

Conference Paper

Risk Factors of Low Birth Weight Infants in the Work Area of Ambacang Public Health Center in Padang, West Sumatera 2014

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Abstract

Low birth weight is infants who born with a weight less than 2.500 gram that irrespective of pregnancy — the purpose of this study to determine the risk factors of low birth weight in Ambacang Public Health Center (PHC) at Padang City in 2014. Case-Control Study conducted the design of this study. Case subject collected by the medical record was 33 samples and control subject were 33 samples. The result showed that anemia during pregnancy (P=0.0001;OR=9.00; 95% CI:2.8698-28.2249), addition weight gain of pregnancy woman (P=0.038; OR=3.495; 95%CI:1.1892-10.2760), woman suffer from chronic energy malnutrition (CEM) (P=0.004; OR=5.4; 95% CI:1.7637-16.5331), age during women pregnancy (P=0.186;OR=3.2;95%CI:0.7664-13.3604), spacing pregnancy (P=0.763; OR=0.694;95%CI:0.2112-2.2830), and parity of pregnancy (P=0.473;OR=2.22; 95%CI:0.5057-9.7645). There is a significant relationship between anemia during pregnancy, additional weight gain of pregnancy woman, chronic energy malnutrition (CEM) with Low Birth Weight.

Keywords: Risk factor; low birth weight; anemia; CEM

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Received: 26 December 2018
Accepted: 23 February 2019
Published: 7 March 2019

Publishing services provided by
Knowledge E

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Selection and Peer-review under
the responsibility of the 2nd
International Meeting of Public
Health 2016 Conference
Committee.

1. Introduction

Improving community health status can be done as early as possible, especially since a mother should do the baby still in the womb and at birth and influential closely with infant mortality. Infant Mortality Rate (IMR) is a critical indicator in determining the level of public health (Amiruddin 2014).

"MDG's targets a reduction of IMR 1990 to 2/3. The means that we must reduce from 97 births become 32". One of the main factors that affect infant mortality is low birth weight (LBW). According to World Health Organization (WHO) definition, LBW is the weight of a baby at birth is less than 2.500 grams regardless of gestational age infants (Kemenkes RI 2014; OECD/WHO 2012).

Indonesian Presidential Regulation No. 42 Year 2013 About the National Movement Acceleration Nutrition Improvement, contained in Chapter I Section 1 paragraph 1 that

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the "National Movement Acceleration Nutrition Improvement is a joint effort between the government and the community through raising the participation and concern of stakeholders in a planned and coordinated to accelerate public nutrition improvement priority in the first thousand days of life". Verse 2, which reads: "A thousand days of life is a phase of life that started since the formation of the fetus in the womb until the child is aged two years (Peraturan Presiden RI No. 42/2013).

Based on the profile of West Sumatra Health Office In 2012, the number of LBW infants is 1.802 cases per 93.290 live births (1.9%). In 2013 the number of low birth weight increased by 2.075 cases (2.2%). In 2014 slightly decreased to 1.493 cases (2.1%). The incident of LBW in Padang city for an event cause most neonatal deaths in 2014 with 32 cases (Dinkes Prov. Sumatera Barat 2012; Dinkes Prov. Sumatera Barat 2013; Dinkes Prov. Sumatera Barat 2014).

Based on the data obtained from the Health Office of Padang city, from 22 health centers in the city of Padang during the years 2012 to 2014, Ambacang PHC is a health center with the highest Low Birth Weight cases in the city of Padang 2014. In 2012 there were 17 cases out of 976 births (1.7%). In 2013 increased to 43 cases out of 962 births (4.5%). In 2014 increased to 46 cases from 972 births (4.7%) (Dinkes Kota Padang 2013; Dinkes Kota Padang 2014, Dinkes Kota Padang 2015).

Based on that data, the researcher is interested to know the risk factors of low birth weight infants in AmbacangPHC of Padang city 2014.

2. Methods

The study design using Case-Control study. The population in this study divided into two populations, namely population case and control populations. The population of the case is all mothers who gave birth to live infants with low birth weight located in AmbacangPHC Padang City during 2014 totaling 46 people. While population control is all the mothers who gave birth to a live infant LBW is not located in Ambacang PHC during 2014 amounted to 972 people. The study was conducted in April-July 2015 in Ambacang PHC Padang. Data processing such as editing, entry, and cleaning. The data analyzed with Epi Info software.

3. Results

Based on Table 1 can be seen that the number of participants by age risk is less than the risk. The number of participants with the risk of spacing pregnancy is less than not risk spacing of pregnancy. The number of participants with the risk of parity is less than not

risk of equality. The number of participants with not risk anemia is less than the risk of anemia. The number of participants with risk addition weight gain is less than not risk. The amount of risk CEM is less than not risk of CEM.

TABLE 1: Independent Variable Frequency Distribution.

Variables Independent	Cases		Control		Total	
	f	%	f	%	f	%
Age						
Risk	8	24.24	3	9.09	11	16.67
Not at risk	25	75.76	30	90.91	55	83.33
Spacing pregnancy						
Risk	6	18.18	8	24.24	14	21.21
Not at Risk	27	81.82	25	75.76	52	78.79
Parity						
Risk	6	18.18	3	9.09	9	13.64
Not at risk	27	81.82	30	90.91	57	86.36
Anemia						
Anemia	27	81.82	11	33.33	38	57.58
Not anemia	6	18.18	22	66.67	28	42.42
Addition weight						
Risk	16	48.48	7	21.21	23	34.85
Not at risk	17	51.52	26	78.79	43	65.15
CEM						
CEM	18	54.55	6	18.18	24	36.36
Not CEM	15	45.55	27	81.82	42	63.64

Based on Table 2,t i can be seen that there is a significant relationship between anemia of pregnant women, a weight gain is risky and less chronic energy with the incidence of low birth weight infants, and there is no significant relationship between the age of the mother during pregnancy, spacing pregnancies and parity incidence of birth weight infants low.

4. Discussion

Based on the results of the bivariate analysis between anemia during pregnancy with the incidence of low birth weight infants showed a significant relationship — pregnant women who have anemia(Hb <11gr%) risk nine times the risk of having low birth weight infants than mothers who not have anemia (Hb ≥11 g%). Research Fitriainingsih (2012) also showed the association between anemia and low birth weight (p value = 0.000) where maternal anemia had 5.365 times risk for having a baby with low birth weight.

TABLE 2: Independent and Dependent Variables Relationship.

Variables	CasesControl		Total	OR	95%CI	p value
Age at risk	8 (24.24)	3 (9.09)	11 (16.67)	3.2	0.766-13.36	0.186
Age not at risk	25 (75.76)	30 (90.91)	55 (83.33)			
Total	33 (100)	33 (100)	66 (100)			
Spacing pregnancy at risk	6 (18.18)	8 (24.24)	14(21.21)	0.694	0.211-2.283	0.763
Spacing pregnancy not at risk	27 (81.82)	25 (75.76)	52(78.79)			
Total	33 (100)	33 (100)	66(100)			
Parity at risk	6 (18.18)	3 (9.09)	9 (13.64)	2.22	0.50-9.76	0.473
Parity not at risk	27 (81.82)	30 (90.91)	57 (86.36)			
Total	33 (100)	33 (100)	66 (100)			
Anemia	27 (81.82)	11 (33.33)	38 (57.58)	9	2.86-28.22	0.0001
Not anemia	6 (18.18)	22 (66.67)	28 (42.42)			
Total	33 (100)	33 (100)	66 (100)			
Addition weight at risk	16(48.48)	7 (21.21)	23 (34.85)	3.49	1.189-10.27	0.038
Addition weight not at risk	17 (51.52)	26 (65.15)	43 (65.15)			
Total	33 (100)	33 (100)	66 (100)			
CEM	18 (54.55)	6 (18.18)	24 (36.36)	5.4	1.763-16.53	0.004
Not CEM	15 (45.45)	27 (81.82)	42 (63.64)			
Total	33 (100)	38 (100)	66 (100)			

Anemia is a condition in decreasing levels of hemoglobin, hematocrit, and red blood cell counts below the usual number are set for individuals. According to WHO (2000), hemoglobin (Hb) for pregnant women suffer from anemia at <11gr%. Impact of iron deficiency in pregnant women can observe from the magnitude of maternal morbidity and mortality, increased fetal morbidity and mortality, as well as increased risk of low birth weight.

Based on the results of the bivariate analysis between the incidence of weight gain addition with low birth weight infants showed a significant relationship. Pregnant women with less weight gain (<10 kg) the risk 3.5 times to have low birth weight infants than women of standard addition of weight gain (10 kg-12.5 kg). The results are consistent with research conducted by Suryati (2013) found an association between weight gain to LBW (p value = 0.000) which increase the weight under 9.821 times the normal risk than average weight gain.

Weight gain addition which suitably describes the fulfillment of the mother and fetus that can support the growth of the fetus in the womb. Maternal weight gain that does not comply will allow miscarriage, premature birth, low birth weight, and bleeding after childbirth. Instead of maternal weight gain also at risk of excessive bleeding or an early indication of poisoning pregnancy/pre-eclampsia or diabetes. Weight gain during pregnancy of about 10 to 12.5 kg, which in the first-trimester increase of less than 1 kg, the

second trimester is about 3 kg, and the third trimester of approximately 6 kilograms (Amiruddin 2014).

Based on the results of the bivariate analysis between chronic energy malnutrition with the incidence of low birth weight infants showed a significant relationship — pregnant women with chronic energy malnutrition (<23.5 cm) by 5.4 times the risk of having a baby of low birth weight than those who did not experience a chronic lack of energy (≥ 23.5 cm). The results are consistent with research conducted by Syarifuddin (2011) suggests there is a relationship between chronic shortage of power to LBW (p value = 0.001) of which approximately 4.00 times the risk of constant energy to give birth to LBW babies than those who did not experience a chronic lack of power (Syarifuddin 2011).

Mid Upper Arm Circumference (MUAC) measurements intended to determine whether someone with chronic energy deficiency (CED). Measurements made with ribbon MUAC, in the middle between the shoulder and elbow left arm. The arm should be in a position free clothes, arm muscles in a state of tense or tight. If found MUAC size <23.5 cm, if the mother has not been pregnant are encouraged to delay pregnancy, but when it found in pregnant women, suggested to postpone pregnancy. This is caused by mothers who are malnourished (calories and protein) lasting or chronic so risky during pregnancy to the mother and her unborn baby (Syarifuddin 2011).

From the results of the study found no significant correlation between the ages of the mother during pregnancy with the incidence of low birth weight infants because most maternal reproductive age is safe.

There was no significant correlation between the incidences of pregnancy spacing to low birth weight infants. Due to the majority of respondents have a safe pregnancy distance (≥ 2 years).

There was no significant relationship between parity with the incidence of low birth weight infants due to the majority of respondents whose child is the first child and premature infants.

5. Conclusions

There is a relationship between low birth weight infants with anemia during pregnancy, additional weight gain; women suffer from Chronic Energy Malnutrition (CEM).

It is recommended to Ambacang PHCto provide education and more understanding to pregnant women regarding anemia during pregnancy, weight gain and chronic lack of energy.

Acknowledgments

Authors express gratitude to Allah SWT who has given the grace and opportunity to study at the lecture bench until the study ended. Thanks to lecturers board of examiners as a mentor and thesis research results that have given a chance, guidance, and challenge to the author in writing scientific papers and resolve this.

References

- [1] Amiruddin R. 2014. "Determinan Kesehatan Ibu dan Anak". Jakarta: Trans Info Media.
- [2] Arisman, M. B. 2004. "Gizi dalam daur kehidupan." Jakarta: EGC: 76-87.
- [3] Dinas Kesehatan Propinsi Sumatera Barat. 2012. Profil Kesehatan Sumatera Barat Tahun 2012. Padang: Dinas Kesehatan Propinsi Sumatera Barat.
- [4] Dinas Kesehatan Propinsi Sumatera Barat. 2013. Profil Kesehatan Sumatera Barat Tahun 2013. Padang: Dinas Kesehatan Propinsi Sumatera Barat.
- [5] Dinas Kesehatan Propinsi Sumatera Barat. 2014. Laporan LB3 Tahun 2014. Padang: Dinas Kesehatan Propinsi Sumatera Barat.
- [6] Dinas Kesehatan Kota Padang. 2013. Data BBLR Per Puskesmas Kota Padang 2012. Padang: Dinas Kesehatan Kota Padang.
- [7] Dinas Kesehatan Kota Padang. 2013. Profil Kesehatan Kota Padang 2013. Padang: Dinas Kesehatan Kota Padang.
- [8] Dinas Kesehatan Kota Padang. 2015. Data BBLR Per Puskesmas Kota Padang Tahun 2014. Padang: Dinas Kesehatan Kota Padang.
- [9] Kementerian Kesehatan RI. 2014. "Pedoman Pelayanan Kesehatan Reproduksi Terpadu di Tingkat Pelayanan Kesehatan Dasar". Jakarta: Direktorat Jendral Bina Gizi dan KIA.
- [10] OECD/WHO. 2012. "Low Birth Weight." Glance: Asia/Pacific 2012: OECD.
- [11] Peraturan Presiden Republik Indonesia Nomor 42 Tahun 2013. Gerakan Nasional Percepatan Perbaikan Gizi.
- [12] Syariffudin V. 2011. "Risiko Kurang Energi Kronis (KEK) Pada Ibu Hamil Di Indonesia." Jurnal Berita Kedokteran Masyarakat; Volume 27, No 4.