**Methods**

*Study Population*

The National Health Insurance Service (NHIS) managed by the Korean government covers approximately 97.2 % of the Korean population and enrollees in this system are recommended to undergo a standardized medical health examination at least every 2 years [8]. From the NHIS database, we selected subjects (age>20 years) who had visited clinics or hospitals with a diagnostic code (ICD‐10) of herpes zoster (HZ; B029) more than once in a given year from January 2010 to December 2015. We analyzed subjects with HZ (*n* = 784,409) and non-HZ subjects (n = 784,409) randomly selected with a 1:1 exact matching for age, sex, and index year. They were followed up for the development of cancer until 2015. Cancer information was collected from the NHIS database according to the cancer code (ICD‐10, C00–C96) which was also registered in the reliable rare incurable disease system. We had a 1‐year washout period between 2008 and 2009 to reduce confounding of previously diagnosed cancer. The HZ group with cancer was defined as HZ patients with a cancer diagnosis 1 year or more after the resolution of HZ. The primary outcome was the occurrence of newly diagnosed cancer. As a secondary outcome, we examined which cancer types are most strongly associated with HZ.

*Statistical Analysis*

The clinical characteristics of the participants with and without HZ were compared using the Student’s *t* test and the χ2 test. The incidence rates of cancer were calculated by dividing the number of incident cases by the total follow-up period. Annual event rates were described as the number of events per 1,000 person-years. Hazard ratios and the corresponding 95% confidence intervals were calculated using the Cox proportional hazards model after adjusting for confounding variables including age, sex, income status, smoking, alcohol consumption, regular exercise, diabetes mellitus, hypertension, dyslipidemia, and body mass index. In order to minimize the effect of variations between survey years, all analyses performed in this study were adjusted for survey year. All *p* values were two-sided and the *p* < 0.05 was considered to indicate statistical significance. Statistical analyses were performed using SAS version 9.4 (SAS Institute Inc., Cary, NC, USA).