Associations of Dietary Quality Score, Waist Circumference and Waist to Hip Ratio Profile with High-Sensitivity C-reactive Protein among Adolescents in Urban Area of Surabaya: A Pathway Analysis = Hubungan Skor Kualitas Diet, Lingkar Pinggang dan Profil Rasio Lingkar Pinggang-Pinggul terhadap High-Sensitivity C-reactive Protein Pada Remaja di Daerah Urban Surabaya: A Pathway Analysis

Triska Susila Nindya, author

Abstrak

Pendahuluan. Inflamasi yang dapat ditandai dengan peningkatan high sensitivity c-reactive protein dapat meningkatkan resiko penyakit degeneratif pada remaja. Hs-CRP dipengaruhi oleh berbagai faktor termasuk diet dan obesitas. Penelitian ini bertujuan untuk menginvestigasi hubungan kualitas diet, lingkar pinggang dan rasio lingkar pinggang-panggul terhadap high-sensitivity protein pada remaja.

Metode. Penelitian potong lintang yang melibatkan 219 remaja berusia 12-17 tahun yang tinggal di Surabaya dilaksanakan pada Bulan Januari – Agustus 2023. Kualitas diet dinilai dengan Healthy Eating Index (HEI) 2015 yang dihitung berdasarkan recall 24 jam selama 2 hari yang tidak berurutan. Lingkar pinggang dan lingkar panggul diukur menggunakan pita pengukur SECA® tapeline dengan akurasi 0,1 cm, sementara hs-CRP menggunakan particle-enhanced immunoturbidimetric assay. Regresi linier berganda digunakan untuk menganalisis hubungan kualitas diet, lingkar pinggang, rasio lingkar pinggang-panggul terhadap hs-CRP dengan mengontrol beberapa faktor perancu. Structural Equation Modelling (SEM) digunakan untuk analisis jalur efek berbagai variabel terhadap hs-CRP.

Hasil. Rata-rata skor HEI 2015 subjek adalah 48.8± 10.3. Sebanyak 57.1% subjek memiliki kualitas diet yang buruk. Proporsi remaja dengan obesitas sentral dan obesitas abdominal sebanyak 25,1% dan 32,9%. Rata-rata hs-CRP adalah 1.71 ± 2.53 mg/L. Lingkar pinggang berhubungan dengan kadar hs-CRP (adjusted =0.450; 95% CI = 0.444 - 0.456), namun rasio lingkar pinggang-panggul (adjusted = 0.274; 95% CI =-0.929 - 1.476) dan kualitas diet (=-0.017; 95% CI =-0.050 - 0.016) tidak berhubungan dengan hs-CRP walaupun telah dikontrol dengan faktor perancu. Analisis jalur menunjukkan bahwa ada pengaruh efek lingkar pinggang dengan arah positif terhadap kadar hs-CRP pada remaja.

Kesimpulan dan Saran. Lingkar pinggang lebih memiliki efek dengan kadar hs-CRP jika dibandingkan dengan kualitas diet dan rasio lingkar pinggang-panggul. Pengukuran lingkar pinggang secara rutin perlu dilakukan untuk skrining dini risiko inflamasi pada remaja.
.....Inflammation can be characterized by an increasing level of high sensitivity C-reactive protein (Hs-CRP), which can promote the risk of non communicable disease in adolescents. Hs-CRP is affected by various factors, including diet and obesity. We investigated the associations of dietary quality score, waist circumference, and waist-to-hip ratio profile with hs-CRP. Methods. A cross-sectional study involving 219 school-going adolescents aged 12-17 years, living in Surabaya was conducted from January to August 2023. Diet quality was assessed by the Healthy Eating Index (HEI) 2015, calculated from two non-consecutive

days of 24 hours recalls. Waist and hip circumference were measured by SECA® tapeline with an accuracy of 0.1 cm. Hs-CRP was assessed by using a particle-enhanced immunoturbidimetric assay. Multiple linear regression was used to analyze the association of dietary quality, waist circumference, and waist-hip ratio (WHR) with Hs CRP while controlling for confounding factors. Structural Equation Modelling (SEM) was used to determine the pathways of the mediator's effect on hs-CRP. Results. Most of the subject was female, in the 15-17 years age group, the puberty stage based on breast or genital development was stage 4. Most adolescents had low physical activity and poor sleep quality. The average HEI 2015 score was 48.8± 10.3. The majority of subjects had poor diet quality. The mean of hs-CRP was 1.71 ± 2.53 mg/L. The proportion of adolescents with central and abdominal obesity were 25.1% and 32.9%, respectively. Waist circumference was associated with hs-CRP (adjusted =0.450; 95% CI = 0.444 - 0.456). However, the waist-to-hip ratio (adjusted = 0.274; 95% CI =-0.929 - 1.476) and HEI 2015 score (=-0.017; 95% CI =-0.050 - 0.016) were not associated with hs-CRP, even after accounting for confounding factors. The pathway analysis showed that the waist circumference variable has a positive significant effect on hs-CRP. Conclusion and Recommendation. Waist circumference is a mediator of hs-CRP compared to the waist-to-hip ratio and diet quality score. Routine waist circumference measurement as a screening tool for inflammation risk must be conducted in adolescents