Abstract Type : Poster exhibition
Abstract Submission No.: A-0146
Abstract Topic : Dialysis

Mortality trends in patients undergoing hemodialysis, 2013-2021: data from National Health Insurance Service in Korea

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Objectives : Assessing recent changes in mortality among hemodialysis (HD) patients can help identify the causes of death most closely associated with changes in mortality and develop prevention strategies. This study aimed to explore trends in all-cause and cause-specific mortality among HD patients in Korea through a national-level data analysis.
Methods : We used national death certificate and claims data provided by the National Health Insurance Service from 2003 to 2021. Age-standardized death rates (ASRs) were calculated by directly standardizing to the 2013 HD population. The joinpoint regression analysis was performed to calculate the annual percentage change (APC) in mortality. We evaluated all-cause and cause-specific mortality rates and APCs over the study period.
Results : The proportion of male and elderly patients has increased over time, especially the number of patients aged 80 years and older in 2018-2021 was more than four times higher than in 2003-2007. From 2003 to 2021, there were a total of 136,302 deaths among HD patients in Korea. 13.6% and 86.4% of all deaths were due to cardiovascular and non-cardiovascular diseases, respectively. In 2003, the ASR of all-cause was 174.1 per 1000 person-years and steadily decreased to 114.5 per 1000 person-years in 2021. The ARS from cardiovascular deaths remained unchanged from 2003 to 2013, but increased by 3.93% (95% CI -3.0 to -2.0) per year from 2013 to 2021. In contrast, the ARS from non-cardiovascular deaths decreased during the study period. The mortality trends for ischemic heart disease and cerebrovascular disease decreased, while the trend for heart failure mortality increased. Cancer-related mortality showed a decreasing trend, and the trend for infection mortality remained unchanged.
Conclusions : The nationally representative data showed a declining trend in age-standardized mortality for HD patients from 2003 to 2021. Non-cardiovascular disease mortality decreased during the study period, while cardiovascular disease mortality increased.