Parity and risk of low birth weight infant in full term pregnancy

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Abstrak

Latar belakang: *Berat badan lahir rendah meningkatkan morbiditas dan mortalitas pada bayi baru lahir. Hasil Riskesdas 2010 dan 2013 menunjukkan penurunan angka prevalensi berat badan lahir rendah dari 11,1% menjadi 10,2%. Tujuan penelitian ini adalah mengidentifikasi faktor risiko yang berkaitan dengan kejadian berat badan lahir rendah pada kehamilan cukup bulan.*

Metode: *Penelitian potong lintang di dua rumah sakit di Jakarta dengan menggunakan data sekunder. Data rekam medik wanita yang melahirkan pada periode 1 Januari sampai 31 Desember 2011 dipilih secara purposif. Berat badan lahir rendah adalah berat badan kurang dari 2500g pada bayi baru lahir. Analisis data dilakukan dengan menggunakan regresi logistik.*

Hasil: *Pada analisis ini didapatkan 2242 subyek yang memenuhi kriteria, dari 4191 subyek. Proporsi berat badan lahir rendah adalah 9,5%. Jika dibandingkan dengan primipara, wanita nullipara memiliki risiko melahirkan bayi dengan berat badan lahir rendah 46% lebih tinggi* [adjusted odds ratio (ORa) = 1.46; P=0.030]. *Selanjutnya, jika dibandingkan dengan bayi laki-laki, bayi perempuan memiliki risiko 42% lebih tinggi mengalami berat lahir rendah* (ORa = 1.42; P=0.017)

Kesimpulan: *Bayi berat badan lahir rendah pada kehamilan cukup bulan lebih sering ditemukan pada wanita nullipara dan bayi perempuan.* ***(Health Science Journal of Indonesia 2016;7:13-6)***

Kata kunci: *paritas, jenis kelamin bayi, berat badan lahir rendah*

Abstract

Background: Low birth weight infants tend to increase the occurence of early infant mortality and morbidity. The survey in Indonesia suggested that the prevalence of low birth weight declined from 11.1% in 2010 to 10.2% in 2013. This study aims to identify the risk factors of low birth weight infant in full term pregnancy.

Methods: This was a cross-sectional study using secondary data from two hospitals in Jakarta. The data was obtained from medical records of pregnant women who gave birth during the period of January 1 to December 31, 2011. Multivariat logistic regression model with stepwise method was used to analyze the risks of low birth weight.

Results: The sample size in this study was 4191 subjects. Out of them 2242 subjects met the inclusion criteria. The proportion of low birth weight was 9.5%. Compared with primipara, nullipara had 46 % increased risk to have LBW infant (ORa = 1.46; P=0.030), meanwhile primipara and nullipara did not have significant difference for having LBW infants (ORa = 0.90; P=0.614). In term of sex of infants, female infant had 42% higher risk of having LBW infant compared with male infant (ORa = 1.42; P=0.017).

Conclusion: Low birth weight infants in full term pregnancies are more common in nullipara and most of the LBW infants are female. ***(Health Science Journal of Indonesia 2016;7:13-6)***

Keyword: parity, sex of infant, low birth weight infants.

Low birth weight infants tend to increase the occurence of early infant mortality and morbidity.[1,2] The low birth weight infants contribute not only health problems but also learning disability and behavioral problems than normal birth weight infants.[3] The incidence of ischemic heart disease and metabolic syndrome was found higher in adulthood who was born with low weight at birth.[4]

Low birth weight was estimated 15% to 20% of all births in the world or more than 20 million births a year had low weight.[5] The survey in Indonesia suggested that the prevalence of low birth weight declined from 11.1% in 2010 to 10.2% in 2013. There was considerable variation in prevalence of low birth weight across regions from the lowest at 7.2% in North Sumatera to the highest at 16,9% in Central Sulawesi.[6]

Various factors have been known as predictors of low birth weight such as maternal age, history of low birth weight infants, prematurity, hypertension, family history of low birth weight, birth order, health status of mother, maternal anemia, history of antenatal care, socio-economic status, maternal education.[7,8,9] This study aims to identify the risk factors of low birth weight infants in two hospitals in Jakarta.

METHODS

This was a cross-sectional study using secondary data from two hospitals in Jakarta. The data was obtained from medical records of pregnant women who gave birth during the period of January 1 to December 31, 2011. Pregnant women who gave birth less than 37 weeks of gestasion and had incomplete data were excluded. The data that were collected including mother's age, mother's education level, mother's occupations, funding source, antenatal care (ANC), gravidity, parity, (pre-) eclampsia, sex and birth weight of infants.

Low birth weight (LBW) was defined as weight at birth less than 2500g while those with birth weight of 2500g and above were defined as normal weight.[10]

Mother's age was divided into three groups: 16-20, 21-35, 36-46 (years). Education level was categorized into three groups : low (uneducated until complete primary school), middle (complete junior high school) and high (complete senior high school or more). Mother's occupations were divided into 5 categories (military/police/civil servants/state, unemployed/

housewife, private employees, entrepreneurs/traders and laborer). Funding sources was grouped into five categories : civil servants insurance (provided by *Askes*), company (*Jamsostek* or other company insurances), private insurance, out of pocket, and social insurance (*Jamkesmas, Jamkesda, or Jampersal*). ANC was divided into three categories : 4 visits or more, less than 4 visits and no antenatal care. Gravidity was categorized into primigravida (first pregnancy), multigravida (has been pregnant two to four times), grand multigravida(has been pregnant five times or more). Parity was clasiified into nullipara/nulliparous woman (a woman who has not given birth previously/ never completed a pregnancy beyond 20 weeks' gestation), primipara/ primiparous woman (a woman who has given birth once) and multipara/multiparous woman(a woman who has given birth more than once).[11] Sex of infant was divided into male and female infant.

The data was tabulated according to various factors included in this study. Multivariat logistic regression analysis with stepwise method was done by using STATA version 9. Ethical approval was obtained from National Institute for Health Research and Development Ethics Committee, Ministry of Health, Republic of Indonesia.

RESULTS

The sample size in this study was 4191 subjects. Out of them 2242 subjects met the inclusion criteria.

Table 1 shows that the proportion of low birth weight was 9.5% (212/2242). Those who had LBW infants and did not have LBW infants were similiarly distributed in respect with mother's age, privat employees, mothers with privat insurance, and grand multigravida. However, compared to the respective reference group, the risk of having LBW infants were more likely higher for those with lower education, unemployed/housewife, enterpreneur/traders, laborer, those with company insurance, out of pocket, social insurance, also for those who never attended antenatal care and those with (pre-)eclampsia.

DISCUSSION

The limitations of this study were use secondary data which provide only certain data and only well recorded data can be used for analysis. This study also was conducted in two hospitals, the results did not represent general population.

Table 1.Socio demographic, clinical characteristics and risk of low birth weight

Variable	No (n=2030)		Yes (n=212)		Crude odds ratio	95% Confidence interval	P
	n	%	n	%			
Mother's age							
21-35	1585	78.1	162	76.4	1.00	Reference	
16-20	92	4.5	12	5.7	1.28	0.68-2.38	0.443
36-46	353	17.4	38	17.9	1.05	0.73-1.53	0.784
Mother's education							
High	574	28.3	39	18.4	1.00	Reference	
Middle	978	48.2	97	45.8	1.46	0.99-2.15	0.055
Low	478	23.5	76	35.8	2.34	1.56-3.51	0.000
Mother's occupation							
Military/police/civil servants/state	110	5.4	6	2.8	1.00	Reference	
Unemployed/housewife	1402	69.2	160	75.5	2.09	0.91-4.84	0.084
Privat employees	419	20.7	33	15.6	1.44	0.59-3.53	0.421
Enterpreneur/traders	65	3.2	8	3.8	3.16	0.75-6.79	0.148
Laborer	29	1.4	5	2.4	2.26	0.90-11.09	0.072
Funding source							
Civil servant insurance	175	8.6	7	3.3	1.00	Reference	
Privat insurance	50	2.5	4	1.9	2.00	0.56-7.11	0.284
Company insurance	89	4.4	10	4.7	2.81	1.03-7.63	0.043
Out of pocket	1090	53.7	104	49.1	2.39	1.09-5.21	0.029
Social insurance	626	30.8	87	41.0	3.47	1.58-7.64	0.002
Antenatal care							
4 visits or more	1754	86.4	178	84.0	1.00	Reference	
Less than 4 visits	99	4.9	10	4.7	0.99	0.51-1.94	0.989
No antenatal care	177	8.7	24	11.3	1.34	0.85-2.10	0.210
Gravidity							
primigravida	719	35.4	93	43.9	1.00	Reference	
multigravida	1202	59.2	106	50.0	0.68	0.51-0.91	0.011
grandmultigravida	109	5.4	13	6.1	0.92	0.50-1.70	0.796
(Pre-)eclampsia							
No	1953	96.2	187	88.2	1.00	Reference	
Yes	77	3.8	25	11.8	3.39	2.11-5.46	0.000

Table 2. the final model demonstrates that compared with primipara, nullipara had 46 % increased risk to have LBW infant, meanwhile primipara and multipara did not have significant difference for having LBW infants. In term of sex of infant, female infant had 42% higher risk of having LBW compared with male infant.

Table 2. Relationship between parity, sex of infant and risk of low birth weight

Variable	No (n=2030)		Yes (n=212)		Adjusted odds ratio	95% Confidence interval	P
	n	%	n	%			
Parity							
Primipara	717	35.3	63	29.7	1.00	Reference	
Nullipara	791	39.0	101	47.6	1.46	1.04-2.04	0.030
Multipara	522	25.7	48	22.6	0.90	0.61-1.34	0.614
Sex of infant							
Male	1079	53.2	95	44.8	1.00	Reference	
Female	951	46.8	117	55.2	1.42	1.06-1.90	0.017

*Adjusted each other between variables listed on this table, mother's education, funding source, and (pre-) eclampsia

This study demonstrated that nulliparous women increased risk of LBW 46% (1.46 times) higher compared to primiparous women. This finding was slightly lower than study done by Stutz in Thailand who stated nulliparous women had 1.95 times greater risk of having LBW.[12] Similiarly, a sistematic review study done by Shah PS reported that nulliparous women were 1.41 times higher risk for LBW.[13] Sae-tia P in Thai reported that nulliparous were at higher risk 1.7 times for LBW.[14] Nulliparity was related with an increased risk of hypertensive disorders in pregnancy, which in turn was strongly associated to LBW.[7,15] In this study, nulliparous woman were significantly related with LBW infants may be due to the occurence of (pre-)eclampsia was more frequent in nulliparous woman.[16]

This study also suggested that female infant had 42% higher risk of having LBW compared to male infant. This result was consistent with other studies. Paneru et all in India found that female infant carried 1,33 times higher risk for LBW than the male infant.[17] Pramono et all also revealed female infant was 1.4 times greater risk for LBW compared to the male.[18] Male infant was strongly associated with higher birth weight, this was apparently due to androgen action which plays a major role in body composition.[19-21]

In conclusion, low birth weight infants in full term pregnancies are more common in nullipara and most of the infants are female

Acknowledgments

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