Appendix SI.

SUPPLEMENTARY MATERIALS AND METHODS

Data source and study population

This study utilized data from the NHIS database gathered from January 2006 through December 2015. NHIS data collection was supervised by the Korean NHI service, which monitors whole medical services. The whole South Korean population is covered by the NHIS. This computerized database includes all insurance claim data, such as patient demographics, date of hospital visits, place of residence, socioeconomic status, and claimed treatment details based on the ICD-10 codes. The Korean NHI service is a universal healthcare system in South Korea, and covers the entire population of over 49 million people.

Study population

Data from patients over 40 years of age with a diagnostic code (ICD-10) of AK (L570) who visited clinics or hospitals more than once in a given year from January 2006 to December 2015 were analysed. An incident case was defined as a person who was newly diagnosed and registered as an AK patient in the corresponding year. The incidence was calculated by dividing the number of new cases in the corresponding year by the total population. A prevalent case was defined as a person registered in the NHIS database as an AK patient in the corresponding year including patients registered as incident cases in previous years. The prevalence was calculated by dividing the number of prevalent cases in the corresponding year by the total population. A cohort study of the association between AK and Bowen's disease (BD) (D04), melanoma (C43) or NMSC (C44) was conducted, with an observation period of up to 10 years. Patients who had developed AK, BD, or skin cancer were excluded before the entry date. The definition of NMSC in this study included BCC, SCC, and other rare subtypes. The study was approved by the Institutional Review Board of the Korean National Institute for Bioethics Policy (NHIS-2017-1-002). The Institutional Review Board at the Korea Centers for Disease Control and Prevention approved the protocol, and all participants signed informed consent. The present study was also approved by the Institutional Review Board of the Catholic University of Korea (approval number KC17ZESI0126).

Study variables

NHIS data were interpreted to calculate the national incidence of AK for all South Koreans. The 2015 incidence was also analysed for participants, who were classified into 5 age groups as follows: 40–49, 50–59, 60–69, 70–79, and over 80 years.