Socio-Demographic and Nutritional Determinants of Birth Weight in Coastal Areas

Determinan Sosio-demografik dan Gizi yang Berhubungan dengan Berat Badan Lahir Bayi di Daerah Pesisir

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Abstract

Objective: To identify socio-demographic and nutritional determinant associated with birth weight in coastal areas.

Methods: A cross-sectional study using a simple random sampling method. Data of labour in coastal areas of Kendari City was analysed. Total of 215 women who aterm delivery in the Community Health Centre of Mata, Nambo and Abeli on January to December 2016 were included in this study. Birth weight was examined in association with the independent variable as maternal age, education, occupation, husband's job, parity, antenatal care, iron tablets consumption and upper arm circumference.

Results: Most participants were aged 20-25 years old, primary education, as housewife, multiparity and husband work as self-employed. There was 8.9% low birth weight in coastal areas. Maternal age, education and ANC visits were significantly associated with birth weight (p < 0.05). Consumption of iron tablets and upper arm circumference were significantly associated with birth weight (p < 0.05).

Conclusions: Maternal age, education and ANC visits were socio-demographic determinants that associated with birth weight. Iron tablets consumption and upper arm circumference were nutritional determinants that significantly associated with birth weight.

Keywords: age, antenatal care, birth weight, education, iron tablets, upper arm circumference

Abstrak

Tujuan: Mengidentifikasi determinan sosio-demografik dan gizi yang berhubungan dengan berat badan lahir bayi di daerah pesisir.

Metode: Penelitian potong lintangdengan pengambilan sampel secara simple random sampling. Dilakukan analisis terhadap 215 ibu hamil yang melahirkan bayi cukup bulan di wilayah kerja Puskesmas Mata, Nambo dan Abelipada bulan Januari sampai Desember 2016. Varia beli independen berupa usia ibu, tingkat pendidikan, pekerjaan, pekerjaan suami, paritas, antenatal care, konsumsi tablet besi dan ukuran lingkar lengan atas.

Hasil: Responden terbanyak berusia 20-25tahun, berpendidikan rendah, bekerja sebagai ibu rumah tangga, multiparitas dan pekerjaan suami wiraswasta. Terdapat8,9% bayi BBLR. Terdapat hubungan yang bermakna antara usia ibu, tingkat pendidikan dan ANC dengan BBL (p < 0.05). Terdapat hubungan yang bermakna antara konsumsi tablet besi dan ukuran LILA dengan BBL (p < 0.05).

Kesimpulan: Determinan sosio-demografik yang berhubungan dengan BBL adalah usia, tingkat pendidikan, dan ANC. Sedangkan determinan gizi yang berhubungan dengan BBL adalah konsumsi tablet besi dan ukuran LILA.

Kata kunci : ANC, BBL, LILA, pendidikan, tablet besi, usia

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INTRODUCTION

Birth weight is an important indicator of newborn health. Birth weight shows health condition of pregnant woman. Normal birth weight is 2500 grams or more. When the birth weight less than 2500 grams is called low birth weight (LBW).[1-3] Low birth weight is an important determinant of childhood morbidity and mortality.[3-5]Several studies have shown a strong association between LBW and increased risk infection, malnutrition, poor academic performance and problems related to mental behaviour and learning difficulties during childhood.[1,3]

The data of Riset Kesehatan Dasar 2013 that

the percentage of LBW in Indonesia was 10.2%, tend to be higher in household groups that do not have regular income such as farmers, fishermen and labor.[6] According to the data in Southeast Sulawesi, the percentage of LBW in Kendari City is still high in the coastal areas (6.88% in Nambo Community Health Center and 3.32% in the Matta Community Health Center.[7]

Risk factor of LBW were multifaceted such as maternal age, gestational age, interval between pregnancies, parity, educational status, violence during pregnancy, antenatal care, socioeconomic status, body mass index (BMI), short stature, maternal nutrition status, anaemia and other micronutrient deficiencies.[1,3,8,9] There is strong association between antenatal care (ANC) and pregnancy outcomes.[1,3]

Maternal nutrition is vital, both before and during pregnancy. The nutritional status of a pregnant woman affects the growth of fetus and birth weight.[10] Some nutrition is needed to fetus growth such as iron.[11] Pregnant woman are particularly vulnerable to iron deficiency. Iron deficiency in pregnant women causes anaemia in pregnancy, LBW and postpartum bleeding.[12] The result study in Semarang obtained prevalence of iron deficiency anaemia higher in coastal areas compare mountain area.[13]

The most common problems in coastal areas community are the low-level welfare, education and health.In general, communities in coastal areas are the family groups that did not have regular income which is mostly self-employed and traditional fisherman with low incomes.[6,14] The impact of low socio-economic status is inadequate food intake, including iron, reduce ability to seek medical care and purchase supplement.[1,3]

Therefore, this study aims to identify socio-demographic and nutritional determinant of pregnant women associated with birth weight in coastal areas.

METHOD

This is a cross-sectional study. The population of this study is pregnant women aged 20-35 years old who gave childbirth aterm in the Community Health Centre of Mata, Nambo and Abeli on January to December 2016.

Samples were taken by simple random sampling. Data using questionnaires and KIA books. Data analysis using SPSS program. Birth weight was examined in association with independent variable as maternal age, education, occupation, husband's job, parity, antenatal care, iron tablets consumption and upper arm circumference. Correlation between birth weight, socio-demographic and nutritional determinant were analysed by bivariate analysis using the chi-square test with significance < 0.05.

Table 1. Characteristics of the Subjects

Determinant	Cases (%) (n=215)	P-value
Age		
20-25	91 (42.3)	0.047
26-30	65 (30.2)	
31-35	59 (27.4)	
Education		
Primary education	99 (46.1)	0.019
Secondary education	98 (45.5)	
Higher education	18 (8.4)	
Occupation		
Housewife	196 (91.2)	0.100
Employee	14 (6.6)	
Self-employed	5 (2.3)	
Husband's job		
Fisherman	76 (35.3)	0.470
Employee	48 (22.4)	
Self-employed	91 (42.3)	
Parity		
Primiparity	66 (30.7)	0.095
Multiparity	132 (61.4)	
Grandemultiparity	17 (7.9)	
ANC visits		
≥ 4	180 (83.7)	0.000
< 4	35 (16.3)	

RESULT

The study was conducted on 215 participants. Most participants were aged 20-25 years old, primary education, worked as housewives, multiparity and husband's work as self-employed. There was 8.9% low birth weight in coastal areas. Table 1 shows the characteristics of the subjects. Chi-square test identified differences between maternal socio-demographic and birth weight. Maternal age, education and ANC visits were significantly associated with birth weight ($p < 0.05$). Association between birth weight with parity, occupation and husband's job were statistically insignificant. Table 2 shows determinant nutritional of pregnant woman

Table 2. Determinant Nutritional of Pregnant Woman in Coastal Areas

Determinant		NBW Cases (%) (n=196)	LBW Cases (%) (n=19)	*p-value*
Iron tablets consumption	Enough	60 (27.9)	1 (0.5)	
	Less	136 (63.2)	18 (8.4)	*0.019*
Arm circumference	≥ 23.5	145 (67.4)	6 (2.8)	
	< 23.5	51 (23.7)	13 (6.1)	*0.000*

in coastal areas. Determinant nutritional in this study was measured by iron tablet consumption and upper arm circumference. Chi-square test identified an association between nutritional status and birth weight. Consumption of iron tablets and upper arm circumference were significantly associated with birth weight (p < 0.05).

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DISCUSSION

Socio-demographic determinants associated with birth weight in coastal areas are maternal age, education and ANC visits. The result is in agreement with previous studies that birth weight is greatly influenced by the level of education and age of pregnant women. Having some kind of maternal education have a protective effect against LBW. Women with no education had the highest odds of giving birth to an infant with LBW and followed by women with primary education.[1,3,8,9] Women with low levels of education can practice poor health habits, lack access to adequate health care resources such as ANC and iron supplements that can consequently affect fetal growth.[3,8]

This study found a significant association between ANC and birth weight. Lack of access to ANC could be influenced by many factors including lower socioeconomic status and poor knowledge. Low socio-economic status is one of strongest predictor of LBW in low-income countries.[3] The result is in agreement with previous studies.[1,3,8,9]

Antenatal care provides routine monitoring of height and weight gain, identification of maternal or fetal problems, provide psychologist support, nutritional advice, and early intervention which reduces adverse pregnancy outcome. These provided services are used for prevention, early diagnosis and treatment of pregnancy-related problems.[3,8]

To reduce maternal and neonatal morbidity and mortality, the World Health Organization (WHO) recommended that pregnant women should receive ANC services at least 4 times starting from the first trimester of pregnancy. The WHO recommends a minimum of four antenatal visits for a woman with a normal pregnancy. Four standard quality of ANC comprising tetanus toxoid vaccination, screening and treatment for infection and identification of warning sign during pregnancy.[15]

Birth weight was significantly associated with upper arm circumference in this study. The result is in agreement with previous studies.[16] The nutritional status of pregnant women is a condition as a result of food consumption and the use of nutrients during pregnancy. A good maternal nutritional status before pregnancy will support fetal growth in early pregnancy.[10,16] To assess the nutritional status of pregnant women is by measuring the upper arm circumference, its better assessment because in pregnant women with malnutrition occasionally shows oedema but rarely in the upper arm. Measurement of the upper arm circumference aims to determine if a person suffers from chronic energy lack. Pregnant women with chronic energy lack are expected to give LBW babies.[16]

This study found that most pregnant women in coastal areas were less likely to consume iron tablets. It may be influenced by myths in coastal areas communities that consuming iron tablets can increase blood pressure. In addition, the

adverse effects of drugs such as nausea and bowel movements are also hard to justify. The result is in agreement with previous studies.[13,17]

Birth weight was significantly associated with iron consumption in this study. The result is in agreement with previous studies in Samarinda and other studies in developing countries.[17] Indirectly iron affects the birth weight. An adequate supply of iron is essential for normal development of the fetus and newborn child. Iron deficiency and iron deficiency anaemia during pregnancy increase the risk of preterm birth and low birth weight.[18]

Perhaps despite poor socio-economic status if women could maintain good nutritional status and avoid potential medical complications during pregnancy, giving birth to a normal weight baby might be a possibility.

CONCLUSIONS

Maternal age, education and ANC visits were socio-demographic determinants associated with birth weight. Iron tablets consumption and upper arm circumference were nutritional determinants that significantly associated with birth weight.

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