

## **Hubungan Obesitas, Kadar Feritin dan Kadar Hepsidin dengan Kejadian Anemia pada Remaja di Sekolah Menengah Pertama (SMP) Kota Yogyakarta**

Setyo Utami Wisnusanti<sup>1)</sup>, Lily Arsanti Lestari<sup>2)</sup>, Siti Helmyati<sup>2)</sup>

<sup>1)</sup>Mahasiswa Program Studi S2 Ilmu Kesehatan Masyarakat Fakultas Kedokteran, Universitas Gadjah Mada. Email: setyo.utami.w@mail.ugm.ac.id

<sup>2)</sup>Departemen Gizi Kesehatan Fakultas Kedokteran, Universitas Gadjah Mada

### INTISARI

**Latar belakang** : Faktor resiko anemia pada remaja obese meningkat dengan adanya gangguan homeostasis besi yang terjadi, ditandai dengan kadar ferritin dan kadar hepsidin tinggi namun kadar hemoglobin rendah yang disebabkan oleh adanya inflamasi kronik derajat ringan terkait obesitas.

**Tujuan** : Penelitian ini dilakukan untuk mengetahui hubungan antara obesitas, faktor perantara yang mempengaruhi dan kejadian anemia pada remaja usia 12-15 tahun di SMP Kota Yogyakarta.

**Metode** : Penelitian yang dilakukan adalah penelitian observasional dengan rancangan penelitian potong lintang pada 68 siswa SMP di Kota Yogyakarta yang mempunyai status gizi normal dan obesitas. Pengukuran tinggi badan, berat badan, indeks massa tubuh, kadar hepsidin, kadar feritin, kadar hemoglobin dan penilaian asupan zat gizi responden dilakukan dalam satu kurun waktu yang hampir bersamaan.

**Hasil** : Presentase anemia pada kelompok normal sebesar 15,15% sedangkan pada kelompok obese sebesar 2,85%. Pada penelitian ini, tidak terdapat perbedaan secara signifikan pada prevalensi anemia antara remaja status gizi normal dan obese ( $p=0,074$ ). Median data kadar hemoglobin pada kelompok normal 14,2 (13,25;15) g/dl dan kelompok obese 14,5 (13,4; 15,2) g/dl. Terdapat perbedaan signifikan pada kadar leukosit pada kedua kelompok responden ( $p=0,0443$ ), namun tidak terdapat perbedaan signifikan pada kadar hepsidin ( $p=0,511$ ). Tidak terdapat korelasi antara kadar hepsidin dan feritin pada seluruh responden ( $p=0,396$ ), serta terdapat korelasi positif tingkat rendah antara kadar feritin dan hemoglobin pada seluruh responden ( $p=0,0008$ ).

**Kesimpulan** : Terjadi proses inflamasi kronis derajat ringan pada kelompok obese, namun tidak terjadi gangguan metabolisme besi akibat inflamasi.

**Kata kunci** : anemia, gizi remaja, hemoglobin, obesitas

## Correlation of Obesity, Ferritin and Hepsidin Levels with Adolescents Anemia in Junior High School of Yogyakarta City

Setyo Utami Wisnusanti<sup>1)</sup>, Lily Arsanti Lestari<sup>2)</sup>, Siti Helmyati<sup>2)</sup>

<sup>1)</sup>Student of School of Public Health Postgraduate Program, Faculty of Medicine, Universitas Gadjah Mada. Email: setyo.utami.w@mail.ugm.ac.id

<sup>2)</sup>Health and Nutrition Department, Faculty of Medicine, Universitas Gadjah Mada

### ABSTRACT

**Background** : The risk factor for anemia in obese adolescents is increased by the presence of iron homeostatic disorder that occurs, characterized by high levels of ferritin and hepcidin levels but low hemoglobin levels which is caused by mild chronic inflammation associated with obesity. This study was conducted to determine the relationship between obesity and intermediary factors that affect incidence of anemia in adolescents aged 12-15 years in Junior High School, Yogyakarta.

**Methods** : This study was an observational research with cross sectional study design on 68 junior high school students in Yogyakarta City who had normal and obesity nutritional status. Measurement of height, weight, body mass index, hepcidin levels, ferritin levels, hemoglobin levels and assessment of nutrient intake of respondents performed in a period of time.

**Results** : The percentage of anemia in the normal group was 15.15% meanwhile in the obese group was 2.85%. In this study, there was no significant difference in the prevalence of anemia between normal and obese group ( $p=0.074$ ). Median data hemoglobin levels in normal group was 14.2 (13.25;15) g/dl and in obese group was 14.5 (13.4;15.2) g/dl. There were significant differences in leukocyte levels between groups ( $p = 0.0443$ ), but there was no significant difference in hepcidin levels ( $p=0.511$ ). There was no correlation between hepcidin and ferritin levels in all respondents ( $p=0.396$ ), and there was a low positive correlation between ferritin and hemoglobin levels in all respondents ( $p=0.0008$ ).

**Conclusion** : Low-grade of chronic systemic inflammation occurs in the obese group, but there is no iron metabolism disorder that occurs due to inflammation.

**Keywords** : anemia, adolescent, hemoglobin, obesity