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## The Relationship between Mothers Characteristic with Anemia in Pregnancy

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### ABSTRACT

Maternal mortality in Indonesia is generally caused by several factors. First, direct obstetrics causes includes bleeding 28%, preeclampsia/eclampsia 24%, infection 11%, while indirect causes include nutritional problems including anemia in pregnant women 40%. Chronic energy deficiency 37%, US well US pregnant women with energy consumption below the minimum requirements of 44.2%. Know the relationship between maternal characteristics and the incidence of anemia in pregnant women at the Gatot Soebroto Army Hospital in 2022. This research is a quantitative study with a case control design, using primary data with a sample of 102 WUS who visited the Midwifery Polyclinic. The sampling technique uses random sampling. Data analysis using univariate and bivariate using chisquare. The results of the study showed that 51 respondents (50%) experienced anemia during pregnancy. Variables related to anemia in pregnant women were parity (0.000), ANC visits (0.011), Compliance with consumption of Fe tablets (0.000) and nutritional status (0.000). Pregnant women who do not adhere to taking Fe tablets have a risk of 13.6 times experiencing anemia compared to pregnancy to pregnant women who adhere to taking Fe tablets with OR = 13.6. There is a relationship between parity, ANC visits, adherence to consumption of Fe tablets and nutritional status with anemia in pregnant women. It is expected that pregnant women can prepare for pregnancy well US a way to prevent anemia in pregnancy.

Keywords: Anemia, Pregnancy, Antenatalcare

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## INTRODUCTION

Anemia is a public health problem biggest in the world especially for a woman of reproductive age. Deep anemia pregnancy is a condition of a mother with a hemoglobin rate below 11 g/dL in the first trimester and three or more times. This happens because of an increase in plasma volume which is much larger than the volume of hemoglobin that occurs in the mother pregnant. 40% of maternal deaths in developing countries hooked up with anemia in pregnancy can increase the risk of a mother on the moment of the pregnancy process to delivery, even things can influence the health of the mother at the moment postpartum<sup>1</sup>.

Maternal mortality in Indonesia is generally caused by several factors. First, the reason is obstetrics: direct causes include bleeding (28%), preeclampsia/eclampsia (24%), and infection (11%), whereas the reason is not direct: that is, existing problems include nutrition (covers anemia in a pregnant mother 40%), lack of energy (chronic 37%), as well as a pregnant mother with energy consumption under the minimum (44.2%)<sup>2</sup>.

The World Health Organization (WHO) reports that the prevalence of anemia in a pregnant mother which experiences anemia is around 35-75% as well as the more increase along with the increase in age of pregnancy. The Ministry of Health RI (2020), reports that according to the Riskesdas 2018 as much as 48.9% of pregnant mothers in Indonesia have anemia and this percentage experiences an increase compared to the data from Riskesdas 37.1% in 2013.<sup>3</sup>

Data from the Health Service Province DKI Jakarta year 2018 based on the results of an inspection of a pregnant mother which experiences anemia most often on age 15-24 years as big as 84.6 percent, age 25-34 years as big as 33.7 percent, age 35-44 years as big as 33.6 percent, and age 45-54 years as big as 24 percent in the Jakarta Center occupy ranking second from 6 regions in DKI<sup>4</sup>.

The impact of anemia on pregnancy to the mother will increase the risk of morbidity and mortality because of the reason of bleeding postpartum, whereas the impact on the fetus will increase the risk of birth premature and heavy body born low<sup>5</sup>.

Anemia on pregnancy cannot be separated from the physiological changes which occur during pregnancy, fetal age, and the condition of the mother pregnant previously. At the moment that, the body will experience a change which significantly, the amount of blood in the body increases 20-30%, so that the need for an increase in iron and vitamin supply to make hemoglobin (Hgb). When pregnant, the mother's body will make more blood for the baby. The body needs blood until 30% more than before pregnant<sup>6</sup>.

The direct reason of anemia in pregnant women is iron deficiency in the body which is caused by a lack of food sources which contain iron, food is not enough however the food own content of iron substance is low so that the amount of iron absorbed is less, and food which is eaten contains substances that inhibit iron absorption<sup>7</sup>.

A number of factors can cause anemia pregnancy among them age, parity, level

education, status economy and obedience for consume tablet Fe, visit ANC, and pattern nutrition<sup>8</sup>.

Parity influence incident anemia on Mother pregnant where pregnancy, the more often a woman pregnant and give birth to so risk have anemia the greater it is because pregnancy drain backup substance iron in body, whereas disobedient Mother pregnantin consuming tablet Fe will riskyraises anemia moment pregnancy.<sup>9</sup>

Antenatalcare is factor can influenceutilization service midwifery on Mother pregnant in effort increase health Mother and fetus effort prevention to abnormalityon pregnancy, labor, childbirth wrong only one is prevent happening anemia. Pattern eat on Mother pregnant will influence to incident anemia, the more good pattern eat on Mother pregnant so the more reduce risk anemia, and vice versa. Program for prevent anemia which done by government Indonesia that is every Mother pregnant expected get tablet plus blood (TTD) minimum 90 tablet during pregnancy. But there are still many pregnant women who do not comply consuming Fe tablets. This can be caused because lack of information about tablet which given by officer health. Besides that can also influenced by effect side which not enough comfortable felt by Mother when consuming Fe tablets. It cause pregnant women no obey and raises anemia in Mother pregnant, as well as setstandard minimum inspection pregnancy normal on Mother pregnant done minimum 6 time visit during pregnancy, do inspection Hb on trimester I And III, quickcheck self if feel complaint which no normal, increase knowledge as well as behavior Mother pregnant and family in choose, process And serving meals as well increase quality service health and nutrition public<sup>10</sup>.

Midwife as power health have role and function which important in programs government, specifically prevention of anemia in pregnant women. Permenkes No. 88 year 2014 about Standard Tablet add Blood for Women of Reproductive Age and Mothers Pregnant explained that giving TTD to Mother pregnant done with gift minimum90 tablet during pregnancy. importance increase quality counseling momentinspection pregnancy for increase adherence to consumption of iron supplements in an effort prevention and counter measures anemia on Mother pregnant<sup>11</sup>.

The results of the preliminary study conductedat the Midwifery Polyclinic of the Gatot Soebroto Army Hospital on in October 2022 that out of 10 pregnant women, 6 people (60%) had anemia. Based on background behind outlined onso writer interested for do study about connection characteristics Mother with incident anemia in Mother pregnant in RSPAD Gatot Subroto year 2022.

## METHOD

Use studies quantitative with *case control* design, use data primarywith sample totaling 102 WUS which visit to Poly Midwifery. Technique sampling using *Random sampling*. Analysis data use *univariate* and *bivariate* use *chi square*.

## RESULTS

**Table 1 Frequency Distribution of Parity of Pregnant Women at the Gatot Soebroto Hospital in 2022**

Variable	Incident Anemia			
	Case		Control	
	f	%	f	%
<b>Parity</b>				
Multipara	41	80,4	21	41,2
Primipara	10	19,6	30	58,8
<b>ANC visit</b>				
Irregular	18	35,3	7	13,7
Regular	33	64,7	44	86,3
<b>Obedience take Fe tablets</b>				
Disobedient	38	74,5	9	17,6
obey	13	25,5	42	82,4
<b>Nutritional status</b>				
Not good	19	37,3	38	76,5
Good	32	62,7	12	23,5
<b>Total</b>	51	100	51	100

In table 1 that the respondent 51 who experienced anemia of pregnancy (50%) of the case group it occurred in multiparous women as many as 41 (80.4%), in the control group it occurred in primiparous women as much as 30 (58.8%). In the case group with regular ANC visits there were 33 (64.7%), while in the control group with regular ANC visits there were 44 (86.3%). In the non-adherent case group, they took as many Fe tablets 38 (74.5 %), whereas in the control group who adhered to taking Fe tablets as much as 42 (82.4 %). On group of cases that have good nutritional status as much 32 (62.7 %) whereas in the control group the nutritional status was not good as many as 38 (76.5 %).

**Table 2 Relationship between Parity with Anemia on Mother Pregnant in RSPAD Gatot Subroto 2022**

Parity	Anemia in pregnancy				pValues	OR
	Yes		No			
	n	%	n	%		
Multipara	41	80,9	21	41,2	0.000	5,8
Primipara	10	19,6	30	58,8		
<b>Total</b>	51	100	51	100		

In Table 2 the relationship between parity and the incidence of anemia in pregnancy in patients at the Midwifery Polyclinic of the Gatot Soebroto Army Hospital in 2022 p value = 0.000 means  $p < \alpha$  (0.05) with the value of OR = 5.8 means that multiparous respondents are at risk of 5.8 times experiencing anemia in pregnancy than primiparous respondents.

**Table 3 Relationship between Visit ANC with Anemia on Mother Pregnant RSPAD Gatot Subroto 2022**

ANC visit	Anemia in pregnancy				p-value	OR (CI95%)
	Yes		No			
	n	%	n	%		
Irregular	18	35,3	7	13,7	0.021	3,4 (1,2-9,1)
Regular	33	64,7	44	86,3		
<b>Total</b>	51	100	51	100		

In table 3 it is concluded that there is a relationship between ANC visits and the incidence of anemia in pregnancy in patients at the Midwifery Polyclinic of the Gatot Soebroto Army Hospital in 2022  $p = 0.021$  means  $p < \alpha (0.05)$  with the value of OR = 3.4 means that respondents who have irregular ANC visits are at risk of 3.4 times experiencing anemia in pregnancy than respondents who have regular ANC visits.

**Table 4 Relationship between Obedience Drink Fe tablets With Anemia In Mother Pregnant in RSPAD GatotSubroto 2022**

Obedience take Fe tablets	Anemia in pregnancy				p-value	OR (CI95%)
	Yes		No			
	n	%	n	%		
Not obey	38	74.5	9	17,6	0.000	13,6 (5.2-35.5)
obey	13	25.5	42	82.4		
<b>Total</b>	51	100	51	100		

In Table 4 it is concluded that there is a relationship between adherence to taking Fe tablets and the incidence of anemia in pregnancy in patients at the Obstetrics Polyclinic of the Gatot Soebroto Army Hospital in 2022  $p \text{ value} = 0.000$  means  $p < \alpha (0.05)$  with OR value = 13.6 (95% CI: 5.2-35.5) means that respondents who do not adhere to taking Fe tablets are at risk of 13.6 times experiencing anemia in pregnancy than respondents who adhere to taking Fe tablets.

**Table 5 Relationship between Nutritional Status and Anemia in Pregnant Women at the Gatot Soebroto Army Hospital 2022**

Nutritional status	Anemia in pregnancy				p-value	OR (CI95%)
	Yes		No			
	n	%	n	%		
Not good	19	37,3	39	76,5	0.000	5,4 (2,3-12,9)
Good	32	62,7	12	23,5		
<b>Total</b>	51	100	51	100		

In table 5 it is concluded that there is a relationship between nutritional status and the incidence of anemia in pregnancy in patients at the Obstetrics Polyclinic of the Gatot Soebroto Army Hospital in 2022.  $P \text{ value} = 0.000$  means  $p < \alpha (0.05)$ , with OR value = 5.4 (95% CI: 2.3-12.9) means that

respondents with poor nutritional status are at risk of 5.4 times experiencing anemia in pregnancy than respondents with good nutritional status.

## DISCUSSION

### 1. Relationship between Parity with anemia in pregnant women

From this study, pregnant women who experienced anemia were multiparas, while those who did not have anemia were primiparas. There is a significant relationship between parity and anemia in pregnancy, so it can be said that multiparous pregnant women are at risk of experiencing anemia.

The results of this study are in line with other studies that show that there is a relationship between parity and anemia in pregnant women. That Mother parity with risk tall anemia occurs. This is because the more big possibility a Mother pregnant have deficiency anemia iron or the more lots parity, increasingly tall the risk have anemia.<sup>12</sup>

Maternal parity is the frequency with which mothers have given birth to live or dead children, but not abortions. the more often a woman experiences pregnancy and childbirth, the more lose a lot of iron and increasingly become anemic<sup>13</sup>

Mothers who give birth more than 3 times can cause anemia, namely 8 to 9 times. A parity number of more than 3 is a factor in the occurrence of anemia because too frequent pregnancies can deplete the mother's body's iron reserves. The number of children a woman gives birth to during her lifetime greatly influences her health<sup>14</sup>.

Parity affects anemia in pregnant women, mothers with a lot of parity will suffer from anemia where blood stores in the body are reduced and cannot increase the amount of hemoglobin in the blood. And vice versa the body is not ready for the next pregnancy process.

### 2. Relationship between ANC visits and anemia in pregnant women

From this study, pregnant women who experience anemia are those who do not make regular ANC visits, while those who do not experience anemia are those who do regular ANC visits. There is a significant relationship between ANC visits and anemia in pregnancy, so it can be said that pregnant women who do not regularly make ANC visits are at risk of developing anemia.

The results of this study are in line with previous research that there is a relationship between ANC visits and the incidence of anemia in pregnant women. Pregnant women who do not regularly make ANC visits have a 4 times greater risk of experiencing anemia than pregnant women who do it regularly. This is because pregnant women who regularly perform ANC will get early anemia checks, get proper nutritional counseling and get complete iron and folic acid supplements as well as adequate health education, so that the risk factors for anemia.<sup>15</sup>

Antenatal Care is a factor that can influence the utilization of midwifery services for pregnant women in an effort to improve maternal and fetal health and efforts to prevent abnormalities in pregnancy, childbirth and postpartum, one of which is preventing anemia.<sup>15</sup>

Prenatal care is one of the important steps that must be carried out by pregnant women towards a healthy pregnancy, known as antenatal care (ANC). ANC services are a policy and strategy by the government that can be used as an initial screening for high-risk pregnancy conditions, one of which is anemia. So that with routine ANC examinations it is hoped that cases of anemia will be quickly detected and immediately intervened.<sup>16</sup>

The continuity of health checks during pregnancy can be seen from the first visit (K1) to the K4 visit with visit times according to the trimester of pregnancy. Nationally ideal K1 coverage is 81.6% and nationally K4 coverage is 70.4%. Based on these data, it was found that there was a difference between the ideal K1 and K4 coverage nationally which showed that 12% of mothers who received ideal K1 did not continue ANC according to the minimum standard (K4).<sup>17</sup>

Until now, several studies have been conducted regarding the relationship between ANC visits and anemia. Previous research said that the frequency of ANC can reduce high-risk pregnancies, one of which is anemia.<sup>6</sup> In addition, a study conducted by Sugma in Yogyakarta showed a significant relationship between ANC regularity and the incidence of anemia in pregnant women. Based on these studies, ANC visits have an important role in the incidence of anemia in pregnant women.<sup>17</sup>

Visits are related to anemia in pregnant women in that with regular ANC the Hb value will be monitored properly and if anemia is found, health workers will immediately intervene by providing education about anemia, how to prevent and overcome it by consuming foods that contain lots of iron and iron tablets.

### **3. Relationship between adherence to taking Fe tablets and anemia in pregnant women**

From this study, pregnant women who experienced anemia were those who did not adhere to consuming Fe tablets, while those who did not experience anemia were those who adhered to consuming Fe tablets. There is a significant relationship between adherence to taking Fe tablets and anemia in pregnancy, so it can be said that pregnant women who do not adhere to taking Fe tablets are at risk of developing anemia.

This study are in line with previous research that there is a relationship between consumption of iron tablets and anemia in pregnant women . prevention of anemia has studied in a manner scientific its effectiveness if held in accordance dosage and terms. But the program for giving Fe tablets to mothers pregnant not enough show significant results in the prevention of maternal anemia pregnant. This caused for two reasons that is obedience low consumption of Fe tablets and hemoglobin level status in women

age fertile (WUS) before low pregnancy. No obedience Mother pregnant in consuming Fe tablets is caused because a number of factor like exists effect aside, forgot and not control routine. <sup>18</sup>

Consumption of Fe tablets is closely related to hemoglobin in pregnant women. Iron deficiency anemia that many pregnant women experience is caused by poor adherence to consuming Fe tablets or the wrong way of consuming them, causing a lack of absorption of iron in the mother's body <sup>19</sup>

In Indonesia, the program to prevent anemia in pregnant women is by providing 90 tablets of Fe supplements during pregnancy. However, many pregnant women refuse or do not comply with this recommendation for various reasons. So that the prevalence of anemia in pregnant women is still high. A mother is said to be obedient in taking Fe tablets if  $\geq 90\%$  of the amount should have been taken <sup>20</sup>

The need for iron tablets is quite high because apart from being needed for the fetus and placenta, it is also due to the process of water retention or the addition of as much as 40% fluid in the mother's body. The recommended number of iron tablets for pregnant women is 18 mg per day. The recommended requirement is difficult to obtain from food sources alone without the addition of iron in food. In a normal diet there is 10-20 mg of iron daily, but only  $<10\%$  of this amount is absorbed. <sup>20</sup>

Iron deficiency since before pregnancy if not treated can result in pregnant women suffering from anemia. This condition can increase the risk of death during childbirth, give birth to babies with low birth weight, the fetus and mother are susceptible to infection, miscarriage, and increase the risk of premature birth. <sup>21</sup>

The right time to take iron tablets is during the day, this is to reduce the feeling of nausea that occurs after you take them. If the mother takes iron tablets in the morning, the mother will have nausea and vomiting because one of the effects is that it causes an unpleasant feeling in the stomach. Iron tablets should be taken with lemon juice or plain water, because they help the absorption of iron. And avoid taking iron tablets using tea, milk and coffee, because it will inhibit the process of absorption of iron absorption. <sup>21</sup>

Consumption of iron tablets affects anemia in pregnant women, mothers who consume sufficient iron tablets will not suffer from anemia where blood stores in the body are added to process the amount of hemoglobin in the blood.

#### **4. Relationship between nutritional status and anemia in pregnant women**

From this study, pregnant women who experienced anemia were those with good nutritional status, while those who did not experience anemia were those with poor nutritional status. There is a significant relationship between nutritional status and anemia in pregnancy, so it can be said that pregnant women with good nutritional status can also be at risk of developing anemia.



The results of this study are in line with previous research that there is a relationship between nutritional status and the incidence of anemia. that pregnant women who are malnourished have a higher likelihood of micronutrient deficiency and anemia.<sup>22</sup>

One way to assess the nutritional status of a group of people is by measuring the human body, known as anthropometry. Several types of anthropometry that have been used include: body weight (BB), body length (PB) or height (TB), upper arm circumference (LILA), head circumference (LK), chest circumference (LD) and subcutaneous fat layer. (LLBK). How to assess the nutritional status of pregnant women, among others, by measuring the circumference of the upper arm or LILA. And in this study, researchers used the LILA measure in determining nutritional status. The LILA size with anemia that LILA describes the nutritional status of pregnant women and to determine the risk of chronic energy deficiency or malnutrition. Pregnancy causes an increase in energy metabolism, therefore the need for energy and other nutrients increases during pregnancy, especially the increased need for iron. This is due to the volume of blood in the body increases to 35%. This is equivalent to 450 mg of iron for producing red blood cells. If the nutritional needs are not met, it will cause anemia in pregnancy.<sup>23</sup>

Pregnant women are at risk of experiencing Chronic Energy Deficiency (KEK) if they have an upper arm circumference (LILA) of less than 23.5. Pregnant women who are KEK will give birth to babies with low birth weight (LBW). KEK can also be an indirect cause of maternal death, because KEK in pregnant women can be one of the causes of anemia in pregnancy. Anemia in pregnancy can cause bleeding which can later result in death of both the mother and the fetus/baby born.<sup>23</sup>

Nutritional status affects anemia in pregnant women because nutritional status is closely related to food consumption by pregnant women, pregnant women whose food intake is sufficient and balanced for the health and development of their fetus will avoid anemia.

## CONCLUSION

The incidence of anemia in pregnant women at the Gatot Soebroto Army Hospital was 51 (25.5%) of the total population . There is a relationship between parity, visits ANC, compliance drink tablet Fe and status nutrition with anaemia on Mother pregnant ( $p=0.000$ ).

## REFERENCES

1. J, Sandi K. Analisis Faktor Risiko Anemia dalam Kehamilan pada Masa Pandemi Pendahuluan. 2022;11:437-444.
2. Wasfaedy Alamsyah. Faktor-Faktor Yang Berhubungan Dengan Kejadian Penyakit Anemia Pada Ibu Hamil Usia Kehamilan 1-3 Bulan Diwilayah Kerja Puskesmas Bontomarannu Kabupaten Gowa. 2020;1(2).
3. Prihatiningsih A. Faktor-Faktor Yang Berhubungan Dengan Anemia Pada Ibu Hamil Pengunjung Puskesmas Kramat Jati, Kec. Kramat Jati, Jakarta Timur Tahun 2011. Published Online 2011:65-79.

4. Eva Hayati. Gambaran karakteristik ibu hamil anemia naskah publikasi. Published online 2020.
5. Aqilah Farah Salsabil. "Hubungan Anemia dalam Kehamilan dengan Kejadian Perdarahan Postpartum di Rumah Sakit Umum Daerah Batara Siang, Kabupaten Pangkep Periode 2021. Published online 2022.
6. Maria F. Kondia, Appolonaris T. Berkanis, S.Kep, Ns, MH.Kes B D, Erna Febriyanti, S.Kep., Ns. M. Faktor-Faktor Yang Mempengaruhi Anemia Pada Ibu Hamil Di Puskesmas Padediwatu Kabupaten Sumba Barat.
7. Gozali W. Hubungan Pola Makan Dengan Kejadian Anemia Pada Ibu Hamil Di Wilayah Kerja Puskesmas Buleleng III. 2018;2(3):117-122.
8. Sariestya Rismawati & ER. Analisis Penyebab Terjadinya Anemia Pada Ibu Hamil. Published Online 2017.
9. Age RB, With P, Event THE, In A, Mothers P. Hubungan Antara Usia Dan Paritas Dengan. 2020;2(April):178-184.
10. Siska Alviani. Faktor Yang Mempengaruhi Pemanfaatan Pelayanan Antenatal Care Di Wilayah Kerja Puskesmas Galang Kecamatan Galang Kabupaten Deli Serdang. Published online 2021.
11. Dan P, Pns K, Terampil B, et al. Peningkatan Kepatuhan Ibu Hamil Dalam Mengonsumsi Tablet Fe Melalui Penyelenggaraan Edukasi Dan Monitoring. Published online 2021.
12. A. Helga Gersi Venna, Elvi Juliansyah S. Faktor-Faktor Yang Berhubungan Dengan Uptd Puskesmas Sungai Durian Kabupaten Sintang. 2022;1(1).
13. Delfi Ramadhini SSSD. Hubungan Umur, Paritas dan Kepatuhan Konsumsi Tablet Tambah Darah Dengan Kejadian Anemia pada Ibu Hamil di Puskesmas Batunadua Kota Padangsidempuan Tahun 2021. 2021;6(2):148-156.
14. Melorys Lestari Purwaningtyas GNP. Faktor Kejadian Anemia Pada Ibu Hamil. 2017;1(3):43-54.
15. Nurhaidah R. Faktor yang Berhubungan dengan Kejadian Anemia pada Ibu Hamil di Wilayah Kerja Puskesmas Mpunda Kota Bima. 2021;9.
16. Obstetri B, Kedokteran F, Lampung U, Ilmu B, Keluarga K, Kedokteran F. Faktor-faktor yang Memengaruhi Kunjungan Antenatal Care ( ANC ) Ibu Hamil Factors Affecting The Antenatal Care ( ANC ) Visits on Pregnant Women. 2017;7(November):72-76.
17. Nanda DD, Kedokteran F, Lampung U, et al. Hubungan Kunjungan Antenatal Care dengan Kejadian Anemia pada Ibu Hamil Trimester III Correlation between Antenatal Care ( ANC ) Visit with Anemia Case on Third Trimester on Pregnant Women. 2017;7(November):88-93.
18. Aghnia Ilma Izzati1, Didik Tamtomo2 SSR. Hubungan Tingkat Kepatuhan Konsumsi Tablet Fe Dengan Kejadian Anemia Ibu Hamil di Puskesmas Margasari.
19. Namchar Kautshar1, Suriah2 NJ. Kepatuhan Ibu Hamil Dalam Mengonsumsi Tablet Zat Besi ( Fe ) Di Puskesmas Bara-Baraya Tahun 2013 The Obedience Of Pregnant Women In Consuming Iron Substance Tablets ( Fe ) In Bara-Baraya Health Center Of Makassar City In 2013 Alamat Korespondensi : Namcha. Published online 2013.
20. Sumailan GP, Dinengsih S, Siauta J. Analisis Upaya Pencegahan Anemia Ibu Hamil pada Masa Pandemi Covid 19 Analysis of Preventing Anemia for Pregnant Mothers during The Covid-19 Pandemic. 2021;7(2):66-76.
21. Wahyu S. Pemberian Zat Besi (Fe) Dalam Kehamilan Oleh : Is Susiloningtyas. *Maj Ilm Sultan Agung*.2018;50(128).<http://lppm-unissula.com/jurnal.unissula.ac.id/index.php/majalahilmiahsultanagung/article/view/74>
22. Risma Putri Utama. Status Gizi dengan Kejadian Anemia Pada Ibu Hamil. 2021;10:689-694. doi:10.35816/jiskh.v10i2.680
23. Budiman LA, Sari AS, Safitri SJ, et al. Analisis Status Gizi Menggunakan Pengukuran Indeks Massa Tubuh Dan Beban Kerja Pada Tenaga Kesehatan Nutrition Status Analysis Using BMI and Workload Measurement with 10 Pulse Method in Health Workers. 2021;01:6-15.