**Methods**

*Database*

The Korean National Health Insurance System covers almost all Korean residents (approx. 97%) and mandates standardized medical examinations every 2 years [13]. This database, subdivided into two different health insurance subtypes; national health insurance and medical aid, accounts for comprehensive medical record data of the following: general information of age and sex, physical and laboratory measurements, questionnaires on lifestyle and behavior, diagnosis and treatment information, medical institution database, and death information. This database administered by the government is a collective record of patient information and medical service with reimbursement claim codes. Therefore, it is considered a concrete nationwide cohort, often used in epidemiological studies. Patient consent was waived by the Institutional Review Board of Seoul Metropolitan Government-Seoul National University Boramae Medical Center (IRB No. 07-2019-24) as all personal information was de-identified.

*Study Population*

A recently published article which comprehensively assessed the IBD definition from Korean insurance claims data demonstrated that combining the International Classification of Diseases 10th revision (ICD-10) code and at least one prescription of IBD-specific medications [5‐aminosalicylic acid, immunomodulators (azathioprine, 6‐mercaptopurine, cyclosporine, or methotrexate) or TNF inhibitors] best reflected actual IBD cases. K51.0–K51.3, K51.5, K51.8, K51.9, and K50.0–50.9 from the ICD-10 code were utilized for UC and CD, respectively. This operational definition demonstrated a sensitivity of 99.8–100% and a specificity of 73–95% depending on the health care facilities [14]. Using this updated version of the validated definition, we identified IBD patients between 2005 and 2008. Controls were age- and sex-matched in 1:4 and defined as those never diagnosed with IBD-related disease from 2003 to 2018. Patients with a history of psoriasis prior to 2009 were initially excluded from the analysis. Among IBD patients and controls, patients who died before psoriasis diagnosis were censored.

*Definition of Outcomes*

The primary outcome was newly diagnosed psoriasis cases from 2009 to 2018. Psoriasis was defined as at least two hospital visits with ICD-10 primary diagnosis of L40. This operational definition demonstrated a sensitivity of 79.6%, a specificity of 91.2%, and a positive prediction value of 95.4% in a validation study by five teaching hospitals [15]. Disease phenotypes, including psoriasis severity and psoriatic arthritis, were also identified: plaque psoriasis was defined as L40.0, L40.8, and L40.9; guttate psoriasis as L40.4; palmoplantar pustulosis as L40.2 and L40.3; and generalized pustular psoriasis as L40.1. Those receiving phototherapy, systemic agents (acitretin, cyclosporine, methotrexate), or biologic agents (infliximab, etanercept, adalimumab, and ustekinumab) were defined as having moderate to severe psoriasis. Otherwise, they fell into the mild type category. To define psoriatic arthritis, at least 2 hospital visits with ICD-10 codes primary diagnosis of L40.5, or L40 and one of the following were used: M070, M071, M072, M073, and M090 [12, 16].

*Statistical Analysis*

The baseline of IBD patients (either UC or CD) were compared with their matched controls using χ2 and *t* tests. The incidence rate was presented as the number of events per 100,000 person-years. Hazard ratios and 95% confidence intervals were calculated using Cox regression models. For multivariate analysis, age and insurance type were adjusted. We conducted detailed subgroup analyses for age and sex. Moreover, by acknowledging the effect of psoriasiform disorder secondary to TNF inhibitors, sensitivity analysis involving TNF inhibitor-naïve patients was performed to provide robustness to the results. All statistical analyses were performed using SAS version 9.4 software (The SAS Institute, Cary, NC, USA). *p* values <0.05 were considered statistically significant.