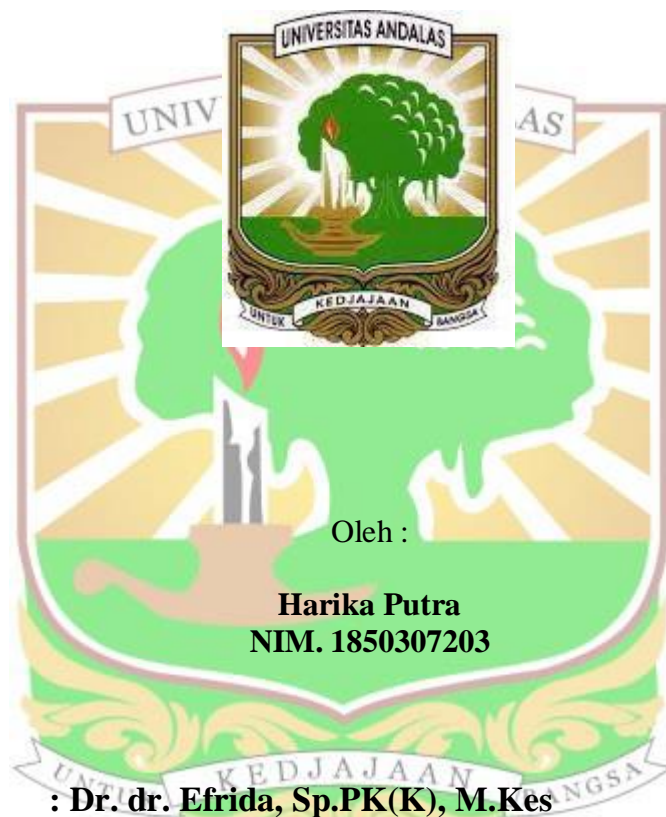Tesis

PERBEDAAN NILAI *HOMEOSTASIS MODEL ASSESSMENT OF INSULIN RESISTANCE* BERDASARKAN KEJADIAN SINDROM METABOLIK PADA DEWASA NON-DIABETES

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ABSTRAK

Latar Belakang: Resistensi insulin memiliki peran yang sangat krusial dalam patofisiologi sindrom metabolik. Resistensi insulin dapat didiagnosis dengan *homeostasis model assessment of insulin resistance* (HOMA-IR). Sampai saat ini nilai dan *cut-off* HOMA-IR berdasarkan populasi dewasa non-diabetes belum ada di Indonesia. Penelitian ini bertujuan mengetahui perbedaan nilai HOMA-IR berdasarkan kejadian sindrom metabolik pada dewasa non-diabetes dan mengetahui *cut-off point* nilai HOMA-IR dalam memprediksi kejadian sindrom metabolik.

Metode: Penelitian analitik *cross sectional* dilakukan terhadap 56 dewasa non-diabetes di RSUP Dr. M. Djamil Padang mulai Juli 2022 hingga Januari 2023. Nilai HOMA-IR didapatkan berdasarkan perhitungan rumus: glukosa darah puasa (mg/dL) x insulin puasa (µU/mL) dibagi 405. Definisi sindrom metabolik berdasarkan kriteria International Diabetes Federation yaitu ditemukannya obesitas sentral ditambah 2 dari 4 kriteria lainnya yaitu peningkatan glukosa puasa, peningkatan trigliserida, penurunan kolesterol *high density lipoprotein* (K-HDL), dan hipertensi atau dalam pengobatan hipertensi. Data dianalisis dengan uji parametrik T tidak berpasangan, bermakna jika $p < 0,05$. Analisis *cut-off point* menggunakan kurva *receiver operating characteristics* (ROC) berdasarkan *Youden Index*.

Hasil: Median umur subjek penelitian 28 tahun, rentang 21-34 tahun. Subjek penelitian terbanyak perempuan (30 orang, 53,6%). Rerata nilai HOMA-IR seluruh subjek penelitian didapatkan 1,92 (0,99). Rerata nilai HOMA-IR kelompok sindrom metabolik didapatkan 2,58 (1,22). Rerata nilai HOMA-IR kelompok tanpa sindrom metabolik didapatkan 1,63 (0,72). Uji statistik menunjukkan terdapat perbedaan yang bermakna antara 2 kelompok ($p= 0,007$). Nilai AUC berdasarkan kurva ROC HOMA-IR didapatkan 0,738 (IK 95% 0,597-0,878). *Cut-off point* nilai HOMA-IR sebagai prediktor kejadian sindrom metabolik pada dewasa non- diabetes adalah 2,03 dengan sensitivitas 64,71% dan spesifisitas 74,36%.

Simpulan: Nilai HOMA-IR kelompok sindrom metabolik lebih tinggi dibandingkan kelompok tanpa sindrom metabolik pada dewasa non-diabetes.

Kata Kunci: HOMA-IR, sindrom metabolik, dewasa non-diabetes.

THE DIFFERENCE OF HOMEOSTASIS MODEL ASSESSMENT OF INSULIN RESISTANCE VALUES BASED ON THE INCIDENCE OF METABOLIC SYNDROME IN NON-DIABETIC ADULTS

ABSTRACT

Introduction: *Insulin resistance plays a crucial part in the pathogenesis of metabolic syndrome. Assessment of insulin resistance within the context of the homeostasis model allows for the diagnosis of insulin resistance. The prevalence of metabolic syndrome in persons without diabetes in Indonesia has not been studied enough to provide population-based HOMA-IR values and cutoffs. The purpose of this research is to establish a cut-off HOMA-IR value for predicting the occurrence of metabolic syndrome and to learn how HOMA-IR values in non-diabetic persons vary depending on the prevalence of this condition.*

Method: *From July 2022 to January 2023, 56 persons without diabetes were included in a cross-sectional analytical research at Dr. M. Djamil Hospital Padang. Fasting blood glucose (mg/dL) multiplied by fasting insulin (U/mL) multiplied by 405 yielded HOMA-IR readings. Central obesity with 2 of the other 4 criteria (high fasting glucose, high triglycerides, low high density lipoprotein cholesterol [K-HDL], and hypertension or medication for hypertension) constitutes the International Diabetes Federation's definition of metabolic syndrome. Parametric unpaired T test was used to assess the data, and a p value of less than 0.05 was considered significant. The Youden Index-based receiver operating characteristics (ROC) curve test was used to analyse the cut-off point.*

Results: *The ages of the participants in the research ranged from 21 to 34, with a median age of 28. Thirty out of the sixty participants (53.6% of the total) were female. The average HOMA-IR score was 1.92 across all participants (0.99). Among those with metabolic syndrome, the average HOMA-IR was 2.58. (1.22). The non-metabolic syndrome group had a mean HOMA-IR of 1.63. (0.72). There was a statistically significant difference (p = 0.007) between the two groups. Using the HOMA-IR ROC curve, the AUC was calculated to be 0.738 (95% CI 0.597- 0.878). With a sensitivity of 64.71 and a specificity of 74.36, the cutoff value of HOMA-IR for predicting metabolic syndrome in non-diabetic persons was 2.03.*

Conclusion: *Among people without diabetes, those with metabolic syndrome had a higher HOMA-IR score than those without the condition.*

Keyword: *HOMA-IR, metabolic syndrome, non-diabetic adults*