history of infectious disease is not a risk factor for anemia because several factors were not studied, such as how long the infection lasted and the patient's healing process. A history of this infectious disease is not included as a risk factor for anemia in pregnant women at the Manggari Community Health Center, Kuningan Regency. This condition is because only three respondents had a history of infectious diseases or around 4% of the total 74 respondents. Several infectious diseases, especially tuberculosis, worms, and malaria, are known to increase the risk of anemia. Worm infections rarely cause death but affect the quality of life of infected people (Sutihati dkk., 2021). Pregnant women are a group that is vulnerable to contracting parasitic infections, such as malaria, due to changes in the immune system during pregnancy. Anemia caused by malaria infection arises due to the process of destroying red blood cells and hampering the process of making red blood cells, which results in decreased blood Hb levels (Flora dkk., 2013).

The results of the multivariate analysis show that the most vital factor that significantly influences the incidence of anemia in pregnant women in the working area of the Manggari Community Health Center, Kuningan Regency, is compliance with the consumption of Fe tablets with a value of p = 0.001 and OR = 42.93. Pregnant women who

are not compliant in consuming Fe tablets During pregnancy, the risk of experiencing anemia is 42.9 times greater than that of pregnant women who adhere to taking Fe tablets.

Table 3. Multivariat Analysis

Variable	OR	95% CI	Sig
Pregnancy spacing	5.894	1.460 – 23.791	0.013
Compliance with blood supplement (Fe) tablet consumption	42.933	4.452 – 414.067	0.001
Average Fe intake	19.574	1.437 – 266.563	0.026
Habit of Consuming Tea/Coffee After Meals	5.222	1.309 – 20.825	0.019

CONCLUSION

Risk factors that have a significant relationship with the incidence of anemia in pregnant women in the Manggari Health Center working area, Kuningan Regency, include maternal age, compliance with Fe tablet consumption, KEK status, parity, average Fe intake, pregnancy interval, and tea/coffee consumption habits after Eat. Apart from that, the most vital factor influencing the incidence of anemia in pregnant women in the Manggari Community Health Center working area, Kuningan Regency, is compliance with the consumption of Fe tablets with an OR = 42.93.

Pregnant women in this study, especially those with anemia, are expected to be more compliant in consuming Fe tablets, maintain pregnancy spacing, pay attention to food intake, especially foods that contain iron, and avoid the habit of consuming tea/coffee after meals.

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