ANTENATAL VISITS AND CONSUMPTION PATTERNS ON THE INCIDENCE OF ANEMIA IN PREGNANT WOMEN

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ABSTRAK : KUNJUNGAN ANTENATAL DAN POLA KONSUMSI TERHADAP KEJADIAN ANEMIA PADA IBU HAMIL

Latar Belakang: Prevalensi anemia pada ibu hamil di Kabupaten Biak Numfor pada tahun 2018 sebesar 81% dan tahun 2019 sebesar 79,3%. Dengan meningkatnya angka kejadian anemia selama kehamilan, maka akan mempengaruhi peningkatan resiko kelahiran prematur, kematian ibu dan bayi.

Tujuan: untuk mengetahui pengaruh kunjungan antenatal dan pola konsumsi terhadap kejadian anemia pada ibu hamil di Kabupaten Biak Numfor.

Metode: Penelitian ini merupakan jenis kuantitatif dengan rancangan cross sectional. Dalam penelitian ini menggunakan empat Puskesmas dengan pengambilan sampel disetiap Puskesmas sebanyak 30 ibu hamil Trimester III total sampel 120 ibu hamil di tambah dengan 10% untuk antisipasi drop out menjadi 130. Teknik pengambilan sampel secara purposive sampling, berdasarkan kriteria inkulisi dan eksklusi yang ditetapkan oleh peneliti. Analisis data menggunakan uji chi-square.

Hasil: terdapat hubungan yang bermakna antara frekuensi pemeriksaan kehamilan dengan p-value 0,023 yang artinya semakin sering ibu hamil melakukan pemeriksaan kehamilan maka semakin kecil kemungkinan mengalami anemia, kemudian pola konsumsi dengan p-value 0, 032 (p<0,005) yang artinya bahwa energi, protein, lemak, karbo, serat dan zat besi yang baik akan membuat ibu tidak mengalami anemia.

Kesimpulan: Dengan melakukan pemeriksaaan kehamilan ditunjang dengan pola konsumsi yang baik dapat menghindari para ibu hamil dari kejadian anemia.

Kata Kunci: Frekuensi Antenatal, Pola Konsumsi, Anemia, Ibu Hamil

ABSTRACT

Background: The prevalence of anemia in pregnant women in Biak Numfor Regency in 2018 was 81% and in 2019 it was 79.3%. With the increasing incidence of anemia during pregnancy, it will affect the increased risk of premature birth, maternal and infant mortality

Purpose: To find out the effect of antenatal visits and consumption patterns on the incidence of anemia in pregnant women in Biak Numfor Regency.

Method: This research is a quantitative type with a cross-sectional design. In this study, four Public Health Centers were taken sampling in each Public Health Center as many as 30 pregnant women in the III Trimester, a total sample of 120 pregnant women, added by 10% in anticipation of drop out to 130. Purposive sampling techniques are based on the inculcation and exclusion criteria set by the researcher. Data analysis using the chi-square test

Results: there is a meaningful relationship between the frequency of pregnancy examinations and a p-value of 0.023 which means that the more often pregnant women do pregnancy checkups, the less likely they are to experience anemia, then the consumption pattern with a p-value of 0.032 (p<0.005) which means that energy, protein, fat, carbo, fiber and iron that are good will make the mother not experience anemia.

Conclusion: By conducting pregnancy examinations supported by good consumption patterns can prevent pregnant women from incidence of anemia.

Keywords: Antenatal Frequency, Consumption Patterns, Anemia, Pregnant Women

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INTRODUCTION

Anemia is a condition or condition characterized by a decrease in hemoglobin (Hb), hematocrit, or red blood cell count. Anemia in pregnancy is a condition of mothers with hemoglobin values below 11 gr% in the first and third trimesters, or hemoglobin values of less than 10.5gr% in the second trimester. Anemia is more common in pregnancy because during pregnancy the need for food substances increases and changes occur in the blood and bone marrow (Prawirohardho, 2014). Anemia is also defined as a lack of iron, folic acid, vitamin B12, proteins, and other essential substances, the most important of which and the main cause of anemia is iron (Fe), which is why anemia is often identified with iron deficiency anemia (Sifakis and Pharmakides, 2000; Susiloningtyas, 2012). Anemia in pregnant women is a global health problem, especially in developing countries (Dogra, 2020; Milman, 2011; Stephen et al., 2018). These health problems remain unresolved and continue to affect the health, quality of life, and working capacity of millions of people around the world (Milman, 2011).

The World Health Organization (WHO), reports that around 32.4 million pregnant women suffer from anemia worldwide, with 0.8 mothers suffering from severe anemia, with the highest prevalence of pregnant women's anemia incidence in Africa (44.6%) and followed by Asia at 39.3%. 50% of anemia cases are caused by iron deficiency, micronutrient deficiencies (folic acid, riboflavin, and Vit B12), acute and chronic infections (malaria and tuberculosis), and disorders affecting the synthesis of hemoglobin (WHO, 2015).

The prevalence of anemia in pregnant women in Indonesia has increased, according to the results of Riskesdas (2013) of 37.1% of pregnant women with anemia (Badan Penelitian dan Pengembangan Kesehatan, 2013) and increased to 48.9% in 2018 (RISKESDAS, 2018). Lack of nutritional knowledge level, lack of iron food intake, Lack of knowledge about anemia, and adherence to consuming irregular Fe Tablets increase the incidence of anemia in pregnant women. An increase in cases of anemia during pregnancy, will affect the increased risk of premature birth, and maternal and infant mortality (Zhang et al., 2009; Sharma, Kaur, and Lata, 2020). In addition, anemia during pregnancy also affects the incidence of Rendan Birth Weight with a Small Gestation Period and affects the decrease in mental potential and physical development of the baby during pregnancy and after (Augusta de Sea, et al, 2015; Sharma, Zhang et al, 2016; Kaur and Lata, 2020).

Data according to the Papua Provincial Health Profile (2016) coverage of Fe tablets to pregnant women is 33.3% (Profil Dinas Kesehatan Provinsi Papua, 2017). Basic Health Research Data (2018) shows that the coverage of Fe tablets to pregnant women in Papua Province is 42.7% (Kementerian Kesehatan RI, 2018). Data on Indonesia's health profile in 2019 shows that Papua has a percentage of coverage of giving Fe tablets to pregnant women far from the Indonesian average of 18.3%. The low coverage of giving Fe tablets is caused, among others, by the implementation of the suboptimal blood-added tablet (TTD) program, which is influenced by the low awareness of pregnant women to check their pregnancies, maternal education, and transportation facilities.

In Biak Numfor Regency in 2018 the prevalence of anemia in pregnant women was 81% of 3,087 pregnant women and in 2019 pregnant women with anemia, namely 79.3% of 3063 pregnant women, while data on the coverage of Fe giving tablets to pregnant women in Biak Numfor Regency (2018) from 3,087 pregnant women who received Fe tablets as many as 90 tablets (Fe3) only amounted to 1,631 pregnant women (52.1%), the rest, namely 1,456 pregnant women only get Fe tablets totaling 30 tablets (Fe1) and Fe3 coverage in 2019 which is 61.0% (Profil Dinas Kesehatan Kabupaten Biak Numfor, 2019). The high incidence of anemia in pregnant women and the low coverage of Fe3 are influenced by the lack of maternal knowledge about anemia in pregnancy and the low awareness of pregnant women to check their pregnancy at the Public Health Center or midwife practices and doctors so that mothers rarely check their pregnancy, mothers check their pregnancy if the pregnancy is large or enters the 2nd trimester, this also affects the Fe 3rd coverage of pregnant women. The lack of Fe tablets consumed and irregularly consuming Fe tablets increases the incidence of anemia in mothers hamiL.

Factors causing anemia have been widely studied in the world and in Indonesia. Factors that influence the occurrence of anemia in pregnancy are direct, indirect, and basic factors. Direct factors consist of adherence to consuming iron, infectious diseases, and bleeding. Indirect factors consist of Antenatal Care (ANC) visits, attitudes, parity, pregnancy distance, age, and diet. Basic factors consist of socioeconomic, knowledge, education, and culture (Istiarti, 2012).

Research by Astari, et al (2018) reported an unfavorable geographical location, a fairly high incidence of malaria, low levels of public education, lack of public attention to health, low socioeconomic

conditions, and high malnutrition are risk factors for anemia in pregnant women. Then the factors of knowledge, attitudes, family support, and support of health workers affect the adherence to taking Fe tablets in pregnant women (Sarah and Irianto, 2018; Widayati and Afriyanii, 2018; Mardhiah and Marlina, 2019; Torano1, 2019).

The results of Ridayanti's research (2012), stated that pregnant women with anemia are also caused by primigravida factors. This is because primigravida mothers do not have the experience to maintain pregnancy health from pregnancy before because it is their first time getting pregnant (Al-Farsi et al., 2011). However, the results of research related to anemia in Papua province are still very minimally reported. The results of many studies are reported related to malaria which is one of the risk factors for anemia in pregnant women.

In pregnancy, it is often found that a decrease in hemoglobin levels is caused by an increase in blood volume in pregnant women (Horowitz, Ingardia, and Borgida, 2013). If this condition does not get intervention, it can develop into fatal anemia. Monitoring the condition of pregnancy for the mother is very important to ensure the health of the mother and fetus. Starting an ANC in the first trimester provides an opportunity for timely optimal treatment and treatment according to existing conditions. Pregnant women receiving services from health workers in health facilities must meet the minimum frequency in each trimester, namely at least once in the first trimester, at least once in the second trimester, and at least twice in the third trimester. The health services provided by pregnant women must meet the type of service in the ANC, which is 10 T.

Anemia is directly affected by the consumption of dairy foods that contain less iron, in addition to infectious factors and bleeding as triggers. Anemia also occurs due to an increase in the need for a person's body such as during menstruation, pregnancy, and childbirth, while iron enters a little. In general, food consumption is closely related to nutritional status. If the food consumed has good nutritional value, then the nutritional status is also good, on the contrary, if the food consumed is lacking nutritional value, it can cause a lack of size

Adherence to consuming iron tablets is the observance of pregnant women carrying out the recommendations of health workers to consume iron tablets. Adherence to consuming iron tablets is measured by the accuracy of the number of tablets consumed, the accuracy of how to consume iron tablets, and the frequency of consumption per day. Iron supplementation or giving Fe tablets is one of the important efforts in preventing and overcoming

anemia, especially iron deficiency anemia. Iron supplementation is an effective way because of its iron content equipped with folic acid which can prevent anemia due to folic acid deficiency (Anita, 2014). Maternal adherence to consuming iron is influenced by the availability of Fe tablets the level of maternal knowledge about Fe Tablets, side effects of Fe Tablets such as nausea, and a feeling of heat in the stomach. (Hariati et al,2019). Non-compliance of pregnant women taking iron tablets can have a greater chance of developing anemia.

The impact of anemia in pregnancy for mothers is to cause premature labor, preeclampsia, sepsis, postpartum bleeding, and an increase in the need for blood transfusions, this is as a risk of increased morbidity and maternal mortality (Ingardia and Borgida, 2013; Abdullahi et al., 2014; Stephen et al., 2018). Meanwhile, the impact on babies is fetal anemia, low birth weight (BBLR), premature birth, low APGAR score, intrauterine growth inhibition, and perinatal mortality (DeLoughery, 2017; Haider et al., 2013; Rukuni et al., 2015).

Efforts to prevent and overcome anemia in pregnant women have been carried out by the government through a program to give blood-added tablets (TTD) as many as 90 tablets during pregnancy (PERMENKES RI No.97 of 2014) However, the incidence of anemia in pregnant women in Indonesia and especially in Biak Numfor Regency is still high.

RESEARCH METHODS

This study uses quantitative studies using observational analytical methods with a cross-sectional approach. The research was carried out at the Public Health Centers in the Biak Numfor district, namely the Korem Health Center, Ridge Health Center, Yendidori Health Center, and Biak City Health Center. The reason for choosing the four Public Health Centers is because the number of pregnant women and the incidence of anemia are still large in the Public Health Centers.

The number of samples in each Puskesmas was 30 third-trimester pregnant women, a total sample of 120 pregnant women was increased by 10% in anticipation of a dropout to 132 pregnant women. Purposive sampling techniques are based on the inculcation and exclusion criteria set by the researcher. Data collection uses primary data, namely filling out questionnaires to obtain maternal characteristics and consumption patterns. In addition, using secondary data taken from the MCH book for pregnant women to see the number of visits and maternal anemia.

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Data analysis was used to determine the relationship between independent variables and dependent variables using the chi-square test. This research has received ethical approval from the Ethics Committee for Health Research, Faculty of Public Health, Hasanuddin University, Makassar, Number: 3812 / UN4.14.1 / TP.01.02 / 2021

RESEARCH RESULTS
Univariate Analysis

Table 1
Distribution of Respondents' ANC History During Pregnancy

ANC history	n	%
Gestational age		
7 months	26	19.7
8 months	62	47.0
9 months	44	33.3
First performed an ANC at gestational age		
1 month	1	0.8
2 month	18	13.6
3 month	36	27.3
4 month	24	18.2
5 month	27	20.5
6 month	16	12.1
7 month	5	3.8
8 month	5	3.8
9 month		
Frequency of performing ANC examinations during pregnancy		
2 times	20	15.2
3 times	34	25.8
4 times	36	27.3
5 times	19	14.4
6 times	16	12.1
7 times	5	3.8
8 times	1	0.8
10 times	1	0.8
ANC obstacle		
None	69	52.3
Take care of the child	7	5.3
Busy work	10	7.6
Ashamed	7	5.3
Don't know pregnant	3	2.3
Economy (vehicles do not exist, transport money does not exist)	36	27.3
Complaints during pregnancy		
None	65	49.2
Tired/tired	2	1.5
Leg cramps	5	3.8
Nauseous	10	7.6
Dizziness/pain	43	32.6
Insomnia	7	5.3

Table 1 presents the distribution of ANC history during pregnancy. Pregnant women who were respondents had a gestational age of 7.8, and 9 months, and most pregnant women with a gestational age of 8 months. Most pregnant women do the ANC examination for the first time at 3 or 5 months gestation and tend to do the examination 3-4 times. Some mothers revealed that there were no obstacles in conducting ANC examinations but some other mothers had economic constraints such as no vehicles or no transport money. Some of the complaints of mothers during pregnancy are dizziness/ headache, nausea, and insomnia.

Table 2
Distribution of Consumption Rates of Energy, Protein, Fat, Carbo, Fiber, And Fe During Pregnancy

Consumption rates (%AKG)	Energy n (%)	Protein n (%)	Fat n (%)	Carbo n (%)	Fiber n (%)	Fe n (%)
Deficit (<70%)	65 (49.2)	87 (65.9)	86 (65.2)	65 (49.2)	127 (96.2)	126 (95.5)
Less (71-79%)	23 (17.4)	11 (8.3)	9 (6.8)	9 (6.8)	0 (0.0)	1 (0.8)
Enough (80-99%)	28 (21.2)	24 (18.2)	14 (10.6)	34 (25.8)	1 (0.8)	1 (0.8)
Good (≥100%)	16 (12.1)	10 (7.6)	23 (17.4)	24 (18.2)	4 (3.0)	4 (3.0)

Table 2 presents the percentage of the adequacy rate of energy, protein, fat, carbo, fiber, and fe consumption during pregnancy. Most pregnant women experience a deficit of protein and fat from the food consumed even though almost all pregnant women lack fiber and iron from the food they consume.

Table 3
Distribution of Macronutrient and Micronutrient Nutritional Adequacy Figures in Pregnant Women

Nutrients	Mean standard AKG	Mean AKG	Mean TKG
Energy/ calories (kkal)	2506.43	1810.19	72.16%
Protein (g)	90.34	57.91	64.20%
Fat (g)	65.97	43.83	66.65%
Karbo (kal)	389.24	307.47	78.77%
Fiber (g)	35.12	13.17	40.52%
Iron (mg)	26.79	8.90	33.10%

Table 3 shows the average nutritional adequacy figures of pregnant women and it is found that all AKG values of energy, protein, fat, carbo, fiber, and fe are still below the average values of the AKG standard, especially for fiber and iron.

Bivariate Analysis

Table 4
Relationship of ANC Frequency With Anemia

ANC Frequency	Anemia n (%)	No anemia n (%)	Total n (%)	p-value*
Not up to standard	72 (80.0)	9 (20.0)	90 (100.0)	0.023
Up to standards	25 (59.5)	26 (40.5)	42 (100.0)	

*continuity correction

The results of statistical tests showed a meaningful relationship between the frequency of ANC and anemia of pregnant women (p<0.05), this was supported by distribution data that showed mothers with an ANC frequency that did not meet the standard, the majority had anemia (80%) while mothers with an ANC frequency according to standards, most of them were not anemia. This means that the more often pregnant women take an ANC examination, the less likely they are to develop anemia.

Table 5
Relationship of Consumption Patterns with Anemia

Consumption patterns	Anemia n (%)	No anemia n (%)	Total n (%)	p-value*
Less	22 (57.9)	16 (42.1)	38 (100.0)	
Enough	20 (83.3)	4 (16.7)	24 (100.0)	0.032
Good	55 (78.6)	15 (21.4)	70 (100.0)	

*Pearson chi-square

The results of statistical tests showed a meaningful relationship between consumption patterns and anemia in pregnant women (p<0.05), distribution data that showed mothers whose food consumption patterns were quite good, the majority had anemia (83.3%) while mothers whose food consumption patterns were not good tended not to be anemic (42.1%). This means that the poor consumption patterns of energy, protein, fat, carbo, fiber, and fe actually make the mother not experience anemia.

DISCUSSION

Relationship between ANC frequency and incidence of anemia in pregnant women in Biak Numfor District

Researchers provide health education related to information during pregnancy, such as information on nutritious foods during pregnancy, and information about blood-boosting tablets, based on the frequency of Antenatal Care (ANC) during pregnancy. With such activities, anemia or lack of red blood cells during pregnancy can be reduced. The purpose of this ANC frequency is to provide integrated, comprehensive, and high-quality antenatal care services, as well as health education and information on the nutritional status of the mother

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during pregnancy and the use of contraceptives (Depkes RI, 2009)

Statistical analysis showed a meaningful relationship between the frequency of ANC and anemia of pregnant women with a value of p = 0.02 <0.05), this was supported by distribution data that showed mothers with an ANC frequency that did not meet the standard, the majority had anemia (80%) while mothers with an ANC frequency according to standards, most were not anemic. This means that the more often pregnant women take an ANC examination, the less likely they are to develop anemia.

This study is in accordance with a study conducted by Anlaaku Peter et al 2011 entitled "Anemia in pregnancy and associated factors: a cross-sectional study of antenatal attendants at the Sunyani Municipal Hospital, Ghana" that pregnant women who visit an ANC and do not experience anemia with a p-value = 0.07. The study using bivariate analysis was conducted using the Pearson Chi-square test to assess the significant difference between anemia and factor category variables with p <0.05 in 95% CI was considered statistically significant and therefore included in the multiple logistic regression model. This means that H0 is received which means that there is no relationship between the frequency of ANC and the incidence of anemia in pregnant women. (Anlaakuu & Anto, 2017)

The relationship between consumption patterns and the incidence of anemia in pregnant women in Biak Numfor Regency

Pregnant women are one of the groups prone to malnutrition because there is an increase in nutritional needs to meet the needs of the mother and the fetus is conceived. The wrong diet in pregnant women has an impact on the occurrence of nutritional disorders, including anemia, insufficient weight gain in pregnant women, and impaired fetal growth.(Ojofeitimi et al., 2008)

Respondents in this study predominantly had a diet of fewer than 85 respondents, out of 85 respondents who were not anemic as many as 24 (28.3%). Meanwhile, there were 47 respondents with sufficient diet and 17 (36.2%) who were not anemic. Based on the results of statistical analysis, the significance level of the p-value of 0.02 < 0.05. This means that statistically there is a significant relationship between consumption patterns and the incidence of anemia in pregnant women.

The results of statistical tests showed a meaningful relationship between consumption patterns and anemia of pregnant women with a value of p = 0.03<0.05), distribution data showing mothers

whose food consumption patterns were quite good, the majority had anemia (83.3%) while mothers whose food consumption patterns were not good tended not to be anemic (42.1%). This means that the poor consumption patterns of energy, protein, fat, carbo, fiber, and fe actually make the mother not experience anemia.

Anemia often occurs due to iron deficiency because in pregnant women there is a twofold increase in iron needs due to an increase in blood volume without expansion of plasma volume, to meet the needs of the mother (prevent blood loss at the time of delivery) and the growth of the fetus.(Opitasari & Andayasari, 2015) Ironically, it is estimated that under 50% of mothers do not have sufficient iron reserves during pregnancy, so the risk of iron deficiency or anemia increases along with pregnancy. It has been proven in Thailand that the main cause of anemia in pregnant women is due to iron deficiency (43.1%) (Sukrat & Sirichotiyakul, 2006). In addition, studies in Malawi found that out of 150 pregnant women, 32% had iron deficiency and one or more micronutrients.6 Similarly, studies in Tanzania showed that anemia of pregnant women was associated with iron deficiency (p = 0.03), vitamin A (p = 0.004) and nutritional status (LILA) (p = 0.003).

CONCLUSION

By examining pregnancy supported by good consumption patterns, it can avoid pregnant women from the incidence of anemia

SUGGESTION

It is recommended that pregnant women check with the midwife regularly and consume iron (Fe) supplements according to the instructions given by the midwife. Health workers, especially midwives, consistently provide health education to pregnant women about the importance of consuming nutritious foods such as fruits, meat, fish, eggs, nuts, and green leafy vegetables such as spinach and broccoli.

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