OPEN ACCESS

Original Research Article

The Relationship between Anemia Status and Nutritional Status of Pregnant Women with the Incidence of Stunting of Infants 0-6 Months in West Kupang District

Matthew Andreas David Matulessy[1*], Christina Olly Lada[1], Efrisca M. Br. Damanik[1], Elisabeth Levina Setianingrum[1]

[1]Faculty of Medicine and Veterinarian, University of Nusa Cendana, Lasiana, Kelapa Lima, Kupang City, East Nusa Tenggara, Indonesia

Abstract: ***Background***: Stunting situation where z score BL/A < -2. There are many factors that cause stunting, including anemia status and nutritional status during pregnancy. ***Research Objective***: Knowing the relationship between anemia status and nutritional status of pregnant women to stunting in babies aged 0-6 months in Kuanheun Village and Bolok Village, West Kupang District, Kupang Regency. ***Method***: The type of research design used by researchers is descriptive (Cross-sectional) research. Analyzing the relationship between anemia status and nutritional status that occurs in mothers during pregnancy with the incidence of infant stunting 0-6 months using a retrospective approach by looking at the history of 4th Antenatal Care (ANC) in the mother's MCH book, as well as making anthropometric measurements on subjects. Data analysis used the Shapiro-Wilk test for the normality test and the Spearman's rho test for the correlation test. ***Results***: There is no significant correlation between the history of anemia status and nutritional status in pregnancy with stunting incidence of 0-6 months, anemia status and stunting incidence with p value = 1.0, nutritional status of pregnant women and stunting incidence with p value = 0.075. ***Conclusion***: There is no relationship between the history of anemia in pregnancy and the nutritional status of babies 0-12 months in West Kupang District.
Keywords: Anemia, Upper Arm Circumference, Pregnancy, Stunting, Infants.

INTRODUCTION

Stunting is a condition where growth failure occurs in children under five due to chronic malnutrition, especially in the first 1,000 days of life (1000 HPK). Stunting also participates in influencing brain growth and development in children under five. (Bappenas, 2018) A child is classified as stunted if the PB/U indicator of a z-score of < -2 (Atikah *et al.,* 2018).

According to the global prevalence in 2017, stunting was 22.2% or 150.8 million toddlers (Riskesdas, 2018). Stunting in Indonesia is also still common. The stunting rate was found to be 30.8% in 2018. East Nusa Tenggara has a high stunting prevalence of above 40% in 2018.(Riskedas, 2018; BKKBN, 2022) According to Riskesdas 2018 Kupang Regency, East Nusa Tenggara has a prevalence rate of 41.4%.(Riskesdas, 2018) According to BKKBN data in 2022, the prevalence of stunting babies in Kuanheun, Kupang Regency, is 46 babies. The prevalence of

families at risk of stunting in Bolok, Kupang Regency is 367 families, of which 47 (13%) are low-risk families, 178 (48%) are medium-risk families, and 142 (39%) high-risk families are stunted (BKKBN, 2022).

According to BKKBN data, one of the causes of stunting in NTT is the problem of mothers as part of the Childbearing Age Couple (PUS).(BKKBN, 2022) So that the child born is not at risk of stunting, pregnant women must also have an excellent nutritional status because if the pregnant woman suffers from Chronic Energy Deficiency (SEZ), then it is likely to give birth to a BBLR baby (Low Birth Weight Baby), where BBLR is one of the basic factors that can cause stunted children in the future if they do not receive adequate treatment (Prawirohardjo, 2016).

There are various ways to measure nutritional status in pregnant women, one of which is anthropometry. SEZ in mothers can be assessed by calculating the LILA of the mother (Holil, 2017). The

*Corresponding Author: Matthew Andreas David Matulessy
Faculty of Medicine and Veterinarian, University of Nusa Cendana, Lasiana, Kelapa Lima, Kupang City, East Nusa Tenggara, Indonesia

10

mother's LILA can also help determine the baby's nutritional status. This can be seen from previous research by Dewi *et al.,* (2020), which proved that women with LILA who belong to the SEZ group have 25% stunting babies (Dewi *et al.,* 2020). Another study also conducted by Alfarisi *et al.,* (2019) found pregnant women with LILA SEZ had stunting babies by 52.9%.(Alfarisi *et al.,* 2019) Almost the same results were also found in another study conducted by Lestari et al. (2019) that mothers with LILA SEZ have babies stunting by 36% (Lestari *et al.,* 2019).

One of the other factors that can also cause stunting is the status of maternal anemia. It can be seen in a previous study by Dewi *et al.,* (2020), which proved that mothers with a history of anemia had stunted children as much as 23.3%.(Dewi *et al.,* 2020) Almost the same results were also obtained in another study conducted by Sofia *et al.,* (2018) that mothers with a history of anemia had stunted children by 62.5% and. (Sofia *et al.,* 2018) In another study conducted by Kartini *et al.,* (2018), it was also found that mothers with a history of anemia had stunted children by 61.9%. (Kartini *et al.,* 2018)

Therefore, based on the background described above, the author will study the relationship between anemia status and nutritional status of pregnant women to stunting in babies 0-6 months old in West Kupang District. This study has never been conducted before in this region, and the number of stunted babies is quite high.

METHODOLOGY
Design, Location, and Time
This cross-sectional study was conducted in August - September 2022. This study took place in Kuanheun Village and Bolok Village, West Kupang District, Kupang Regency.

Sampling
Total respondents used in this study were 40 people. The inclusion criteria used were want to become research respondents, respondents who had toddlers aged 0-6 months in Kuanheun Village and Bolok Village, respondents who brought Maternal and Child Health (MCH) books of the study subject.

Data Collection
The research begins with providing explanations related to the research to the respondents, after providing explanations, a sample determination will be carried out based on inclusion criteria, and the researchers will ask for the willingness of the respondents to participate in this study. Respondents will be interviewed by researchers and enumerators regarding respondents' identities, infant identities, data during respondents' pregnancies in the MCH book and infant health data. After the interview, researchers will take anthropometric measurements using Onemed OD231B.

Data Analysis
Techniques data analysis are used is univariate and bivariate. Frequency distribution is used in univariate to analysis characteristics of subjects and respondents. The spearman's rho test is used in bivariate analysis to assess the relationship between the mother's history of anemia and upper arm circumference during pregnancy on the antenatal care examination with stunting in Kuanheun Village and Bolok Village. Analyses were conducted using JASP (Jeffrey's Amazing Statistics Program) version 0.16.3.

RESULT AND DISCUSSION
Univariate Analysis
Characteristics of Respondents
The frequency distribution of respondent's characteristics based on socioeconomic conditions shows that the majority of respondents are from Bolok Village (65%) and the majority of respondents occupy private houses (70%). Most of the respondents were out of work (77.5%) and the majority of respondents had a family income that was less than the minimum wage (65%). This distribution also showed that the majority of respondents were married (67,5%) and most respondents had a low level of education (79.5%). Table 1 shows the frequency distribution of characteristics based on socioeconomic conditions.

Table 1: Frequency distribution *characteristics of respondents based on socioeconomic conditions*

Characteristics of Respondents	Frequency (n) n=40	Percentage (%)
Research Location		
Kuanheun	14	35
Bolok	26	65
Status of Residence		
Family house	12	30
Private house	28	70
Employment		
Employed	9	22,5
Unemployed	31	77,5
Family Income		
Less than minimum wage	26	65

Characteristics of Respondents	Frequency (n) n=40	Percentage (%)
More than minimum wage	14	35
Marital Status		
Not married	13	32,5
Married	27	67,5
Education Background		
Low (Primary school/ Junior high school/ Senior high school)	31	79,5
High (Diploma III/ Diploma IV/ Bachelor)	9	20,5

The frequency distribution of respondents characteristics based on maternal health during pregnancy shows that the majority of the age group of mothers during pregnancy is 20-25 years (35%). It also showed that 20 respondents (50%) experienced anemia during pregnancy and 5 respondents who experienced SEZ during pregnancy (12.5%). Table 2 shows the frequency distribution of characteristics based on maternal health during pregnancy.

Table 2: Frequency distribution *characteristics of respondents based on maternal health during pregnancy*

Characteristics of Respondents	Frequency (n) n=40	Percentage (%)
Age During Pregnancy (year)		
< 20	1	2,5
20-25	14	35
26-30	11	27,5
31-35	10	25
> 35	4	10
History of Pregnancy Anemia		
Anemia	20	50
Normal	20	50
History of Maternal SEZ		
SEZ	5	12,5
Normal	35	87,5

Characteristics of Subjects

The frequency distribution of subject characteristics based on the baby's health condition showed that the majority gender of the subjects were male (52.5%) and the majority of the subjects age groups were 4-6 months (57,5%). The frequency distribution of the characteristics of the baby's health condition also showed that the majority of subjects history of birth weight were normal (90%). The majority of the subjects did not experienced infectious diseases in the last 1 month (72,5%) and the distribution results showed that stunting events occurred in 6 study subjects (15%). Table 3 shows the frequency distribution of characteristics based on the baby's health condition.

Table 3: Frequency distribution *characteristics of subjects based on the baby's health condition*

Characteristics of Subjects	Frequency (n) n=39	Percentage (%)
Gender		
Male	17	43,6
Female	22	56,4
Infant Age (month)		
6-8	16	41
9-12	23	59
History of birth weight		
Normal (> 2500 gr)	36	90
Low Birth Weight (< 2500 gr)	4	10
Infectious Diseases in infants in the last 1 month		
Exist	23	59
None	16	41
Stunting		
Stunted (Z-score PB/U < -2,0)	10	25,6
Not Stunted (Z-score PB/U > -2,0)	29	74,4

Bivariate Analysis

The background of respondents based on stunting incidence is present in Table 4. This table shows the number of stunting incidences in the age group of mothers during pregnancy, maternal education, history of maternal anemia during pregnancy, history of maternal SEZ during pregnancy, maternal SEZ currently, body mass index maternal currently, infant gender, infant age, history of birth weight, and history of infectious diseases in infants.

Table 4: Cross-tabulation of maternal and child characteristics with stunting incidence

Characteristics	Nutritional Status Height for Age (n=40)				Total	
	Normal		Stunting			
	n	%	n	%	N	%
Age During Pregnancy (year)						
< 20	1	100	0	0	1	100
20-25	11	78,5	3	21,5	14	100
26-30	9	81,8	2	18,2	11	100
31-35	9	90	1	10	10	100
> 35	4	100	0	0	4	100
Education Background						
Low	25	80,6	6	19,4	31	100
High	9	100	0	0	9	100
History of Pregnancy Anemia						
Anemia	17	85	3	15	20	100
Normal	17	95	3	15	20	100
History of Maternal SEZ						
SEZ	3	60	2	40	5	100
Normal	31	88,5	4	11,5	35	100
Maternal SEZ Currently						
SEZ	9	81,8	2	18,2	10	100
Normal	27	93,1	2	6,9	29	100
Body Mass Index Maternal Currently						
Underweight	5	83,3	1	16,7	6	100
Normal	18	85,7	3	14,3	21	100
Overweight	7	100	0	0	7	100
Obese 1	4	100	0	0	4	100
Obese 2	2	100	0	0	2	100
Infant Gender						
Male	17	88,9	4	11,1	21	100
Female	17	86,9	2	10,6	19	100
Infant Age (month)						
0-3	14	82,3	3	17,7	17	100
4-6	20	86,9	3	13,1	23	100
History of Birth weight						
Normal (> 2500 gr)	31	86,1	5	13,9	36	100
Low Birth Weight (< 2500 gr)	3	75	1	25	4	100
Infectious Diseases in infants in the last 1 month						
None	25	86,2	4	13,8	29	100
Exist	9	81,8	2	18,2	11	100

Cross-tabulation in Table 4 shows that most of the stunted babies have a mother with low education. The incidence of stunting is more extensive in male infants (11,1%) than in female infants (10.6%). Then based on the infants age, the incidence of stunting is same proportion in the age group of 1-3 months and the age group of 4-6 months.

Correlation of History Anemia and History SEZ in Mother during Pregnancy on the Antenatal Care Examination with Stunting in Kuanheun Village and Bolok Village

The correlation between a history of anemia and history of SEZ in the mother during pregnancy in ANC K4 with stunting incidence in infants 0-6 months were analyzed using Spearman's rho tests.

Table 5: Spearman's rho test results on the relationship of history anemia during pregnancy to stunting

Nutritional Status Height for Age (n=40)	History of Anemia During Pregnancy (n = 40)				p ª
	Normal		Anemia		
	n	%	n	%	
Normal	17	50	17	50	1,0*
Stunting	3	50	3	50	

ª Spearman's rho Tests: *p > 0,05

Spearman's rho test results in Table 5 show that statistical test results are insignificant p = 1,0 (p > 0,05).

Table 6: Spearman's rho test results on the relationship of history SZE during pregnancy to stunting

Nutritional Status Height for Age (n=40)	History of SZE during pregnancy (n = 40)				p ª
	Normal		SZE		
	n	%	n	%	
Normal	31	91,2	3	8,8	0,075*
Stunting	4	66,7	2	33,3	

ª Spearman's rho Tests: *p > 0,05

Spearman's rho test results in Table 6 show that statistical test results are insignificant p = 0,0,75 (p > 0,05).

DISCUSSION

The sample from this study was divided into 2, namely respondents and research subjects. The respondents were mothers of 0-6 month babies in Kuanheun village & Bolok village, and subjects were 0-6 month babies in Kuanheun village & Bolok village. The data taken on the respondents were Hemoglobin levels and the results of the LILA examination at the 4th ANC, which can be reviewed in the MCH book brought by the respondent when they came on the day of data collection. The interpretation used is whether or not the respondent is anemic and also the SEZ or not of the respondent. The interpretation of the data subjects taken is the length of the baby's body on the day of data collection with the interpretation of the z score PB/U.

The data collection results carried out by researchers face-to-face in Kuanheun Village, and Bolok Village obtained 40 samples where 20 samples had anemia when containing subjects, and 20 samples did not experience anemia when containing subjects. There were 5 respondents who experienced SEZ when pregnant with subjects and 35 respondents who did not experience SEZ when they were pregnant with subjects. The results of data collection also contained 34 research subjects who were not stunted and 6 research subjects who were stunted.

The distribution of respondents' characteristics in Table 1 showed that most respondents were not working (77.5%) and chose to be homemakers. This has a positive impact, namely that respondents have more time to care for subjects. Respondents also had more time to pay attention to the subjects' nutritional intake. This is also in line with research conducted by Ibrahim *et al.,* (2015), where there is a significant relationship between maternal employment status and stunting incidence.(Ibrahim *et al.,* 2015) Table 1 also shows that as many as (30%) of respondents still live in family homes. This can also affect the incidence of stunting because the nutrition will be divided, where the nutrients that should be for the subject can be divided among other family members. This is also in line with research conducted by Tongkonoo *et al.,* (2021), where the status of residence also affects the incidence of stunting (Tongkonoo *et al.,* 2021).

Table 1 also shows that as many as (32.5%) of respondents are not married by the civil registry, so the subjects do not have a Family Card (KK), and it is difficult for subjects to get health insurance such as BPJS, so when they are sick, the subjects do not have treatment assistance as a result of which the subjects cannot be screened when they are stunted or do not seek treatment when they are sick because of medical expenses that the mother cannot bear.34 In Table 1, as many as 65% of respondents have less income. This can also affect the incidence of stunting, where income greatly affects the family's ability to meet the needs of food intake at home, so low family income will affect the quality and quantity of food. This is in line with research by Ibrahim *et al.,* (2015), where there is a relationship between family income and stunting events (Ibrahim *et al.,* 2015).

The cross-tabulation in Table 3 shows that most stunting events occur in mothers with young gestational age (50%). These results align with research by Elisabeth *et al.,* (2018), which proves that mothers with a young gestational age can cause mothers to experience preeclampsia during pregnancy and will give birth to stunted children (Elisabeth *et al.,* 2018). Table 3 also shows that stunting events mainly occur in mothers with low education (100%). These results also align with research conducted by Mustamin *et al.,* (2018), which also proves a meaningful relationship between maternal education and stunting incidence. A mother's knowledge of nutrition greatly influences her behavior in providing food for her child (Mustamin *et al.,* 2018). The mother's current LILA in Table 3 shows that mothers with normal LILA after giving birth have more normal children (93.1%). This is in line with research conducted by Sumi *et al.,* (2015), which also

explains that mothers who have normal LILA have a good intake, so the nutrients in breast milk are also wealthy and nutritious. They can prevent babies from experiencing stunting events (Sumi *et al.,* 2015). Cross-tabulation in 3 also explains that mothers with underweight BMI and normal BMI have more frequent stunting events. This is also in line with research conducted by Sumi *et al.,* (2015) that mothers with good BMI have normal children. This is because the better the mother's BMI can affect nutrition from mother to baby through breast milk (Sumi *et al.,* 2015).

The sex of the babies in Table 3 also shows that as many men (66.7%) experienced stunting events. This result is also in line with research conducted by Syahruddin *et al.,* (2022), namely as many as (38.5%) of male babies are stunted compared to female babies (33.3%). The prevalence in males is higher because the gross motor development of boys is faster and more diverse; therefore requires more energy, whereas the nutritional intake received is less (Syahruddin *et al.,* 2022). Table 3 shows that (16.7%) of infants with a history of BBLR experienced stunting events. Similarly, Murti *et al.,* (2020) research showed that babies with a history of BBLR experienced stunting events as much as (71.9%). This can happen because, in general, babies with low birth weight usually find it difficult to pursue optimal growth during 1000 HPK (Murti *et al.,* 2020). Table 3 also shows that as many as (33.3%) of babies with a history of infection experience stunting. This is also in line with research conducted by Yulnefia *et al.,* (2022), namely, as many as (58%) of babies who have a history of infection experience stunting events (Yulnefia *et al.,* 2022).

In this study, researchers also conducted a spearman's rho test between a history of anemia and the nutritional status of PB/U babies. They produced a p = 1 value with no relationship between a history of anemia and pb/U nutritional status in babies 0-6 months in Kuanheun and Bolok villages. This research is in line with the research conducted by Aryanto *et al.,* (2020), with a correlation between hemoglobin levels and stunting events in the results of p-value = 0.547. There is no relationship between a history of anemia and the incidence of stunting.(Aryanto *et al.,* 2020) Likewise, the research conducted by Ratna *et al.,* (2016) with a correlation between hemoglobin levels and the incidence of p-value = 0.401, where there is no relationship between a history of anemia and the incidence of stunting in infants 0-6 (Ratna *et al.,* 2016). Another study opposite results by Arman *et al.,* (2022) with a correlation between anemia status and stunting incidence, which had a p-value = 0.003 (Arman *et al.,* 2022). Research with significant results was also conducted by Karjono *et al.,* (2020) with a correlation between anemia and stunting incidence which has a p-value = 0.001 (Karjono *et al.,* 2020).

According to research conducted by Hidayanti *et al.,* (2020), anemia during pregnancy can cause perinatal infections, preeclampsia, increased risk of bleeding, IUGR, premature birth, and BBLR in infants (Hidayanti *et al.,* 2020). In this study, respondents received blood-added tablets during pregnancy which amounted to 90 tablets. Therefore it is expected that there would be no incidence of anemia in mothers who were pregnant with subjects. In this study, mothers who experienced anemia were 20 respondents out of 40 existing respondents. According to research conducted by Bakhtiar *et al.,* (2021), this is influenced by maternal knowledge about the usefulness of blood-added tablets and the adherence to consuming blood-added tablets (Bakhtiar *et al.,* 2021). In this study, the diagnosis of anemia in pregnant women was taken based on secondary data from the MCH book. Hb examination in pregnant women at puskesmas / posyandu generally uses the Hb Sahli method. Hb Sahli examination is very subjective depending on the accuracy of the eyes of the examiner, so whether or not the diagnosis of anemia in pregnant women is correct requires further examination to prove the presence or absence of anemia.

Researchers also conducted the same test on the history of SEZ and the nutritional status of PB/U babies. Also, they obtained a p-value = 0.075, which can also be interpreted to mean that there is no relationship between the history of SEZ and the nutritional status of PB/U babies in Kuanheun Village and Bolok Village. This research is in line with research that has been conducted by Warsini *et al.,* (2016) with the correlation between the history of SEZ and the incidence of stunting obtained the result of p-value = 0.67 (Warsini *et al.,* 2016). Another study also conducted by Tika *et al.,* (2020) with the correlation between SEZ and stunting incidence is also in line with this study which proves that there is no difference between LILA stunting babies and also normal babies where p-value = 0.835 (Tika *et al.,* 2020). This study has results that are contrary to the research conducted by Karjono *et al.,* (2020) with a correlation between SEZ and stunting incidence which has a p-value = 0.029 (Karjono *et al.,* 2020). Significant results are also the same as the study conducted by Ruaida *et al.,* (2018) with a correlation between SEZ and stunting incidence which has a p-value = 0.00 (Ruaida *et al.,* 2018).

Pregnant women with SEZ are one of the risks of mothers giving birth to BBLR babies, which will later be at risk of stunting. The status of SEZ in pregnant women should also be followed from the beginning of pregnancy because if pregnant women get SEZ and are given the right intervention, it is hoped that they will not give birth to BBLR babies and avoid becoming stunted children in the future (Muhamad, 2020). One of the reasons this study has insignificant results is that the number of samples is small, so it is necessary to think about further research with a larger and multicenter sample number.

CONCLUSION

In this study, half respondents had a history of maternal anemia during pregnancy. Few respondents had a history SZE during pregnancy. The incidence of stunting in Kuanheun Village and Bolok Village is not quite much. Furthermore, there is an insignificant relationship between the history of maternal anemia and history of maternal SZE during pregnancy with the incidence of stunting in infants aged 0-6 months. Although there still needs more research with a different closure.

REFERENCES

- Akmal, S., Nining, A. N., & Fransiska, M. (2022). Hubungan Kejadian *Stunting* dengan Perkembangan Anak Usia 6-23 Bulan The *Association Between Stunting and Development Among Children Aged 6-23 Months* Sekolah Tinggi Ilmu Kesehatan Tamalatea Makassar, Indonesia. 15(4), 327–32.

- Alfarisi, R., Nurmalasari, Y., Nabilla, S., Dokter, P. P., Kedokteran, F., & Malahayati, U. (2019). Status gizi ibu hamil dapat menyebabkan kejadian stunting pada balita. *Jurnal Kebidanan*, *5*(3), 271-8.

- Anggraeni, N. (2019). Hubungan Indeks Masa Tubuh Dan Lingkar Lengan Atas Ibu Menyusui Terhadap Status Gizi Bayi Usia 0-12 Bulan Di Pekon Pagelaran Kabupaten Pringsewu. *J Ilm Kesehat*, 8(1), 7–13.

- Arman. (2022). Faktor Risiko Riwayat Anemia kehamilan terhadap kejadian *stunting* pada Baduta. *J Keperawatan,* 14(September), 845–50.

- Atikah Rahayu, Fahrini Yulidasari, Andini Octaviana Putri, Lia Anggraini. *Study Guide - Stunting* dan Upaya Pencegahannya *Study Guide - Stunting* dan Upaya.

- Bakhtiar, R., Muladi, Y., Tamaya, A., Utari, A., Yuliana, R., & Ariyanti, W. (2021). Hubungan Pengetahuan Dan Kepatuhan Ibu Hamil Anemia Dalam Mengkonsumsi Tablet Tambah Darah Di Wilayah Kerja Puskesmas Lempake Kota Samarinda. *Jurnal Kedokteran Mulawarman*, *8*(3), 78-88.

- BKKBN. Keluarga berisiko stunting_kabupaten Kupang_bolok. BKKBN, editor. Kupang: BKKBN; 2021. 151–156 p.

- Dewi, R., Evrianasari, N., & Yuviska, I. A. (2020). Kadar HB, LILA dan Berat Badan Ibu saat Hamil Berisiko terhadap Kejadian Stunting pada Anak Usia 1-3 Tahun. *Jurnal Kebidanan Malahayati*, *6*(1), 57-64.

- Fatimah, C. M. M., & Suryati, E. O. (2020). Hubungan Berat Badan Lahir Rendah (Bblr) Dengan Kejadian *Stunting* Pada Balita Usia 2-5 Tahun Di Desa Umbulrejo Kecamatan Ponjong Kabupaten Gunung Kidul. *J Ilm Kesehat Keperawatan*, 16(2), 52.

- Holil M. Par'i, S.K.M. MK. Penilaian Status Gizi. 2017.

- Ibrahim, I. A., & Faramita, R. (2015). Hubungan faktor sosial ekonomi keluarga dengan kejadian *stunting* anak usia 24-59 bulan di wilayah kerja puskesmas Barombong kota Makassar tahun 2014. Al-Sihah *Public Heal Sci* J [Internet]. 7(1), 63–75. *Available from*: http://103.55.216.55/index.php/Al-Sihah/article/view/1978

- Karjono, L. E. (2021). Anemia dan Kurang Energi Kronik (KEK) Sebagai Faktor Risiko Terjadinya *Stunting* di wilayah Kerja UPT BLUD Puskesmas Senaru Kabupaten Lombok Utara. 8(1), 76–9.

- Kartini. (2018). Hubungan Anemia Dalam Kehamilan Dengan Panjang Badan Bayi Baru Lahir di Rumah Sakit Benyamin Guluh Kabupaten Kolaka Tahun 2018. *Heal Inf J Penelit,* 10(1), 33–8.

- Kementerian PPN/ Bappenas. Pedoman Pelaksanaan Intervensi Penurunan *Stunting* Terintegrasi di Kabupaten/Kota. Rencana Aksi Nas dalam Rangka Penurunan *Stunting* Rembuk *Stunting* [Internet]. 2018;(November):1–51. *Available from*: https://www.bappenas.go.id

- Kristiana, W., Haman, H., & Detty. S. N. (2016). Riwayat KEK dan anemia pada ibu hamil tidak berhubungan dengan kejadian *stunting* pada anak usia 6-23 bulan di Kecamatan Sedayu, Bantul, Yogyakarta *CED and maternal anemia did not associate with stunting in children 6-23 months in Sedayu Subdistrict, Bantu,* 44.

- Lestari, P. D., Rohmah, N., & Utami, R. (2019). Hubungan Status Gizi Ibu Saat Hamil Dengan Kejadian *Stunting* Pada Balita. Fak Ilmu Kesehat Univ Muhammadiyah Jember [Internet]. 26, 1–9. *Available from*: http://repository.unmuhjember.ac.id/5047/11/k. ARTIKEL JURNAL.pdf

- Lillik, H., & Zen, R. (2020). Dampak Anemia Defisiensi Besi pada Kehamilan: *a Literature Review. Gaster.*, 18(1), 50.

- Manafe, W. A., Lalandos, J. L., & Setianingrum, E. L. S. (2019). Analisis Faktor Risiko Maternal Terhadap Kejadian Preeklampsia Di Rsud Prof. Dr. WZ Johannes Kupang. *Cendana Medical Journal (CMJ)*, *7*(2), 236-242.

- Muhammad, A. (2020). Teknik Menghitung Kadar Hemoglobin Menggunakan Metode Sahli. Fak Sains dan Teknol Univ Islam Negeri Walisongo. 2020(April), 1–7.

- Mustamin. (2018). Hubungan Tingkat Pendidikan Ibu Dan Pemberian Asi Eksklusif. 25, 25–32.

- Prastia, T. N., & Listyandini, R. (2020). Perbedaan Kadar Hemoglobin dan Lingkar Lengan Atas Ibu Hamil antara Anak Bawah Dua Tahun (BADUTA) Stunting dan Normal. *Journal of Health Science and Prevention*, *4*(2), 100-105.

- Prawirohardjo, S. (2016). Ilmu Kebidanan. Edisi Keem. Prof. dr. Abdul Bari Saifuddin, MPH S (K),

editor. PT Bina Pustaka Sarwono Prawirohardjo; 981 p.

- Presiden RI. PERPRES No. 82 Tahun 2018 tentang JKN. 2018. p. 1–74.
- Ratna. (2016). Hubungan antara kadar Hemoglobin Ibu Hamil dengan Status Gizi Anak Usia 0-6 Bulan di Wilayah Kerja Puskesmas Sangkrah Kota SuraKARTA. Naskah Publikasa Univ Muhammadiyah [Internet]. 20(1), 1–8. *Available from*: https://doi.org/10.1016/j.ajodo.2017.09.016%0Ahttp://www.ncbi.nlm.nih.gov/pubmed/?term=M+Yamaguchi+RANK+?+RANKL+?+OPG+during+orthodontic+tooth+movement%0Ahttps://doi.org/10.1016/j.ajodo.2018.10.015%0Ahttp://dx.doi.org/10.1186/s40510-016-0158-5%0Ahttp://ww
- Riskesdas. (2018). Riskendas 2018. *Lap Nas Riskesndas 2018,* [Internet]. 44(8), 181–222. *Available from*: http://www.yankes.kemkes.go.id/assets/downloads/PMK No. 57 Tahun 2013 tentang PTRM.pdf

- Ruaida, N., & Soumokil, O. (2018). Hubungan Status Kek Ibu Hamil Dan Bblr Dengan Kejadian Stunting Pada Balita Di Puskesmas Tawiri Kota Ambon. *Jurnal Kesehatan Terpadu (Integrated Health Journal)*, *9*(2), 1-7.
- Sofia F. Skripsi hubungan status anemia ibu hamil dengan kejadian. 2018.
- Tongkonoo, S. B. (2021). The Relationship of Social, Economic, and Enviromental Factors With Stunting Occurrence in Toddlers. *Jambura J Heal Sci Res.,* 3(2), 256–76.
- Yulnefia, M. S. (2022). Hubungan Riwayat Penyakit Infeksi Dengan Kejadian *Stunting* Pada Balita Umur 24-59 Bulan Di Wilayah Kerja Puskesmas Tambang Kabupaten Kampar. *J Bidan Cerdas,* 4(1), 10–7. Muhammad, A., Dadi, A., & Kince, S. (2020). Hubungan Kadar Hemoglobin Ibu Hamil Trimester Satu dengan Kejadian *Stunting* pada Balita di Kecamatan Conggeang Kabupaten Sumedang Tahun 2018. *J Integr Kesehat Sains,* 2(1), 43–6.