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## **Cause specific death differs based on HbA1c levels in hemodialysis patient with diabetes**

**Dae Kyu Kim**<sup>1</sup>, Soo-Young Yoon<sup>1</sup>, Jong ho Kim<sup>1</sup>, Shin Young Kang<sup>1</sup>, Gang Jee Ko<sup>2</sup>, Kyung Hwan Jeong<sup>1</sup>, Jin Sug Kim<sup>1</sup>, Ju Young Moon<sup>1</sup>, Sang Ho Lee<sup>1</sup>, Hyeon Seok Hwang<sup>1</sup>

<sup>1</sup>Department of Internal Medicine-Nephrology, Kyung Hee University Medical Center, Korea, Republic of

<sup>2</sup>Department of Internal Medicine-Nephrology, Korea University Anam Hospital, Korea, Republic of

**Objectives:** Adequate glycemic control with achieving target HbA1c is critical in hemodialysis (HD) patients with diabetes and HbA1c level is closely associated with mortality risk. However, it is unclear whether mortality risk of cause-specific death differs based on different HbA1c levels.

**Methods:** A total 24620 maintenance HD patients with diabetes were enrolled from the electronic health record-based registry data of Korean Society of Nephrology. Plasma HbA1c level was measured at the time of study data entry, and patients were classified into six categories based on the HbA1c level. We examined the associations between HbA1c levels and the risk of cause-specific death (cardiovascular, infection, non-cardiovascular/non-infection).

**Results:** In multivariable cox regression analysis, compared with HbA1c 6.5%-7.5%, the risk of all-cause mortality was increased as HbA1c level was increased; 0.99-fold (95% confidence interval [CI], 0.91-1.07) in HbA1c 5.5%-6.5%, 1.08-fold (95% CI, 0.99-1.19) in HbA1c 7.5-8.5%, (95% CI, 0.99-1.19), 1.26-fold in HbA1c 8.5%-9.5% (95% CI, 1.12-1.42) and 1.57-fold in HbA1c >9.5% (95% CI, 1.39-1.78). In cause-specific death analysis, the risk of cardiovascular-related mortality showed similar pattern and the adjusted risk was 0.96 (95% CI, 0.84-1.09), 1.17 (95% CI, 1.01-1.35), 1.53 (95% CI, 1.29-1.82) and 1.57-fold (95% CI, 1.30-1.91) for HbA1c 5.5%-6.5%, HbA1c 7.5%-8.5%, HbA1c 8.5%-9.5% and HbA1c > 9.5%, respectively. However, infection-related mortality risk was not significantly increased across HbA1c strata except the risk in HbA1c >9.5% (HR, 1.71; 95% CI, 1.29-2.26). Non-cardiovascular related/non-infection related mortality risk was not increased in all HbA1c categories.

**Conclusions:** The risk of cause-specific mortality differs according to HbA1c level in HD patients with diabetes. The risk of cardiovascular mortality was most closely associated with increasing HbA1c level than those of infection or non-cardiovascular related/non-infection.