

## ABSTRAK

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**Latar Belakang:** Tingginya proporsi balita pendek ditemukan di beberapa daerah endemik maupun *replete* GAKI. Kekurangan asupan zat gizi seperti asupan energi, protein, dan yodium akan mempengaruhi pembentukan hormon tiroid dan juga mempengaruhi pertumbuhan dan perkembangan balita.

**Tujuan:** Mengetahui hubungan antara kadar TSH, fT4, dan asupan zat gizi dengan TB/U Z-Score pada anak balita berusia 24-59 bulan yang tinggal di daerah *replete* GAKI.

**Metode:** Studi *cross-sectional* ini melibatkan 72 balita berusia 24-59 bulan yang dipilih secara *simple random sampling*. TSH dan fT4 dari serum darah diukur dengan metode ELISA. Pengukuran asupan energi, protein dan yodium menggunakan SFFQ. Hubungan antara dua variabel diuji menggunakan uji korelasi *Pearson/Rank Spearman*. Determinan TB/U Z-Score diuji menggunakan uji regresi linier berganda.

**Hasil:** Median TSH dan rerata fT4 sebesar 1,96 (0,47-9,00) mIU/mL dan 1,50±0,23 ng/dL. Median asupan energi, protein, dan rerata asupan yodium pada subyek lebih tinggi dari angka kecukupan gizi (AKG) masyarakat Indonesia. Tidak ditemukan hubungan yang signifikan antara kadar TSH, fT4, asupan zat gizi (energi, protein dan yodium), serta riwayat infeksi dengan TB/U Z-Score ( $p > 0,05$ ). Uji regresi linier berganda menunjukkan bahwa berat badan balita ( $r=0,627$ ;  $p=0,000$ ;) dan tinggi badan ibu ( $r=0,328$ ;  $p=0,037$ ) memiliki hubungan dengan TB/U Z-Score ( $\text{adj. } R^2 = 0,429$ ). Persamaan HAZ yang didapat adalah  $-10,584 + (0,231 \times \text{berat balita}) + (0,038 \times \text{tinggi badan ibu})$ .

**Kesimpulan:** Determinan TB/U Z-Score pada balita yang tinggal di wilayah *replete* GAKI adalah berat badan balita dan tinggi badan ibu.

**Kata Kunci:** TB/U Z-Score, TSH, fT4, Yodium, Balita

## ABSTRACT

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**Background:** High proportion of short toddlers was found in several IDD endemic and replete areas. Lack intake of energy, protein, and iodine will affect the formation of thyroid hormones and also affect the growth and development of toddlers.

**Objectives:** To determine the association of TSH, fT4, and nutrient intake with HAZ Score in toddlers aged 24-59 months who lived in IDD replete areas.

**Methods:** This cross-sectional study involved 72 children aged 24-59 months who were selected by simple random sampling. TSH and fT4 in serum were measured by ELISA methods. A semi-quantitative food frequency questionnaire was used to investigate energy, protein and iodine intake. Association between two variables was examined using Pearson or Rank Spearman test. The HAZ Score determinant was tested by multiple linear regression.

**Results:** The TSH median and fT4 mean were 1,96 (0,47 to 9,00) mIU/mL and  $1,50 \pm 0,23$  ng/dL. The average and median intake of energy, protein and iodine in the subjects were higher than the Indonesian Recommended Nutrient Intake (RNI). There were no significant correlations between TSH, fT4, nutrient intake, history of infection with HAZ in this study ( $p > 0.05$ ). Multiple linear regression tests showed that the actual toddler weight ( $r = 0,627$ ;  $p = 0.000$ ;) and maternal height ( $r = 0,328$ ;  $p = 0.037$ ) had significant correlations with HAZ (adjusted  $R^2 = 0,429$ ). The HAZ equation was  $-10.584 + (0.231 \times \text{the weight of the toddler}) + (0.038 \times \text{the height of the mother})$ .

**Conclusion:** The determinant of HAZ on toddlers who lived in IDD replete area were the actual weight of the toddler and maternal height.

**Keywords:** HAZ; TSH; fT4; Iodine; Children Under Five-Years Old