ABSTRAK

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Latar Belakang : Obesitas merupakan salah satu faktor risiko utama sebagai penyakit metabolik, termasuk peradangan kronis yang ditandai dengan peningkatan kadar TNF-α. Pola makan yang mengandung komponen pro-inflamasi dapat mempengaruhi kadar TNF-α dan berkontribusi terhadap inflamasi sistemik. DII digunakan untuk mengukur potensi inflamasi dari pola makan individu.

Tujuan : Penelitian ini bertujuan untuk menganalisis hubungan antara DII dan persentase lemak tubuh terhadap kadar TNF-α pada kelompok dewasa obesitas.

Metode : Penelitian ini menggunakan desain *cross-sectional* pada 80 subjek kelompok dewasa obesitas Semarang. Penilaian pola makan dengan DII yang diambil dari asupan makan menggunakan *Semi-Quantitative Food Frequency Questionnaire* (SQ-FFQ), pengukuran antropometri, persentase lemak tubuh menggunakan *Bioimpedance Analysis* (BIA), dan aktivitas fisik dengan *International Physical Activity Questionnaire* (IPAQ). Penanda inflamasi menggunakan TNF-α dengan menggunakan metode Enzyme-Linked Immunosorbent Assay (ELISA). Analisis statistik menggunakan uji *Rank-Spearman*.

Hasil : Hasil menunjukkan bahwa ditemukan hubungan antara skor DII dan persentase lemak tubuh (r = 0,521 ; p = 0,023) terdapat hubungan signifikan antara TNF-α dengan Indeks Massa Tubuh (r = 0,253 ; p = 0,023) dan tidak ditemukan hubungan signifikan antara skor DII dan kadar TNF-α (r = 0,212 ; p = 0,510), serta antara persentase lemak tubuh dan kadar TNF-α (r = 0,189 ; p = 0,743).

Simpulan : Dari hasil penelitian ini, dapat disimpulkan bahwa pola makan yang bersifat pro-inflamasi (ditunjukkan dengan skor DII yang tinggi) berhubungan dengan peningkatan persentase lemak tubuh pada usia dewasa. Artinya, semakin tinggi sifat inflamasi dari makanan yang dikonsumsi, semakin besar kemungkinan seseorang memiliki lemak tubuh yang lebih tinggi. Selain itu, kadar TNF-α juga ditemukan berhubungan positif dengan indeks massa tubuh yang menunjukkan bahwa proses inflamasi dalam tubuh berkaitan dengan peningkatan berat badan. Namun, hubungan antara skor DII dan TNF-α tidak ditemukan signifikan, kemungkinan karena adanya perbedaan kondisi biologis antar individu dan faktor lain yang memengaruhi kadar inflamasi dalam tubuh.

Kata Kunci : *Dietary Inflammatory Index*, obesitas, TNF-α, inflamasi, pola makan

ABSTRACT

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Background : Obesity is a significant risk factor for metabolic disorders, including chronic inflammation marked by elevated Tumor Necrosis Factor Alpha (TNF-α) levels. Diets rich in pro-inflammatory components can influence TNF-α levels and contribute to systemic inflammation. The Dietary Inflammatory Index (DII) serves as a tool to assess the inflammatory potential of an individual's dietary intake.

Objective : This study aims to examine the relationship between the DII and body fat percentage with TNF-α levels in obese adults.

Methods : This cross-sectional study was conducted on 80 obese adults in Semarang. Dietary intake was assessed using the DII, which was calculated from food consumption data obtained through a Semi-Quantitative Food Frequency Questionnaire (SQ-FFQ). Anthropometric measurements were performed, including body fat percentage assessed via Bioelectrical Impedance Analysis (BIA). Physical activity levels were evaluated using the International Physical Activity Questionnaire (IPAQ). TNF-α levels were measured using the Enzyme-Linked Immunosorbent Assay (ELISA) method. Statistical analysis was conducted using the Spearman Rank correlation test.

Result : The study found a significant correlation between DII scores and body fat percentage ($r = 0.521$; $p = 0.023$) and a significant relationship between TNF-α levels and Body Mass Index (BMI) ($r = 0.253$; $p = 0.023$). However, no significant association was observed between DII scores and TNF-α levels ($r = 0.212$; $p = 0.510$) or between body fat percentage and TNF-α levels ($r = 0.189$; $p = 0.743$).

Conclusion : Base on the results of this study, it can be concluded that a pro-inflammatory diet (indicated by a high DII score) is associated with an increase in body fat percentage in adulthood. This means that the higher the inflammatory nature of the consumed food, the greater the likelihood of a person having higher body fat. Additionally, TNF-α levels were also found to be positively correlated with body mass index, indicating that the inflammatory processes in the body are associated with weight gain. However, the relationship between the DII score and TNF-α was not found to be significant, possibly due to defferences in biological conditions among individuals and other factors affecting inflammation levels in the body.

Keywords : Dietary Inflammatory Index, obesity, TNF-α, dietary pattens