

FULL ABSTRACT

Intergenerational Cycle of Low Birth Weight.

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Low birth weight (LBW) is one of the health problems in developing country. The prevalence of LBW in Indonesia ranges between 11.1%-11.5%. Various factors affecting LBW need to be explored further to enable prevention efforts.

Tanjungsari Cohort Study (TCS) is a cohort study that has been running since 1988 with the second generation (F2), who was born within the cohort, has currently reached adulthood. This cohort gives opportunities to understand the impact of maternal birth weight and its influence on F2 pregnancy in terms of offspring birth weight (IBW of the third generation (F3)).

This study is a longitudinal study designed as a part of the TCS in Sumedang District, West Java. One thousand five hundred forty one women were born during the period of 1988–1989. Of those, women who were pregnant during the period of January 2014 to 2015 participated in this study. To those subjects, some measurements were performed including body weight, which was measured using TANITA 240 MA (Tokyo, Japan); body height using Stadiometer SECA 207 (Hamburg, Germany); mid upper arm circumference (MUAC) using SECA 212 (Hamburg, Germany); body composition, that includes fat mass (FM) and fat free mass (FFM), using TANITA 240 MA (Tokyo, Japan); hemoglobin level using HemoCue® Hb 201+ (Angelholm, Sweden); and nutrition intake using Recall 3 x 24 hours method. All measurements were performed in the 1st trimester, 2nd trimester, and 3rd trimester. Some data were gained from the previous data, i.e. maternal birth weight (MBW) (F2), maternal birth height, maternal history of body weight from 1 to five years of age, and maternal history of body height from 1 to five years of each. Those variables were then associated to the offspring infant birth weight (F3) that measure using Baby scale SECA 334 (Hamburg, Germany).

During January 2014–September 2015, there were 129 women were pregnant but only 109 women completed first trimester measurements and only 105 and 91 completed the second and third trimester measurements, respectively. The prevalence of LBW was 18% and 17.8% for F2 and F3 respectively. There is no significant difference between IBW of women with LBW history and women with normal birth weight (NBW) history ($p=0.24$). In regression analysis adjusted to maternal age, parity, and frequency of prenatal care, the factors associated with IBW were MBW ($p=0.04$), maternal body weight in 1st trimester, 2nd trimester, and 3rd trimester ($p=0.00$; $p=0.00$; $p=0.00$), MUAC in 1st trimester and 3rd trimester ($p=0.00$; $p=0.04$), FM in 2nd trimester and 3rd trimester ($p=0.01$ and $p=0.00$), and FFM in 1st trimester, 2nd trimester, and 3rd trimester ($p=0.02$; $p=0.04$; $p=0.02$).

In conclusion, factors that influence infant birth weight are history of maternal birth weight, maternal weight in each trimester, MUAC in trimester 1 and 3, FM in 2nd and 3rd trimesters, and FFM in each trimester.