

INTISARI

HUBUNGAN ANTARA ASUPAN MIKRONUTRIEN TERHADAP KEJADIAN GASTROENTERITIS EOSINOFILIK DI RSUP DR. SARDJITO

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Latar Belakang: Gastroenteritis Eosinofilik (GEE) merupakan peradangan yang terjadi di saluran cerna yang ditandai dengan adanya infiltrasi eosinofil dan degranulasi eosinofil pada lapisan mukosa, muskularis maupun serosa. Penyebab Gastroenteritis Eosinofilik belum diketahui secara pasti, penelitian terdahulu menunjukkan bahwa alergi makanan dan disbiosis turut berperan penting. Diet yang tinggi lemak trans, protein daging, gula pereduksi dan garam (Natrium) serta kurang serat dapat menginduksi disbiosis yang selanjutnya dapat menyebabkan inflamasi di usus. Obesitas, diet rendah Vitamin D, Vitamin A, Vitamin C, Vitamin E, Selenium, Zink, Magnesium diduga menjadi faktor risiko terjadinya Gastroenteritis Eosinofilik. Makanan yang diolah dengan metode *deep fried/fried* diduga dapat meningkatkan peluang terjadinya Gastroenteritis Eosinofilik dibandingkan dengan makanan yang diolah dengan metode *boiled/steamed*. Sampai saat ini masih sangat jarang ditemukan penelitian mengenai hubungan antara asupan mikronutrien dan cara pengolahan makanan terhadap kejadian Gastroenteritis Eosinofilik.

Tujuan: Untuk mengetahui hubungan antara asupan mikronutrien dan cara pengolahan makanan terhadap kejadian Gastroenteritis Eosinofilik di RSUP Dr. Sardjito.

Metode: Penelitian ini menggunakan desain *case control* dengan mengambil data sekunder berupa *recall diet* menggunakan *Food Frequency questionnaire* dari pasien yang tegak diagnosa Gastroenteritis Eosinofilik berdasarkan hasil biopsi endoskopi pada periode Juli 2021 – Juli 2022, yang memenuhi kriteria inklusi dan eksklusi. Kelompok kontrol adalah subjek normal yang tidak memiliki gejala dispepsia dalam waktu dua bulan terakhir, dilakukan *matching* 1:1 dengan subjek GEE berdasarkan usia dan jenis kelamin. Variabel yang dikaji meliputi usia, jenis kelamin, indeks massa tubuh (IMT), keluhan gastrointestinal, cara pengolahan makanan (*deep fried/fried* atau *steamed/boiled*), asupan Natrium, Magnesium, Selenium, Zink, Vitamin D, Vitamin A, Vitamin C, Vitamin E (diolah dengan perangkat lunak *Nutrisurvey*). Dilakukan analisis bivariat menggunakan Uji *Pearson Chi Square*, *Fisher's Exact extended*. Hasil dinyatakan bermakna secara statistik jika *P-value* <0,05.

Hasil: Kelompok GEE didominasi oleh subjek dengan asupan Natrium di bawah rekomendasi AKG yaitu 36 orang (87,80%), OR antara subjek yang memiliki asupan Natrium di atas AKG terhadap subjek yang memiliki asupan Natrium adekuat tidak bisa dihitung. Asupan Magnesium di atas rekomendasi AKG dapat meningkatkan peluang terjadinya GEE, meski hasilnya tidak bermakna secara statistik OR 1,75; 95% CI 0,021-142,19; *P-value* 1,000). Asupan Zink di bawah rekomendasi AKG memiliki efek protektif terhadap kejadian GEE (OR 0,299; 95% CI 0,109-0,8098; *P-value* 0,008). Asupan Vitamin A di bawah rekomendasi AKG memiliki efek protektif terhadap kejadian GEE (OR 0,286; 95% CI 0,080 - 0,929; *P-value* 0,019). Asupan Vitamin C di bawah rekomendasi AKG juga memiliki efek protektif terhadap kejadian GEE (OR 0,414; 95% CI 0,114-1,387; *P-value* 0,109). Asupan Selenium di atas rekomendasi AKG memiliki efek protektif terhadap kejadian GEE (OR 0,525; 95% CI 0,104-2,301; *P-value* 0,331). Seluruh subjek GEE dan subjek kontrol, 82 orang memiliki asupan Vitamin D dibawah AKG, OR antara subjek yang memiliki asupan Vitamin D di atas AKG terhadap subjek yang memiliki asupan Vitamin D adekuat tidak bisa dihitung. Seluruh subjek GEE dan subjek kontrol, 82 orang memiliki asupan Vitamin E yang adekuat, OR antara subjek yang memiliki asupan Vitamin E di atas AKG terhadap subjek yang memiliki asupan Vitamin E adekuat tidak bisa dihitung.

Subjek yang cara pengolahan makanannya di *steamed/boiled* memiliki peluang 89,7% lebih rendah untuk mengalami Gastroenteritis Eosinofilik dibandingkan dengan subjek yang cara pengolahan makanannya di *deep fried/fried* (OR 0,103; 95% CI 0,012-0,867; *P-value* 0,029).

Kesimpulan: Semua subjek dalam kelompok GEE dan kelompok kontrol memiliki asupan Vitamin D di bawah rekomendasi RDA, meskipun *odds ratio* untuk GEE tidak dapat dihitung, hasil penelitian ini mendukung hipotesis sebelumnya. Asupan tinggi Natrium, rendah Magnesium, rendah Zink, rendah Selenium, rendah Vitamin A, rendah Vitamin C, rendah Vitamin E tidak terbukti dapat meningkatkan peluang kejadian Gastroenteritis Eosinofilik. Subjek yang cara pengolahan makanannya di *steamed/boiled* memiliki peluang 89,7% lebih rendah untuk mengalami Gastroenteritis Eosinofilik dibandingkan dengan subjek yang cara pengolahan makanannya di *deep fried/fried*, hasil signifikan secara statistik dan mendukung hipotesis sebelumnya (OR 0,103; 95% CI 0,012-0,867; *P-value* 0,029).

Kata Kunci: Gastroenteritis Eosinofilik, Natrium, Magnesium, Zink, Selenium, Vitamin D, Vitamin A, Vitamin C, Vitamin E, *deep fried/fried*, *steamed/boiled*.

ABSTRACT

ASSOCIATION BETWEEN MICRONUTRIENT INTAKE AND INCIDENCE OF EOSINOPHILIC GASTROENTERITIS AT DR. SARDJITO GENERAL HOSPITAL

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Background: Eosinophilic Gastroenteritis (EGE) is an inflammation of the gastrointestinal tract characterized by eosinophil infiltration and degranulation of eosinophils in the mucosa, muscularis, and serosal layers. The cause of Eosinophilic Gastroenteritis is not yet fully understood; previous research suggests that food allergies and dysbiosis play a role. A diet high in trans fats, meat protein, reducing sugars, and salt (sodium), as well as low in fiber, can induce dysbiosis, which can then lead to intestinal inflammation. Obesity, a diet deficient in Vitamin D, Vitamin A, Vitamin C, Vitamin E, Selenium, Zinc, and Magnesium are suspected risk factors for Eosinophilic Gastroenteritis. Compared to meals processed using the boiled/steamed method, foods processed using the deep-fried/fried method are believed to raise the risk of getting Eosinophilic Gastroenteritis. To date, there is very rare research about the association between micronutrient intake and food processing methods with the incidence of Eosinophilic Gastroenteritis.

Objective: To determine association between micronutrient intake and food processing methods with incidence of Eosinophilic Gastroenteritis at Dr. Sardjito General Hospital.

Methods: This study used a case-control design by collecting secondary data in the form of dietary recall using a Food Frequency questionnaire from patients diagnosed with Eosinophilic Gastroenteritis based on endoscopic biopsy results between July 2021 and July 2022, who met the inclusion and exclusion criteria. The control group consisted of normal subjects who had not experienced dyspeptic symptoms in the last two months, matched 1:1 with EGE subjects based on age and gender. The variables studied included age, gender, body mass index (BMI), gastrointestinal complaints, food processing method (deep-fried/fried or steamed/boiled), and intake of Sodium, Magnesium, Selenium, Zinc, Vitamin D, Vitamin A, Vitamin C, and Vitamin E (processed using Nutrisurvey software). Bivariate analysis was performed using the Pearson Chi-Square Test, Fisher's Exact Extended Test. Results were declared statistically significant if the P-value was <0.05.

Results: The EGE group was dominated by subjects with sodium intake below the recommended RDA, namely 36 people (87.80%), the OR between subjects with sodium intake above the RDA and subjects with adequate sodium intake could not be calculated. Magnesium intake above the recommended RDA can increase the chance of EGE, although the results were not statistically significant (OR 1.75; 95% CI 0.021-142.19; P-value 1.000). Zinc intake below the RDA recommendation had a protective effect against the incidence of EGE (OR 0.299; 95% CI 0.109-0.8098; P-value 0.008). Vitamin A intake below the RDA recommendation had a protective effect against the incidence of EGE (OR 0.286; 95% CI 0.080-0.929; P-value 0.019). Vitamin C intake below the RDA recommendation also had a protective effect against the incidence of EGE (OR 0.414; 95% CI 0.114-1.387; P-value 0.109). Selenium intake above the recommended RDA had a protective effect against the incidence of EGE (OR 0.525; 95% CI 0.104-2.301; P-value 0.331). Of all EGE subjects and control subjects, 82 had Vitamin D intakes below the RDA. The OR between subjects with Vitamin D intakes above the RDA and those with adequate Vitamin D intakes could not be calculated. Of all EGE subjects and control subjects, 82 had adequate Vitamin E intakes. The OR between subjects with Vitamin E intakes above the RDA and those with adequate Vitamin E intakes could not be calculated. Subjects whose food was steamed/boiled had an 89.7% lower chance of developing Eosinophilic Gastroenteritis compared to subjects whose food was deep-fried/fried (OR 0.103; 95% CI 0.012-0.867; P-value 0.029).

Conclusion: All subjects in the EGE group and the control group had Vitamin D intake below the RDA recommendation, although the odds ratio for EGE could not be calculated, the results of this study support the previous hypothesis. Intake of high sodium, low magnesium, low zinc, low selenium, low vitamin A, low vitamin C, low vitamin E has not been proven to increase the chance of eosinophilic gastroenteritis. Subjects whose food processing methods were steamed/boiled had an 89.7% lower chance of experiencing Eosinophilic Gastroenteritis compared to subjects whose food processing methods were deep-fried/fried, the results were statistically significant and supported the previous hypothesis (OR 0,103; 95% CI 0,012-0,867; P-value 0,029).

Keywords: Eosinophilic Gastroenteritis, Natrium, Magnesium, Zinc, Selenium, Vitamin D, Vitamin A, Vitamin C, Vitamin E, deep fried/fried, steamed/boiled.