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**Impact of COVID-19 vaccination to SARS-Cov-2 infection and outcomes  
among end-stage renal disease patients in South Korea**

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**Introduction:** End stage renal disease (ESRD) patients are known to have high morbidity and mortality from SARS-CoV-2 infection. We investigated the impact of single dose or multiple doses of vaccination on SARS-CoV-2 infection, hospitalization rate, and mortality in a nationwide scale using a claim database.

**Methods:** This study used KDCA (Korea Disease Control and Prevention Agency) Covid-19 NHIS cohort data. ESRD patients were study population. SARS-CoV-2 infections, hospitalizations from SARS-CoV-2 infections, and 30-day mortality after SARS-CoV-2 infections were study outcomes. We used public COVID-19 infection database which contains available data since October 8, 2020. Vaccination started since February 26, 2021. The study period was from Feb 26, 2021 to Dec 31, 2021. (Figure 1) Patients with prior COVID-19 infection before ESRD or before vaccination were excluded. In the multivariable logistic regression models, age, sex, comorbidities (HTN, DM, CVD), and ESRD duration were adjusted as covariables. This research was funded by Seoul National University Bundang Hospital (No.2022-04590).

**Results:** Total 109,671 ESRD patients were COVID-19 vaccinated. Among 85,971 dialysis patients, 2,550 (3.0%) received single dose, and 83,421 (97.0%) received multiple doses. Among 23,700 KT recipients, 452 (1.9%) received single dose and 23,248 (98.1%) received multiple doses. KT recipients who were vaccinated multiple doses showed reduced SARS-CoV-2 infection (OR 0.450, 95% C.I. 0.237-0.856,  $p=0.015$ ), reduced 30-day-mortality (OR 0.139, 95% C.I. 0.089- 0.432,  $p=0.016$ ). Dialysis patients with multiple vaccination doses also showed reduced COVID-19 infection (OR 0.612, 95% C.I. 0.436- 0.858,  $p=0.004$ ), and reduced 30-day-mortality (OR 0.196, 95% C.I. 0.089- 0.432,  $p<0.001$ ). In both populations, multiple doses of COVID-19 vaccination did not reduce COVID-19-related hospitalization. (data not shown)

**Conclusion:** We present the first nationwide scale evidence that multiple doses of SARS-CoV-2 vaccination significantly reduced 30-day mortality, and SARS-CoV-2 infection rate in the dialysis population and KT recipients.