

**PERBEDAAN RERATA RASIO TRIGLISERIDA KOLESTEROL
HIGH DENSITY LIPOPROTEIN
PADA DEWASA NON-DIABETES BERDASARKAN
KEJADIAN RESISTENSI INSULIN**



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ABSTRAK

Latar Belakang: Individu dengan resistensi insulin cukup sulit terdeteksi karena tidak menunjukkan gejala klinis dan skrining yang tidak rutin dilakukan. *Homeostasis model assessment of insulin resistance* (HOMA-IR) telah digunakan secara luas sebagai penilaian alternatif dalam mendeteksi resistensi insulin, namun biaya pemeriksaan insulin cukup mahal dan belum tersedia di banyak laboratorium. Potensi penggunaan rasio trigliserida kolesterol *high density lipoprotein* (TG/K-HDL) telah dilaporkan oleh berbagai penelitian dengan luaran yang bervariasi. Penelitian ini bertujuan mengetahui perbedaan rasio TG/K-HDL berdasarkan kejadian resistensi insulin dan *cut off point* rasio TG/K-HDL terhadap kejadian resistensi insulin pada dewasa non-diabetes.

Metode: Penelitian analitik dengan rancangan potong lintang dilakukan terhadap 96 dewasa non-diabetes di RSUP Dr. M. Djamil Padang sejak Oktober 2022 hingga Mei 2023. Pemeriksaan kadar TG menggunakan metode *glycerol phosphate oxidase* dan K-HDL menggunakan metode kolorimetri enzimatis. Rasio TG/K-HDL dihitung melalui perbandingan kadar TG dan K-HDL. Nilai HOMA-IR dihitung menggunakan kadar glukosa darah puasa (mg/dL) x insulin puasa ($\mu\text{U/mL}$)/405. Kejadian resistensi insulin didefinisikan sebagai nilai HOMA-IR $\geq 2,0$. Data dianalisis menggunakan uji parametrik T tidak berpasangan, bermakna jika $p < 0,05$. Analisis *cut off point* menggunakan kurva *receiver operating characteristics* (ROC) berdasarkan Indeks Youden.

Hasil: Median umur subjek penelitian adalah 27 (18-49) tahun. Sebanyak 58,3% subjek adalah perempuan. Median indeks massa tubuh dan lingkar pinggang lebih tinggi pada kelompok resistensi insulin dibanding non-resistensi insulin. Rerata rasio TG/K-HDL kelompok resistensi insulin sebesar 2,8 (1,3) dan kelompok non-resistensi insulin sebesar 1,4 (0,5) ($p < 0,001$). Nilai *area under receiver operating characteristics curve* (AUROC) didapatkan 0,828. *Cut off point* rasio TG/K-HDL terhadap resistensi insulin didapatkan 1,94 dengan sensitivitas 70,3% dan spesifisitas 89,8%.

Simpulan: Rerata rasio TG/K-HDL kelompok resistensi insulin lebih tinggi dibanding kelompok non-resistensi insulin pada dewasa non-diabetes. *Cut off point* rasio TG/K-HDL sebesar 1,94 menilai kejadian resistensi insulin dengan akurasi 82,3%.

Kata Kunci: rasio TG/K-HDL, resistensi insulin, dewasa non-diabetes

**THE DIFFERENCE OF MEAN TRIGLYCERIDE TO
HIGH DENSITY LIPOPROTEIN CHOLESTEROL RATIO
IN NON-DIABETIC ADULTS BASED ON
THE INCIDENCE OF INSULIN RESISTANCE**

ABSTRACT

Background: Individuals with insulin resistance are quite difficult to detect because they do not show clinical manifestations and screening is not routinely carried out. Homeostasis model assessment of insulin resistance (HOMA-IR) has been widely used as an alternative assessment in detecting insulin resistance, but the cost of insulin measurement is quite expensive and not available in many laboratories. The potential use of triglyceride to high density lipoprotein cholesterol (TG/HDL-C) ratio has been reported by various studies with varying results. This study aims to determine the difference of TG/HDL-C ratio based on the incidence of insulin resistance in non-diabetic adults and to determine the cut off point of TG/HDL-C ratio on the incidence of insulin resistance.

Methods: An analytic study with cross-sectional design was conducted on 96 non-diabetic adults at Dr. M. Djamil Hospital Padang from October 2022 to May 2023. Triglyceride was measured using glycerol phosphate oxidase method and HDL-C using enzymatic colorimetric. TG/HDL-C ratio is calculated by comparing TG and HDL-C levels. HOMA-IR was calculated using fasting blood glucose (mg/dL) x fasting insulin (μ U/mL) levels/405. The incidence of insulin resistance was defined as HOMA-IR \geq 2.0. Data were analyzed using parametric independent T test, significant if $p < 0.05$. Cut off point analysis was performed using receiver operating characters (ROC) curves based on the Youden index.

Results: Median age of subjects was 27 (18-49) years. As many as 58.3% of the subjects were women. Median body mass index and waist circumference were higher in insulin resistance group than non-insulin resistance group. Mean TG/HDL-C ratio was 2.8 (1.3) in insulin resistance group and 1.4 (0.5) in non-insulin resistance group ($p < 0.001$). The area under the receiver operating characteristics curve (AUROC) value was 0.828. TG/HDL-C ratio cut off point for insulin resistance was 1.94, with corresponding of sensitivity and specificity were 70.3% and 89.8%, respectively.

Conclusion: The TG/HDL-C ratio of insulin resistance group was higher than non-insulin resistance group in non-diabetic adults. TG/HDL-C ratio cut off point of 1.94 can assess the incidence of insulin resistance with an accuracy 82.3%.

Keywords: TG/HDL-C ratio, insulin resistance, non-diabetic adults

