

# Association of Birth Weight, Immunization, and Parity with Nutritional Status of Children Under Five Years

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Keywords: Immunization status, Low birth weight, Nutritional status, Parity

Abstract: Children under five are one group at risk of health. This study aimed to assess variables associated with the nutritional status of children under five. This cohort retrospective study of 216 children under five and their mothers/ caregivers were conducted (January 2018) using cluster random sampling technique. This study involved collecting information on the socio-demographic characteristic and anthropometric measurement (Weight for height z-score) of the eligible children. About 51.9% were male, 32.9% mother/ caregivers were illiterate. The result showed that about 70.1% were found to have normal nutritional status, 10.3% were found to be moderately wasted, and 7.5% were found to be severely wasted. About 8.3% had low birth weight, 11.6% were partially immunized, and 9.3% had high parity ( $\geq 5$  children). There was a significant statistical association of children having low birth weight, immunization status, and parity with nutritional status among the children studied. There is a need to promote and encourage girl/ female health education in the communities in order to build their awareness about maternal health and immunization.

## 1 INTRODUCTION

Children under five are one of the vulnerable groups to health risk. Optimal nutritional status can help them avoid disease problems. The impact of malnutrition status includes reducing the quality of human resources, increasing the risk of disease, death and lack of intelligence of children, the risk of death of children suffering from malnutrition, as well as increasing malnutrition to 2.5 and 8 times that of normal children. That influence nutritional status are direct factors (food intake and infectious diseases) and indirect (demographics, birth weight, immunization, parity, etc.) Sukmawati dan Ayu (2010). This study analyzed nutritional status based on variables of birth weight, immunization, and parity.

## 2 SUBJECTS AND METHODS

The research employed quantitative analytic with a retrospective cohort design. The population selected was all aged 10--59 months; they were the visitors of posyandu. Samples were determined using cluster random sampling (cluster = integrated service post/ posyandu). The research location was in the district Cipayung, Depok City (West Java), particularly Cipayung (Posyandu RW 1, 9 and 11) and Bojong Pondok Terong (Posyandu RW 2, 5, and 7). The sample size was calculated using the simple random sampling formula ( $n = 98$ ) with a design effect of 2 (WHO provisions) and an additional sampling error of 20% so that the total respondents were 235, but only 216 respondents' result can be analyzed. The study was conducted in December 2017 until May 2018. Nutritional status data was collected by measuring the weight for height index

(WFH). The results of calculations with WHO-Anthro software were compared to the WHO NCHS standard; other data (demography, birth weight immunization, and parity) were by observation and interview. Before conducting the data collection, this study was approved by the UHAMKA Health Ethical Research Committee.

### 3 RESULTS

Based on the analysis, the mother giving exclusive breastfeeding have not met the WHO standards (4.8 months) as shown in the following table 1.

Table 1: Statistical value of the independent variable.

No	Variable	Mean	SD	Min	Max
Birth weight (kg)		3.04	0.45	1.4	4.5
Exclusive BF (mo)		4.8	2.4	0	12
Start MP-ASI (mo)		4.8	2.4	0	12
Mother age (year)		30.7	6.9	17	47
Parity (child)		2	1.04	1	8
Income (Rp)		3286800	1788455	600000	15000000
Family Size (people)		4.4	1.5	1	11

By using nutritional status measurements based on weight for age (WFA), the results obtained revealed that about 77% of respondents have good nutritional status.

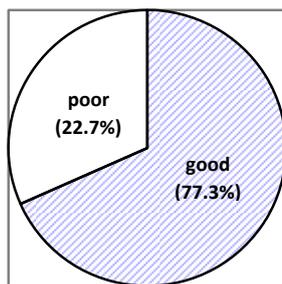


Figure 1: Nutritional status of children under five years based on WFA.

Demographic, immunization, weight, and parity variables can be seen in the following table (table 2).

Table 2: Distribution of demographic, immunization, weight and parity variables.

Variable	n	%
<b>Preterm</b>		
1. Yes	27	12.5
2. No	189	87.5
<b>Birth Weight</b>		
1. Low	18	8.3
2. Normal	198	91.7
<b>Immunization Status</b>		
1. Incomplete	25	11.6
2. Complete	191	88.4
<b>Infection Diseases</b>		
1. Yes	91	42.1
2. No	125	57.9
<b>Sex</b>		
1. Male	112	51.9
2. Female	104	48.1
<b>Born Status</b>		
1. Twins	2	0.9
2. Single	214	99.1
<b>Exclusive Breastfeeding</b>		
1. No	91	42.1
2. Yes	125	57.9

Bivariate analysis resulted in the following table (Table 3).

Table 3: Bivariate analysis of independent variable.

Variable	Nutritional Status		Total	P-value	OR ((5% CI)
	Other	Normal			
<b>Birth Weight</b>					
1. Yes (< 2.5 kg)	10 (55.6%)	8 (44.4%)	18	0.001	5.096 (1.887 – 13.763)
2. No (≥ 2.5 kg)	39 (19.7%)	159 (80.3%)	198		
<b>Immunization Status</b>					
1. Incomplete	12 (48.0%)	13 (52.0%)	25	0.003	3.842 (1.621 – 9.105)
2. Complete	37 (19.4%)	154 (80.6%)	191		
<b>Parity</b>					
1. Risky (≥4 children)	9 (45%)	11 (55%)	20	0.026	3.191 (1.238 – 8.226)
2. No Risky (<4 children)	40 (20.4%)	156 (79.6%)	196		

## 4 DISCUSSION

The nutritional status of respondents was not good (about 22.7%). It was caused by less optimal food intake. Food intake is influenced by purchasing ability, which is also influenced by parents' income. More than half (54.6%) of the respondents' parents have inadequate income. In addition, almost half of them suffered from infectious diseases (42.1%). In line with the results of research by Linda and Hamal (2011) in Tangerang, Banten, it was found that 30.1% of children under five had poor nutrition. Likewise, Linda's (2012) study on children under five in Bogor regency shows 19.9% of the respondents were in poor nutrition.

Children in this research were born with low birth weight/ LBW (8.3%). The cause of LBW, among others, was mother having an upper arm circumference (LILA) of less than 23.5 cm before pregnancy, thereby exposing her to the risk of chronic lack of energy. The condition leads mother to be at risk of giving birth to LBW. LBW status is related to the nutritional status with a value of OR 5,096. It means that babies born with LBW conditions have a risk of 5,096 times greater to get poor nutritional status than those born with normal weight.

Linda's (2013) study found that there were still 4.3% of babies born with LBW conditions. The results of Riskesdas in 2007, 2010, and 2013, claimed that LBW in Indonesia amounted to 8.3%, 11.1%, and 10.2%, respectively. In other words, the prevalence of LBW in the study area was still relatively lower than the national figure, but higher than the Linda study (2013).

Incomplete immunization status (11.6%) could happen because parents were reluctant to bring their children to health facilities to be immunized on the grounds that after the immunization they become feverish, fussy, and even sick. Statistically, there is a correlation between the completeness of immunization and the nutritional status of children. The OR showed a value of 3,842. It means that respondents who have incomplete immunization had a risk of 3,842 times greater to experience poor nutritional status than those with the complete one. In addition, working mothers are likely to be the cause of their children not being immunized. However, this figure is still lower compared to the results of the 2013 Riskesdas, where children who did not have complete immunization were 40.8%.

The parity was more than 4 people (9.3%). There were mothers who did not support family planning (KB) programs. The results of the Linda's (2013) study found that 6.4% of mothers had high parity.

However, the result does not show any relation with nutritional status.

## 5. CONCLUSION

Although the nutritional status of children under five is better, about half of them still experience LBW, incomplete immunization, and high parity.

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