

ABSTRAK

HUBUNGAN KADAR VITAMIN D DAN HEMOGLOBIN SERUM DENGAN KEKUATAN GENGGMAN TANGAN PADA LANJUT USIA

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Latar Belakang: Jumlah penduduk lanjut usia (lansia) di Indonesia mengalami peningkatan selama lebih dari satu dekade. Lansia akan mengalami suatu proses menua. Sarkopenia, salah satu kondisi degeneratif yang sering dijumpai pada lansia, meningkatkan risiko jatuh, fraktur, disabilitas fisik hingga kematian. Salah satu komponen dalam mendiagnosis sarkopenia adalah dengan menilai kekuatan otot, yang dinilai dengan kekuatan genggam tangan. Lansia cenderung rentan mengalami defisiensi vitamin D dan anemia. Penelitian ini bertujuan untuk menganalisis hubungan antara kadar vitamin D dan hemoglobin serum dengan kekuatan genggam tangan pada lansia.

Metode: Penelitian observasional dengan desain *cross sectional* dilakukan pada subjek lanjut usia (usia ≥ 60 tahun) di Posyandu Lansia Pasadena, Semarang. Kadar vitamin D dan hemoglobin diukur dengan menggunakan sampel darah vena. Kekuatan genggam tangan dinilai dengan melakukan *CAMRY Dynamometer*. Analisis bivariat dilakukan menggunakan uji korelasi Spearman untuk mengetahui hubungan antara kadar vitamin D dan kadar hemoglobin terhadap kekuatan genggam tangan. Analisis multivariat dilakukan menggunakan uji Regresi Linear untuk mengetahui apakah variabel tetap memiliki signifikansi hasil apabila dianalisis secara bersama-sama dengan variabel lainnya. Signifikan apabila $p < 0.05$

Hasil: Berdasarkan 67 subjek lansia (usia rerata 64.36 ± 3.54 tahun), 92.5% adalah lansia muda, jenis kelamin didominasi perempuan (59.7%). Median kadar vitamin D 18.7 (4.8-51.3) ng/mL. Secara keseluruhan, 89.6% dari subjek memiliki kadar vitamin D tidak normal, sedangkan 10.4% sisanya memiliki kadar vitamin D normal. Median kadar Hb 13.7 (11-18.3) g/dL. Secara keseluruhan, 11.9% dari subjek mengalami anemia, sedangkan 88.1% sisanya memiliki kadar hemoglobin normal. Sebanyak 85.1% subjek lansia memiliki kekuatan genggam tangan rendah, didominasi oleh perempuan (63.2%). Terdapat korelasi positif *moderate* antara kadar vitamin D dengan kekuatan genggam tangan ($p = 0.0001$, $r = 0.564$). Terdapat korelasi positif *moderate* antara kadar hemoglobin dengan kekuatan genggam tangan ($p = 0.0001$, $r = 0.477$). Analisis regresi linear menunjukkan adanya pengaruh kadar vitamin D dan hemoglobin secara bersama-sama terhadap kekuatan genggam tangan ($p = 0.001$).

Kesimpulan: Terdapat hubungan signifikan antara kadar vitamin D dan hemoglobin serum dengan kekuatan genggam tangan pada lansia.

Kata Kunci: kadar vitamin D, kadar hemoglobin, kekuatan genggam tangan, lanjut usia

ABSTRACT

THE ASSOCIATION OF VITAMIN D AND SERUM HEMOGLOBIN LEVELS WITH HAND GRIP STRENGTH IN ELDERLY

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Background: The number of elderly in Indonesia has increased for more than a decade. Elderly will experience a process of aging. Sarcopenia, a degenerative condition that is often found in the elderly, increases the risk of falls, fractures, physical disability and even death. One component in diagnosing sarcopenia is to assess muscle strength, which is assessed by hand grip strength. The elderly tend to be susceptible to vitamin D deficiency and anemia. This study aims to analyze the association between vitamin D and serum hemoglobin levels with hand grip strength in the elderly.

Methods: An observational study with a cross sectional design was conducted on elderly subjects (age ≥ 60 years) at the Pasadena Elderly Posyandu, Semarang. Vitamin D and hemoglobin levels were measured using venous blood samples. Hand grip strength was measured by performing the CAMRY Dynamometer. Bivariate analysis was carried out using the Spearman correlation test to determine the correlation between vitamin D levels and hemoglobin levels on hand grip strength. Multivariate analysis was carried out using the Linear Regression test to determine whether the variables still had significant results when analyzed together with other variables. Significant if $p < 0.05$.

Results: Of 67 elderly subjects (mean age 64.36 ± 3.54 years), 92.5% were young elderly, gender was dominated by female (59.7%). Median vitamin D level was 18.7 (4.8-51.3) ng/mL. Overall, 89.6% of subjects had abnormal vitamin D levels, while the remaining 10.4% had normal vitamin D levels. Median Hb level 13.7 (11-18.3) g/dL. Overall, 11.9% of subjects had anemia, while the remaining 88.1% had normal hemoglobin levels. As many as 85.1% of elderly subjects had low hand grip strength, dominated by female (63.2%). There was a moderate positive correlation between vitamin D levels and hand grip strength ($p = 0.0001$, $r = 0.564$). There was a moderate positive correlation between hemoglobin levels and hand grip strength ($p = 0.0001$, $r = 0.477$). Linear regression analysis showed that there was an effect of vitamin D and hemoglobin levels together on hand grip strength ($p = 0.001$).

Conclusion: There is a significant association between serum vitamin D and hemoglobin levels on hand grip strength in elderly.

Keywords: vitamin D levels, hemoglobin levels, hand grip strength, elderly