

# Hubungan Kadar Zink dengan Derajat Penyakit COVID-19 pada pasien yang dirawat di RS Universitas Indonesia = Association between Zinc Level and Severity of COVID-19 in Hospitalized Patients in The Universitas Indonesia Hospital

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## Abstrak

Coronavirus Disease 2019 (COVID-19) merupakan pandemi dengan morbiditas dan mortalitas yang tinggi. COVID-19 dapat mencetuskan badai sitokin, suatu reaksi hiperinflamasi yang menyebabkan acute respiratory distress syndrome dan kegagalan multiorgan. Zink dipertimbangkan sebagai terapi supportif pada COVID-19 karena memiliki potensi sebagai immunomodulator, antivirus serta antiinflamasi. Penelitian ini dilakukan untuk mengetahui hubungan kadar zink pada saat masuk perawatan dengan manifestasi derajat penyakit COVID-19 serta luaran buruk COVID-19. Derajat penyakit ditentukan berdasarkan manifestasi klinis sesuai kriteria WHO saat masuk perawatan sedangkan luaran buruk bila subjek pernah dirawat di ruang intensif, menggunakan ventilator selama perawatan atau meninggal. Pada penelitian ini didapatkan total 87 kasus yang terbagi menjadi kelompok derajat tidak berat sebanyak 74 kasus dan kelompok derajat berat sebanyak 13 kasus. Berdasarkan luaran didapatkan kelompok luaran buruk sebanyak 22 kasus dan luaran baik 65 kasus. Rerata kadar zink lebih rendah pada kelompok derajat berat dan kelompok luaran buruk. Ditemukan hubungan yang bermakna secara statistik pada rerata kadar zink dengan luaran COVID-19 sedangkan dengan derajat penyakit cenderung bermakna secara statistik. Kadar zink terhadap luaran buruk COVID-19 memiliki luas Area Under the Curve (AUC) 81,6%, dengan nilai titik potong kadar zink 56,05 ug/dL yang memiliki sensitivitas 77,3% dan spesifitas 73,8%. Pasien dengan kadar zink 56,05 ug/dL berisiko 8,79 kali lebih tinggi mengalami luaran buruk COVID-19 dibandingkan pasien dengan kadar zink >56,05 ug/dL setelah diadjust dengan usia, komorbid penyakit jantung, dan diabetes mellitus. Diperlukan penelitian lanjutan dengan jumlah sampel yang cukup untuk memperkuat hasil penelitian ini.

.....Coronavirus Disease 2019 (COVID-19) is a pandemic with high morbidity and mortality. COVID-19 can trigger a cytokine storm, a hyperinflammatory reaction that causes acute respiratory distress syndrome and multiorgan failure. Zinc was considered as a supportive therapy for COVID-19 because it has potential as an immunomodulator, antiviral and anti-inflammatory. This study aims to analyze the association between zinc level at the time of admission on disease severity and poor outcome of COVID-19. Disease severity was determined based on clinical manifestations according to WHO criteria on admission, while poor outcome was defined as a history of intensive care unit stay, intubated during treatment or deceased. There were 87 subjects consist of 74 cases of non-severe group and 13 cases of severe group. As for the outcome, there were 22 cases of poor outcome and 65 cases of good outcome. The mean of zinc level was lower in severe and poor outcome group. There was a significant association between zinc level and poor outcome, while disease severity tended to be statistically significant. An Area Under the Curve (AUC) of zinc level and COVID-19 poor outcome was 81,6%, with a cut point of 56,05 ug/dL, sensitivity and specificity was 77.3% and 73.8%. Patients whose zinc level 56.05ug/dL had a 8.79-

fold higher risk of poor outcome compared to patients whose zinc level  $> 56.05$  ug/dL after age, heart disease, and diabetes mellitus adjustment. Further studies a sufficient number of sample are needed to support this study.