ABSTRACT

Background: *Iodine Deficiency Disorders (IDD) is still one of the problems in Indonesia. This indicates the vulnerability of people with hypothyroid disorders. These thyroid disorders are often associated with anemia, which is marked by a decrease in erythrocyte counts. Anemia can affect oxygen supply that makes lower concentration and also affect on intelligence level which can be rated as Intelligence Quotient (IQ) scores. Hypothyroidism also can affect directly to cognitive system. This study was to analyze the association between erythrocytes counts and IQ scores.*

Methods: *This study was cross-sectional study design with purposive sampling method. The subjects of this study were 8-14 years old. Total of 60 children participated from primary school in IDD endemic area. Erythrocyte counts were analyzed from the blood samples in Laboratory of PKU Muhammadiyah Gamping. IQ scores were obtained from intelligence test with Culture Fair Intelligence Test Scale 2. Data analysis used Pearson test to find the association between erythrocyte counts and IQ scores.*

Results: *This study found the mean±SD value of IQ score was 91,20 ± 14,37 with IQ category as Mentally Deffective 2 pupils 3(5%), Borderline 12 pupils (20%), Low Average 13 pupils (21,67%), Average 27 pupils (45%), and High Average5 pupils (8,3%). The mean age was 10,13 ± 1,05 years. All of subject had normal erythrocyte counts ($5,17 ± 0,27$ million/mm^3) and there was significant association between erythrocyte counts with Intelligence Quotient (IQ) statistically (r = 0,304 ; p = 0,018).*

Conclusion:*There was significant association between erythrocyte counts and IQ scores. Low erythrocyte counts will lower IQ scores.*

Keywords: *erythrocyte counts, Intelligence Quotient (IQ), Iodine Deficiency Disorders (IDD) endemic*

INTISARI

Latar belakang: Permasalahan Gangguan Akibat Kekurangan Iodium (GAKI) di Indonesia sangat berpotensi untuk bisa menyebabkan penyakit hipotiroid dimana penyakit hipotiroid dapat menyebabkan kejadian anemia, yang ditandai dengan penurunan jumlah eritrosit. Anemia dapat mengganggu suplai oksigen yang dapat mempengaruhi konsentrasi dan berdampak pada tingkat kecerdasan yang dapat diketahui melalui nilai IQ. Penyakit hipotiroid juga dapat berdampak langsung pada kemampuan kognitif dari seseorang. Penelitian ini bertujuan untuk mengetahui hubungan julah eritrosit dengan *Intelligence Quotient* (IQ) pada siswa SD usia 8-14 tahun di daerah endemik GAKI.

Metode: Penelitian ini merupakan penelitian *cross-sectional* dengan menggunakan metode *purposive sampling* pada pengambilan sampel. Total sampel dalam penelitian berjumlah 60 siswa SD di daerah endemik GAKI. Jumlah eritrosit dianalisis dari sampel darah yang diuji di Laboratorium PKU Muhammadiyah Gamping. Nilai IQ diuji menlalui tes IQ dengan menggunakan *Culture Fair Intelligence* Test Skala 2. Analisis hubungan menggunakan uji Pearson untuk menentukan hubungan antara jumlah eritrosit dan nilai IQ.

Hasil: Pada penelitian didapatkan rata-rata skor IQ adalah 91,20 ± 14,37 dengan kategori *Mentally Defective* 3 orang (5%), *Borderline* 12 orang (20%), *Low Average* 13 orang (21,67%), *Average* 27 orang (45%), dan *High Average* 5 orang (8,3%). Rata-rata usia adalah 10,13 ± 1,05 tahun. Semua subjek mempunyai jumlah eritrosit normal dengan nilai rata-rata 5,17 ± 0,27 juta/mm^3 dan ada hubungan yang signifikan secara statistik antara jumlah eritrosit dan nilai IQ (r = 0,304 ; p = 0,018).

Kesimpulan: Ada hubungan yang signifikan antara jumlah eritrosit dan nilai IQ. Jumlah eritrosit yang rendah akan menurunkan nilai IQ.

Kata kunci: jumlah eritrosit, *Intelligence Quotient* (IQ), endemik Gangguan Akibat Kekurangan Iodium (GAKI)