

Latar Belakang: Berdasarkan Riset Kesehatan Dasar (Riskesdas), dalam lima tahun terakhir (2013 - 2018) prevalensi diabetes di Indonesia meningkat dari 6,9% menjadi 8,5%. Angka ini sudah menyamai prevalensi diabetes global yakni 8.5%. Hal ini cukup mengkhawatirkan mengingat diabetes melitus merupakan faktor risiko mayor dari berbagai macam penyakit seperti kebutaan, gagal ginjal, penyakit jantung koroner, stroke, dan amputasi tungkai bawah. Berbagai macam zat diduga berhubungan dengan metabolisme glukosa, salah satunya adalah organofosfat yang terdapat dalam pestisida. Hal ini diperkuat oleh penelitian sebelumnya yang menunjukkan adanya asosiasi positif antara prevalensi diabetes dengan paparan pestisida pada petani di Thailand. Di sisi lain, dalam sebuah studi dilaporkan bahwa tingkat keracunan pestisida di Kabupaten Magelang, Jawa Tengah mencapai 98%. Sayangnya, hubungan antara paparan pestisida dengan kadar gula darah di Kecamatan Ngablak, Kabupaten Magelang, Jawa Tengah belum pernah diteliti sebelumnya. Mengingat tren diabetes yang terus meningkat serta tingginya tingkat keracunan pestisida di Kecamatan Ngablak, maka penelitian ini sangat penting untuk dilakukan.

Tujuan: Mengetahui hubungan antara paparan pestisida dengan kadar gula darah pada petani di Kecamatan Ngablak, Kabupaten Magelang, Jawa Tengah.

Metode: Penelitian menggunakan metode potong-lintang (*cross-sectional*). Sampel merupakan petani di Kecamatan Ngablak, Kabupaten Magelang, Jawa Tengah, khususnya Desa Ngaglik, Pernolo, dan Seloprojo yang diambil secara acak. Data mengenai usia, riwayat hipertensi, riwayat hiperkolesterol, dan status merokok diambil melalui kuisioner. Berat badan dan tinggi badan diukur dan digunakan untuk memperoleh Indeks Massa Tubuh (IMT). Penilaian kadar kolinesterase yang merupakan gambaran tingkat paparan pestisida dilakukan pada sampel darah vena yang kemudian dianalisis dengan metode Ellman. Kadar gula darah diukur secara sewaktu dengan alat monitor multifungsi gula darah, asam urat, dan kolesterol multifungsi (GCU).

Hasil: Dari 78 subjek, sebanyak 41% memiliki kadar kolinesterase yang rendah (<8 U/mL) dan 87.2% memiliki kemungkinan mengidap DM (kadar gula darah sewaktu ≥ 90 mg/dL). Dari hasil uji *chi-square test* tidak ditemukan adanya hubungan yang signifikan antara kadar kolinesterase ($P = 0.537$, OR = 0.539), usia ($P = 0.931$, OR = 0.943), IMT ($P = 0.237$, OR = 2.33), riwayat hipertensi ($P = 0.333$, OR = 0.361), riwayat hiperkolesterol ($P = 0.620$, OR = 1.78), dan status merokok ($P = 0.811$, OR = 1.193) dengan kadar gula darah.

Kesimpulan: Tidak ditemukan adanya hubungan yang bermakna antara kadar kolinesterase, usia, IMT, riwayat hipertensi, riwayat hiperkolesterol, dan status merokok dengan kadar gula darah.

Kata Kunci: Kolinesterase, gula darah, pestisida

ABSTRACT

Background: According to Basic Health Research (Riskesmas) from 2013 to 2018, diabetes prevalence in Indonesia has increased from 6.9% to 8.5%. This number is equal to the global diabetes prevalence of 8.5%. This is quite alarming because diabetes is a major risk factor of many diseases such as blindness, kidney failure, coronary heart disease, stroke, and limb amputation. Many substances are suspected to be related to glucose metabolism. One of them is organophosphate, that can be found in pesticides. Research shows that there is a positive association between diabetes prevalence and pesticide exposure in Thailand farmers. Meanwhile, another study reported that the pesticide poisoning level at Magelang district, Central Java has reached 98%. Unfortunately, a research about the association between pesticide exposure and blood glucose level in Ngablak, Magelang district, Central Java has never been conducted before. Given the increasing trend of diabetes and a high level of poisoning in Ngablak, this research is very important to do.

Objective: To determine the association between pesticide exposure and blood glucose level in farmers of Ngablak, Magelang district, Central Java.

Method: This research is a cross-sectional study. The sample was taken randomly from Ngablak, Seloprojo, and Pernolo village at Ngablak, Magelang district, Central Java. A questionnaire was used to obtain information about age, hypertension history, hypercholesterolemia history, and smoking status. The sample's weight and height were measured to calculate Body Mass Index (BMI). A vein puncture was also conducted and a blood sample was drawn to measure Cholinesterase level based on Ellman's method. This cholinesterase level represents pesticide exposure in farmers. Random blood glucose level was measured by blood glucose, urate, and cholesterol multifunction monitoring device (GCU).

Results: From 78 subjects, 41% have low cholinesterase level (<8 U/mL) and 87.2% is likely to have DM (random blood glucose ≥ 90 mg/dL). Chi-square test showed that there are no significant associations between cholinesterase level ($P = 0.537$, OR = 0.539), age ($P = 0.931$, OR = 0.943), BMI ($P = 0.237$, OR = 2.33), hypertension history ($P = 0.333$, OR = 0.361), hypercholesterolemia history ($P = 0.620$, OR = 1.78) and smoking status ($P = 0.811$, OR = 1.193) with blood glucose level.

Conclusion: There is no significant association between cholinesterase level, age, BMI, hypertension history, hypercholesterolemia history, and smoking status with blood glucose level.

Keyword: Cholinesterase, blood sugar, pesticide