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Korelasi Proxy Paparan Sinar Matahari dan Indeks Massa Tubuh dengan Kadar 25(OH)D Pada Pasien Osteosarkoma Di RS Sardjito
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KORELASI *PROXY* PAPARAN SINAR MATAHARI DAN INDEKS MASSA TUBUH DENGAN KADAR 25(OH)D PADA PASIEN OSTEOSARKOMA DI RS SARDJITO

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ABSTRAK

Latar belakang: Pasien osteosarkoma merupakan salah satu kelompok populasi berisiko mengalami defisiensi vitamin D. Vitamin D berperan penting dalam kesehatan tulang dan sebagian besar kebutuhan tubuh diperoleh melalui produksi endogen di kulit yang membutuhkan paparan sinar ultraviolet B (UV-B) dari matahari. Produksi endogen ini dapat dipengaruhi oleh berbagai faktor, seperti kualitas udara yang memengaruhi intensitas radiasi UV-B dan status gizi yang tercermin dari indeks massa tubuh (IMT).
Tujuan: Mengetahui kadar 25-hiroksivitamin D [25(OH)D] pada pasien osteosarkoma, menganalisis hubungan *proxy* paparan sinar matahari dengan kadar 25(OH)D, dan menganalisis hubungan IMT dengan kadar 25(OH)D.
Metode: Penelitian ini menggunakan desain potong lintang dengan total 25 pasien osteosarkoma yang menjalani perawatan di RS Sardjito. Kadar 25(OH)D diukur menggunakan metode *competitive* ELISA. Data *proxy* paparan sinar matahari meliputi Air Quality Index (AQI), konsentrasi $PM_{2.5}$, PM_{10}, dan O_3 diperoleh dari World Air Quality Index. Data IMT diperoleh dari *Case Report Form* pasien. Analisis hubungan dilakukan menggunakan uji korelasi Pearson atau Spearman sesuai distribusi data dan uji *Chi-square* untuk analisis sekunder.
Hasil penelitian: Rerata kadar 25(OH)D pada subjek adalah 12,91 ± 5,76 ng/ml yang termasuk kategori defisiensi. Tidak ditemukan hubungan signifikan antara *proxy* paparan sinar matahari dengan kadar 25(OH)D. Analisis IMT sebagai variabel kontinu juga tidak menunjukkan hubungan signifikan dengan kadar 25(OH)D ($p = 0,514$). Namun, analisis sekunder berdasarkan kategorisasi menunjukkan hubungan signifikan antara *z-score* IMT/U ≤ –2,42 SD dengan rendahnya kadar 25(OH)D pada kelompok usia ≤ 18 tahun ($p = 0,040$).
Kesimpulan: Pasien osteosarkoma di RS Sardjito memiliki kadar 25(OH)D yang rendah. *Proxy* paparan sinar matahari tidak berhubungan signifikan dengan kadar 25(OH)D, sedangkan *z-score* IMT/U pada anak dan remaja (≤18 tahun) yang kurang dari rerata penelitian berhubungan dengan kadar vitamin D yang lebih rendah.
Kata kunci: osteosarkoma, vitamin D, 25(OH)D, paparan sinar matahari, indeks massa tubuh.

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CORRELATION OF SUNLIGHT EXPOSURE PROXY AND BODY MASS INDEX WITH 25(OH)D LEVELS IN OSTEOSARCOMA PATIENTS AT RS SRADJITO

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ABSTRACT

Background: *Osteosarcoma patients are among the populations at high risk of vitamin D deficiency. Vitamin D plays a crucial role in bone health and the majority of the body's requirements are met through endogenous production in the skin, which depends on exposure to ultraviolet B (UV-B) radiation from sunlight. This endogenous production can be influenced by various factors, such as air quality that affects UV-B radiation intensity and nutritional status as reflected by body mass index (BMI).*
Objectives: *To determine the serum levels of 25-hydroxyvitamin D [25(OH)D] in osteosarcoma patients, to analyze the correlation between sunlight exposure proxy and 25(OH)D levels, and to analyze the correlation between BMI and 25(OH)D levels.*
Methods: *This cross-sectional study involved 25 osteosarcoma patients receiving treatment at RS Sardjito. Serum 25(OH)D levels were measured using the competitive ELISA method. Data on sunlight exposure proxy, including Air Quality Index (AQI), concentrations of $PM_{2.5}$, PM_{10}, and O_3, were obtained from the World Air Quality Index. BMI data were collected from patients' case report forms. Correlation were assessed using Pearson or Spearman tests according to data distribution and secondary analyses were conducted using the Chi-square test.*
Results: *The mean serum 25(OH)D level among patients was 12.91 ± 5.76 ng/ml, classified as deficient. No significant correlation were found sunlight exposure proxy and 25(OH)D levels. BMI was not significantly correlated with 25(OH)D levels ($p = 0.514$). However, secondary analysis based on categorical data showed a significant correlation between a BMI-for-age z-score ≤ –2.42 SD and lower 25(OH)D levels among patients aged ≤ 18 years ($p = 0.040$).*
Conclusion: *Osteosarcoma patients at RS Sardjito exhibited low serum 25(OH)D levels. Sunlight exposure proxy were not significantly correlated with 25(OH)D levels, whereas undernutrition among children and adolescents was correlated with lower vitamin D levels.*
Keywords: *osteosarcoma, vitamin D, 25(OH)D, sunlight exposure, body mass index.*

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