

# Kadar thyroid stimulating hormone neonatus dan hubungannya dengan status berat lahir = Neonatal thyroid stimulating hormone level and its association with birth weight status / Achmad Rizki Yono

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## Abstrak

### <b>ABSTRAK</b><br>

Latar Belakang: Program Skrining Hipotiroid Kongenital Nasional di Indonesia menunjukkan angka insidensi hipotiroid kongenital cukup tinggi. Salah satu faktor risiko yang bertanggung jawab adalah bayi berat lahir rendah. Pada bayi berat lahir rendah, maturitas organ relatif belum matur, sehingga mengganggu fungsi organ termasuk kelenjar tiroid dan hipofisis.

Tujuan: Penelitian cross-sectional ini bertujuan untuk mengetahui persentase bayi berat lahir rendah di Indonesia, nilai rujukan TSH neonatus berdasarkan berat lahir, korelasi antara berat lahir bayi dengan fungsi kelenjar tiroid, serta hubungan antara status berat lahir dengan nilai rerata TSH neonatus.

Metode: Dari 2.987 subjek yang didapatkan dari 10 provinsi pada program skrining hipotiroid kongenital nasional pada bulan Mei sampai Juni 2017 di Rumah Sakit Umum Pusat Nasional Dr. Cipto Mangunkusumo, sebanyak 1.700 subjek memenuhi kriteria inklusi dan eksklusi yang diperoleh melalui teknik consecutive sampling. Nilai TSH didapatkan melalui metode Fluorometri dengan reagen Labsystem. Subjek dibagi menjadi dua kelompok yaitu 1.573 subjek untuk kelompok bayi berat lahir normal dan 127 subjek untuk kelompok bayi berat lahir rendah. Sampel kemudian dianalisis menggunakan uji Mann-Whitney dengan SPSS versi 20.0 untuk diketahui hubungannya dengan nilai rerata TSH neonatus dan MedCalc versi 17.9 untuk menghitung nilai rujukan TSH neonatus.

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### <b>ABSTRACT</b><br>

Background: National Congenital Hypothyroidism Screening Program in Indonesia showed high incidence of Congenital Hypothyroidism. One of responsible risk factors is low birth weight. In low birth weight, organ maturity is relatively immature, thus disrupting organ function including thyroid and hypophysis gland.

Objective: This cross-sectional study was aimed to determine the percentage of low birth weight in Indonesia, neonatal TSH reference values based on birth weight, the correlation between birth weight and thyroid gland function, as well as the association between birth weight status with neonatal TSH level.

Methods: Of the 2,987 subjects obtained from 10 provinces in national congenital hypothyroidism screening program data from May to June 2017 in Dr. Cipto Mangunkusumo National General Hospital, as many as 1,700 subjects fulfilled the inclusion and exclusion criteria obtained through consecutive sampling. TSH value was obtained by Fluorometri method with Labsystem reagent. Subjects were divided into two groups, 1,573 subjects for normal birth weight and 127 subjects for low birth weight. Then, samples were analyzed by Mann-Whitney test with SPSS version 20.0 to investigate association to neonatal TSH level and MedCalc version 17.9 to calculate neonatal TSH reference values.

Results: Low birth weight was 7.5%. The TSH reference value in all neonates, normal birth weight, and low birth weight were 1.40-8.04 mU/L with median 3.10 (1.00-19.80), 1.50-8.06 mU/L with median 3.20 (1.00-

19.80), and 1.00-9.06 mU/L with median 2.50 (1.00-13.80) respectively. There was a positive significant correlation between low birth weight and thyroid function ( $r = 0.367$ ,  $P < 0.001$ ). There was also a significant difference between birth weight status with neonatal TSH level ( $P < 0.001$ ).

Discussion: The percentage of low birth weight in Indonesia is half the percentage of babies born in the world according to WHO. The neonatal TSH reference values in Indonesia is close to 10 mU/L as cut off in developed countries. Birth weight influences neonatal TSH level. It correlates with delayed in hypothalamus-hypophysis-thyroid axis maturity.