審査の結果の要旨

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This study quantified the effect of sociodemographic factors on cause-of-death assignment to International Classification of Disease and Related Health Problem (ICD) disease clusters, and estimated the adjusted probability of cause-specific mortality and described temporal trends in underlying cause of death (UCD) assignment by sociodemographic factors among diabetes-attributable deaths in the United States between 1999 and 2017. Here are the results that were obtained from the study.

1. There were 4,472,917 diabetes-attributable deaths, equivalent to 9.4% of all-cause mortality between 1999-2017.

2. Age was a key contributor for UCD assignment among cardiovascular disease, neoplasms, other non-communicable diseases (NCDs), and communicable disease, in relations to diabetes UCD assignment. Between 1999-2017, there was an increase in the probability of UCD assignment to cardiovascular disease among ages 70-74 (relative risk ratio (RRR): 1.08 (95% confidence intervals (CI): $1.07 - 1.08$)), ages 75-79 (RRR: 1.15 (95% CI: $1.14 - 1.15$), 80-84 (RRR: 1.22 (95% CI: $1.21 - 1.23$), and 85 and over (RRR: 1.33 (95% CI: $1.32 - 1.33$)) compared to 60-69. For neoplasms relative to diabetes, compared to ages 60-69, the RRR of UCD assignment was higher among ages 70-74 (1.14 (95% CI: $1.13 - 1.14$)) and ages 75-79 (1.07 (95% CI: $1.06 - 1.07$)), whereas it was lower among other age groups under 60 and over 80.

3. Compared to whites, blacks had decreased probability of UCD assignment to cardiovascular disease (RRR: 0.88 (95% CI: $0.88 - 0.89$)), neoplasms (RRR: 0.85 (95% CI: $0.84 - 0.85$)), other NCDs (RRR: 0.65 (95% CI: $0.65 - 0.66$)), and communicable disease (RRR: 0.89 (95% CI: $0.89 - 0.89$)), compared to diabetes.

4. For cardiovascular disease UCD assignment, compared to diabetes, being outpatient (RRR: 1.15 (95% CI: $1.14 - 1.15$)) and dead arrival at hospital (RRR: 1.11 (95% CI: $1.11 - 1.11$)) increased its probability, relative to inpatient deaths. The trend was opposite for neoplasms, with decreased probability of UCD assignment to neoplasms compared to diabetes among the outpatient deaths (RRR: 0.23 (95% CI: $0.23 - 0.23$)) and those dead arrival at hospital (RRR: 0.21 (95% CI: $0.21 - 0.21$)) compared to inpatients.

5. Between 2003-2017, of which information on autopsy was available, there was a general decline among assignment to cardiovascular diseases, with an increase in assignment to other NCDs among all race and age subgroups. Increased probability of UCD over-assignment of diabetes-attributable death to neoplasm among those without autopsy as compared to those with autopsy was found after 2005.

   Given the findings above, this study has shown that better quality of autopsy performance and quality training of clinicians regarding UCD cause-of-death assignment in relations to sociodemographic factors, especially age, race, and place of death, may contribute to improving cause-of-death assignment among diabetes-attributable deaths. Findings of this study will help to identify priorities for improvement in cause-of-death assignment, as well as evidence-based resource allocation to the correct knowledge domain and sociodemographic group according to the levels of adjusted assignment. In addition, the evidence will as well inform preventive actions to be taken towards diabetes-attributable true causes of death in the country and other advanced economies.

   よって、本論文は博士（保健学）の学位請求論文として合格と認められる。