

Korelasi Kadar *Kholinesterase* Darah Dengan Fungsi Kognitif Anak Usia Sekolah Dengan Riwayat Paparan Pestisida Di Kecamatan Ngablak, Kabupaten Magelang

Intisari

Latar Belakang

Populasi yang rentan terpapar pestisida selain petani adalah anak-anak yang tinggal di daerah pertanian. Paparan kronis awal dari anak yang tinggal di daerah pertanian menyebabkan inhibisi *kholinesterase*. Studi terdahulu menunjukkan toksisitas terjadi lebih tinggi pada anak yang terpapar pestisida karena otak mereka sedang berkembang dengan cepat. Penelitian ini bertujuan untuk mengetahui korelasi kadar *kholinesterase* darah dengan fungsi kognitif anak dengan riwayat paparan pestisida di kecamatan Ngablak, kabupaten Magelang.

Metode

Penelitian ini adalah studi potong lintang. Subjek penelitian adalah anak usia sekolah dengan riwayat paparan pestisida di kecamatan Ngablak, kabupaten Magelang. Kadar *kholinesterase* dianalisa dari darah. Fungsi kognitif dinilai menggunakan *Modified Mini Mental State Examination for Children* (MMMSEC).

Hasil

Jumlah total subjek adalah 56 anak dengan usia 9-11 tahun. Nilai median kadar *kholinesterase* adalah 9.64 kIU/L, dengan 24 subjek (42.9%) memiliki kadar *kholinesterase* darah yang rendah. Nilai median skor MMMSEC adalah 33 dengan 11 subjek (19,6%) memiliki fungsi kognitif abnormal. Analisis bivariat menunjukkan kadar *kholinesterase* darah berkorelasi dengan skor MMMSEC ($r= 0.343$, $p= 0.010$). Analisis multivariat regresi linear menunjukkan kadar *kholinesterase* darah berkorelasi secara positif dengan fungsi kognitif anak ($\beta= 0.360$; $p \text{ value} = 0.010$). Analisis lebih lanjut menunjukkan domain atensi yang dinilai dengan *backward digit span* dan memori yang dinilai dengan orientasi, secara signifikan berkorelasi dengan kadar *kholinesterase* darah ($\beta: 0.297$ dan 0.371 secara berurutan; $p < 0.05$).

Kesimpulan

Kadar *kholinesterase* darah berkorelasi secara positif dengan fungsi kognitif anak, khususnya fungsi atensi dan memori.

Kata kunci: paparan pestisida, kadar, kadar *kholinesterase* darah, fungsi kognitif

***Correlation Between Blood Cholinesterase Level and Cognitive Function of
School-Aged Children with History of Pesticide Exposure in
Ngablak District, Magelang Regency.***

Abstract

Background

Children who lived in agricultural area were vulnerable populations from pesticide exposure. Early chronical exposure in children who lived in agriculture area caused cholinesterase inhibition. Previous study showed higher toxicity in children who were exposed by pesticide because their brains were developing rapidly. This study was aimed to identify correlation between blood cholinesterase level and cognitive function in children with history of pesticide exposure in Ngablak district, Magelang Regency.

Methods

This was a cross-sectional study. The subjects were school-aged children with history of pesticide exposure in Ngablak, Magelang Regency. Cholinesterase level was analyzed from blood. Cognitive function was assessed using Modified Mini Mental State Examination for Children (MMMSEC).

Results

In total, 56 subjects aged between 9–11 years old were included. The median of blood cholinesterase level was 9.64 kIU/L, with 24 subjects (42.9%) had low level of blood cholinesterase. The median of MMMSEC score was 33 with eleven subjects (19.6%) had abnormal cognitive function. Bivariate analysis showed that blood cholinesterase level was associated with MMMSEC Score ($r= 0.343$, $p= 0.010$). Multiple linear regression showed that blood cholinesterase level was correlated positively with children cognitive function ($\beta= 0.360$; p value = 0.010). Further analysis showed that attention domain as assessed by backward digit span and memory domain by orientation were significantly correlated with blood cholinesterase level (β : 0.297 and 0.371 respectively; $p < 0.05$).

Conclusions

Blood cholinesterase level was positively correlated with children cognitive function especially attention and memory function.

Keywords: *pesticide exposure, blood cholinesterase level, cognitive function*