

Retrospective study on anemia prevalence of pregnant women during third trimester pregnancy in Yogyakarta 2019

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Abstract

Anemia during pregnancy can result in fetal death, abortion, congenital defects, low birth weight, reduced iron reserves in children or children born with malnutrition. This study aimed to describes the anemic incidence in the third trimester of pregnant women at Puskesmas Tegalrejo Yogyakarta. This research was a descriptive study that used a retrospective time approach. A total of 212 pregnant women in the third trimester met the inclusion criteria, which was pregnant women in the third trimester who had their pregnancy checked at the Puskesmas Tegalrejo Yogyakarta. The research tool used was a data collection sheet. Data was analyzed in proportion and percentage then using Chi Square analysis to get the correlational value ($p < 0.05$). Odds Ratio for Cohort value toward anemic status also was analyzed. The incidence rate of anemia (Hb < 11 gr%) occurred in 44 (20.8%) mothers aged < 20 years and > 35 years, 58 (27.4%) mothers with gestational age < 37 weeks, 137 (64.6%) mothers with > 4 parity, with a pregnancy interval of < 24 months from the last child, as many as 141 (66.5%) mothers and 110 (51.9%) mothers with nutritional status based on upper arm circumference < 23.5 cm. These factors are considered risk factors for causing anemia in pregnant women. Correlation test using Chi Square is known to show $p < 0.05$ for all variables. The highest risk for Anemic Incidence was known to be indicated by the Pregnancy Interval factor, < 24 months ($p < 0.001$; OR 9,512) followed by parity > 4 ($p < 0.001$; OR 6,679).

Keywords: anemia, pregnant women

INTRODUCTION

Reducing the Maternal Mortality Rate (MMR) to 70 per 100,000 live births (KH) by 2030 is one of the Sustainable Development Goals (SDGs), which is a sustainable development effort that becomes a reference in the development and negotiation framework of countries in the world. This output is certainly getting lower when compared to the 2015 MDGs target of reducing MMR to 102 per 100,000 KH (Nur, 2019). That target is an approach following the facts that, estimated that worldwide more than 585 mothers die each year during pregnancy and childbirth, anemia is one of the indirect causes of death for pregnant women and childbirth. The



prevalence of anemia in pregnant women globally reaches 41.8% or 56 million pregnant women (WHO, 2015).

Bleeding ranks highest as a cause of maternal death throughout the period. One of the occurrences of bleeding is caused by low levels of hemoglobin (HB) in pregnant women which will cause anemia (Ngurah Rai, 2017). Anemia, mostly in pregnant women, is classified as lack of nutritional value, the physiological condition of the mother, namely the high need for iron during pregnancy to meet the needs of the mother and her fetus, causes many women to experience iron deficiency. Nutritional problems for pregnant women have a wider impact, both on the mother and the fetus, so that it requires special attention to this. Anemia during pregnancy can result in fetal death, abortion, congenital defects, low birth weight, reduced iron reserves in children or children born with nutritional (Manuaba, Obstetrics, Gynecology and Family Planning, 2010).

Meanwhile, the prevalence of anemia in pregnant women in DIY in 2015 was 14.85% and increased in 2016, which was 16.09% and again decreased to 14.32% in 2017. The data indicates that the target of reducing the number of maternal deaths a priority health problem in DIY. The prevalence of pregnant women in DIY with the highest anemia was in the city of Yogyakarta 30.81%, Bantul 16.32%, Kulon Progo 12.88%, Sleman 8.06%, and Gunung Kidul 16.77%. The prevalence of pregnant women in DIY with the highest anemia was in the city of Yogyakarta 30.81%, Puskesmas Tegalrejo Yogyakarta was the highest prevalence of pregnant women with anemia from other Puskesmas (Ministry of Health, 2017).

Factors that affect hemoglobin levels during pregnancy include the age of pregnant women, age 20-35 years is the productive and ideal age, while at age <20 years is a period of growth and development so that more nutritional intake is used for the needs of the mother than the fetus. Age > 35 years is a period of decline in reproductive organ functions and a high risk of experiencing labor complications. Mothers aged > 35 years tend to experience anemia due to decreased iron reserves in the body (Prahesti, 2017).

Gestational age, namely pregnant women in the first trimester will have a lower risk than the second trimester and third trimester. At the time of pregnancy, plasma volume, volume and mass of red blood cells have increased. The increase that occurs in blood volume causes a decrease in hemoglobin and hematocrit concentrations where a decrease in hemoglobin concentration is known as anemia. The peak incidence of anemia during pregnancy is in the third trimester (Fanni, 2017).

Regulation number 4 of 2019 chapter III concerning technical standards for meeting the quality of basic services in the minimum service standards in the health sector. Fulfillment of the quality of basic services at the SPM in the health sector in the District or City area regarding the standard of blood supplement tablets for pregnant women Blood booster tablets for pregnant women are shown to meet the needs of pregnant women, prevent iron deficiency anemia and folic acid deficiency and are available and distributed throughout the Province and then given through Puskesmas, Puskesmas Assistance, Posyandu or Village Midwives for pregnant women to consume blood booster tablets 90 tablets for at least 90 days. In addition, the role of the

government is through the placement of midwives in villages, empowering families with the community using the maternal and child health book (KIA book), as well as childbirth planning and complication prevention programs (P4K) (Permenkes, 2019).

Based on a preliminary study at the Tegalorejo Health Center in Yogyakarta, the authors obtained data that in 2019 there were 148 third trimester pregnant women with anemia out of 212 pregnant women in the third trimester who had their pregnancy checked. This study aims to reveal the prevalence of anemia in Yogyakarta City and the factors that influence the incidence, especially in the third trimester of pregnancy. This study also urgently required as a basic incidence data in Yogyakarta to be developed more by further research.

RESEARCH METHODS

This research was a descriptive study that describes the anemic incidence in the third trimester of pregnant women at Puskesmas Tegalorejo Yogyakarta. This study used a retrospective time approach. A total of 212 pregnant women in the third trimester met the inclusion criteria, which was pregnant women in the third trimester who had their pregnancy checked at the Puskesmas Tegalorejo Yogyakarta. The research tool used was a data collection sheet containing patient identity, Anemic Status, Ages of Mother, Ages of Pregnancy, Parity, Pregnancy distance, and Nutritional Status based on upper arm circumference. Data was analyzed in proportion and percentage then using Chi Square analysis to get the correlational value ($p < 0.05$). Odds Ratio for Cohort toward anemic Status also was analyzed. This study was obtained the Ethical Approval number 1132/KEP-UNISA/II/2020.

RESULTS AND DISCUSSION

Table 1. Respondent Characteristics based on Anemic Status, Ages of Mother, Ages of Pregnancy, Parity, Pregnancy distance, and Nutritional Status based on upper arm circumference (N=212)

Characteristics	Frequency (n)	Percentage (%)
1. Anemic Status		
Anemic (<11 gr%)	148	69.8
Not Anemic (≥ 11 gr%)	64	30.2
2. Ages of Mother		
<20 years old and >35 years old	49	23.1
20-35 years old	163	76.9
3. Gestational Age		
<37 weeks	115	54.2
37-40 weeks	97	45.8
4. Parity		
>4 parities	138	65.1
≤ 4 parities	74	34.9
5. Pregnancy Interval		
<24 months from the last child	144	67.9
≥ 24 months from the las child	68	32.1
6. Nutritional Status based on upper arm circumference		
<23,5 cm	112	52.8
>23,5 cm	100	47.2

Table 2. Crosstabulation and Correlative analysis between Anemic Status and Risk Factors

Characteristic	Anemic Status		Total	OR (95% CI)*	p**
	Anemic (<11 gr%)	Not Anemic (≥11 gr%)			
Ages of Mother					
<20 years old and >35 years old	44 (20.8%)	5 (2.4%)	49 (23.1%)	ref	0.001
20-35 years old	104 (49.1%)	59 (27.8%)	163 (76.9%)	1.407 (1.212-1.634)	
Total	148 (69.8%)	64 (30.2%)	212 (100.0%)		
Gestational Age					
<37 weeks	58 (27.4%)	57 (26.9%)	115 (54.2%)	ref	<0.001
37-40 weeks	90 (42.5%)	7 (3.3%)	97 (45.8%)	0.544 (0.450-0.657)	
Total	148 (69.8%)	64 (30.2%)	212 (100.0%)		
Parity					
>4 parities	137 (64.6%)	1 (0.5%)	138 (65.1%)	ref	<0.001
≤4 parities	11 (5.2%)	63 (29.7%)	74 (34.9%)	6.679 (3.871-11.523)	
Total	148 (69.8%)	64 (30.2%)	212 (100.0%)		
Pregnancy Interval					
<24 months from the last child	141 (66.5%)	3 (1.4%)	144 (67.9%)	ref	<0.001
≥24 months from the last child	7 (3.3%)	61 (28.8%)	68 (32.1%)	9.512 (4.714-19.194)	
Total	148 (69.8%)	64 (30.2%)	212 (100.0%)		
Nutritional Status based on upper arm circumference					
<23,5 cm	110 (51.9%)	2 (0.9%)	112 (52.8%)	ref	<0.001
>23,5 cm	38 (17.9%)	62 (29.2%)	100 (47.2%)	2.585 (2.010-3.324)	
Total	148 (69.8%)	64 (30.2%)	212 (100.0%)		

*Risk for Cohort Anemic Status – Anemic (<11gr%); **Analyzed using Chi Square with significance of p<0.05

The incidence rate of anemia with Hb <11gr% occurred in 44 (20.8%) mothers aged <20 years and > 35 years, 58 (27.4%) mothers with gestational age <37 weeks, 137 (64.6%) mothers with > 4 parity, with a pregnancy interval of <24 months from the last child, as many as 141 (66.5%) mothers and 110 (51.9%) mothers with nutritional status based on upper arm circumference <23.5cm. These factors are factors that are considered risk factors for causing anemia in pregnant women. Correlation test using Chi Square is known to show p <0.05 for all variables. The highest risk was known to be indicated by the Pregnancy Interval factor, <24 months (p <0.001; OR 9,512) followed by parity >4 (p <0.001; OR 6,679).

The age group at risk of developing anemia is the age group <20 years and > 35 years (Proverawati, 2011). At gestational age, the more gestational age is, the fetus will get bigger. This is then related to the proportion that must be flowed by more blood, so that the older the gestational age, the risk of pregnant women becoming anemia is greater (Fanni, 2017). In addition, the age group > 35 years is associated with decreased maternal health, especially in the function of the reproductive organs. This of course makes pregnant at > 35 years of age can cause various complications such as bleeding, location abnormalities, mild pre-eclampsia, and anemia (Manuaba, 2007). In contrast to the risk in the 20 year age group. The reproductive organs at this age are immature and not ready to get pregnant. In addition, biologically, this age tends to be mentally unstable and not ready to get pregnant. This leads to low attention to pregnancy (Prawiroharjo, 2010).

Mothers who have given birth > 4 times (multigravida) are at risk of experiencing serious complications such as bleeding, this is influenced by anemia during pregnancy (Manuaba, 2010). Physiologically, mothers with parity or a history of pregnancy that are too frequent will experience a greater volume of blood plasma, causing greater hemodilution as well. The theory explains that after the fourth pregnancy, the risk of anemia increases, this is because repeated pregnancies cause damage to the blood vessels and uterine walls which usually affect the circulation of

nutrients to the fetus. The more often a woman gives birth, the greater the risk of blood loss and an impact on reducing Hb levels. Each time a woman gives birth, the amount of iron lost is estimated at 250 mg. In addition, mothers who have given birth more than 4 times are at risk of experiencing serious complications such as bleeding, this is due to anemia during pregnancy. Besides that, the bleeding that occurs causes the mother to lose a lot of hemoglobin and decreased iron reserves so that the next pregnancy becomes more at risk of experiencing anemia again (Irul, 2019).

One of the causes of anemia is a short gestation interval of <2 years. Pregnancy that is too close to cause anemia, because the mother's condition has not yet recovered and the fulfillment of nutritional needs is not optimal, but it must meet the nutritional needs of the fetus she is carrying (Abrori, 2018). Naturally, pregnant women with anemia are caused by repeated pregnancies in a short time. The mother's iron reserves have not yet been recovered which is eventually depleted for the needs of the next conceived fetus. The more often a woman experiences pregnancy and childbirth, the more iron loss in her body will be (Allen, 2012). Pregnancy will also cause iron reserves to decrease, therefore at the end of each pregnancy it takes 2 years to restore iron stores to normal levels provided that during this grace period health and nutrition are in good condition. Therefore, the distance between the last delivery and the next delivery is recommended at least 2 years (Wasnindar, 2014). This is supported by research conducted by Abrori, Kiki and Marlenywati. Based on the results of the calculation of the Chi square statistical test, there was a significant relationship between pregnancy distance and the incidence of anemia in pregnant women at Puskesmas Putussibau Selatan (OR = 3.886; 95% CI = 1.19-12.68; p = 0.044). It is known that mothers who have a birth spacing <2 years have a chance of having 3,886 times more anemia than mothers with a pregnancy interval of ≥ 2 years (Abrori, 2018).

Pregnant women with good nutritional status will have normal hemoglobin levels. Adequate maternal nutritional intake and contains iron derived from animal meat, fruit, green vegetables can be consumed (Syafiq, 2010). The limit of the size of the upper arm circumference (LILA) in pregnant women is said to be normal if not less than 23.5 cm (Mutiarasari, 2019). This is also supported by research conducted by Mutiarasari. Based on the results of the calculation of the Chi square statistical test, it is known that there is a relationship between nutritional status and the incidence of anemia with a P-value (0.012 <0.05), with an OR of 6,500 with 95% CI at 1,316-32,097.

CONCLUSION

The highest risk for Anemic Incidence was known to be indicated by the Pregnancy Interval factor, <24 months (p <0.001; OR 9,512) followed by parity >4 (p <0.001; OR 6,679).

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