# Supplementary Online Content

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This supplementary material has been provided by the authors to give readers additional information about their work.

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## **eMethods.** Data Sources, Validation of Diagnostic Accuracy, and Categorization of Sociodemographic and Clinical Characteristics

### Data Sources

The National Health Insurance Service-National Sample Cohort (NHIS-NSC) is a population-based cohort in Korea that have followed approximately one million individuals for 13 years from 2002 to 2015. Initially, it consisted of 1 025 340 subjects, which represented 2.2% of the total eligible Korean population in 2002. The database contains information on National Health Insurance (NHI) claims, including socio-demographics, diagnoses, and prescriptions. The NHIS-NSC database has been used in several cross-sectional studies of certain diseases in the country.

The National Health Screening Program (NHSP) is a regular, standardized medical examination provided by the Korean NHI Corporation. All insured adults aged 40 years and older are recommended to undergo this population-based health screening program every 1 or 2 years. It includes body measurements (height, weight, and waist circumference), laboratory tests (blood pressure and routine blood/urine tests), medical interviews, and questionnaires about lifestyle and medical history, including smoking and drinking habits. The body mass index (BMI) was calculated based on the subjects' height and weight. Blood pressure was measured by a healthcare personnel after at least 5 min of resting. Blood samples were obtained after overnight fasting (at least 8 h) to measure the fasting blood sugar (FBS) and cholesterol levels.

### Validation of Diagnostic Accuracy

In this study, patients who had ≥ 3 documented dermatologist visits between 2010 and 2019 with a primary or secondary diagnosis of PPP were defined as patients with PPP. Among 52 145 patients who had ≥3 documented dermatologist visits with a diagnosis of PPP, 14 746 patients also had at least one visit with a diagnosis of pompholyx. On the contrary, 26 151 patients among 391 566 patients who had ≥3 documented dermatologist visits with a diagnosis of pompholyx had at least one visit with a diagnosis of PPP. To minimize misclassification, we excluded these patients from the final statistical analysis.

To validate the diagnostic accuracy of PPP, we examined several algorithms based on the number of dermatologist visits with a diagnosis of PPP made by a dermatologist. A random sample of electronic medical records from the Seoul National University Hospital was reviewed. We randomly selected 200 patients with PPP (who visited the dermatology outpatient clinic at least once with ICD-code L403 as the principal or secondary diagnosis) and 200 suspected non-PPP patients (who visited the dermatology outpatient clinic at least once with ICD-code L301 [pompholyx] as the principal or secondary diagnosis) from November 2010 to October 2020. We defined the gold standard for the diagnosis of PPP as the presence of yellowish pustules on a scaly, erythematous, and desquamative background, localized on the palms and/or soles with a chronic relapsing course. All the clinical photographs and medical records were manually reviewed. In addition, histopathological and mycological examinations such as the KOH test to differentiate pompholyx, psoriasis vulgaris, tinea, palmoplantar keratoderma, and other possible differential diagnoses were reviewed if available. The sensitivity, specificity, positive predictive value, and negative predictive value of each algorithm were calculated (eTable 1). Since we sought to explore the differences between the characteristics of PPP patients and those of controls, an algorithm with relatively higher specificity was selected.

### Categorization of Sociodemographic and Clinical Characteristics

The region of residence was categorized into urban (metropolitan), suburban (city), and rural (other county) areas. Income was divided into 10 deciles based on the NHI premium, and then regrouped as low, middle, and high. The NHI premium was used as a reliable measure of income because it is proportional to the monthly income, including earnings and capital gains. The insurance type was categorized into health insurance and medical aid.

Smoking history was classified as non-, ex-, or current smoker. Smoking pack-years were categorized by 10 years (0, <10, <20, <30, and ≥30 pack-years). Alcohol consumption was classified as light, moderate, or heavy drinkers based on the drinking frequency and amount per session. Moderate drinkers were defined as those who consume up to 7 and 14 drinks per week for women and men, respectively, and those who consume more than this quantity were considered as heavy drinkers. Weight status was classified as underweight, normal, overweight, or obese according to the body mass index (BMI) with Korean-specific cut-off values of 18.5 $kg/m^2$, 23 $kg/m^2$, and 25 $kg/m^2$. Abdominal obesity was defined as a waist circumference of > 90 cm in men or > 85 cm in women.

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The criteria for the categorization of laboratory data from the NHSP were as follows: systolic blood pressure (BP), ≥ 140 mmHg as high BP; hemoglobin, <13 g/dL in males and <12 g/dL in females as anemia; glucose (FBS), <100 mg/dL as normal level, 100-125 mg/dL as borderline, and ≥126 mg/dL as high; serum cholesterol level, <200 mg/dL as normal level, 200-239 mg/dL as borderline, and ≥240 mg/dL as high; serum triglyceride level, 150 mg/dL, 200 mg/dL, and 500 mg/dL as cut-off values; LDL-cholesterol level, 100 mg/dL, 130 mg/dL, 160 mg/dL, and 190 mg/dL as cut-off values; HDL-cholesterol level, 40 mg/dL and 60 mg/dL as cut-off values; aspartate transaminase (AST) and alanine transaminase (ALT), < 40 IU/L as normal level and ≥40 IU/L as high; gamma-glutamyl transferase (GGT), ≥ 63 IU/L in males and ≥ 35 IU/L in females as high; and creatinine, ≤ 1.5 mg/dL as normal level and > 1.5 mg/dL as high.

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## **eResults.** Pilot Study

In the pilot study using the NHIS-NSC database, we compared PPP patients to the general population. A total of 918 patients with PPP and 3672 age- and sex-matched controls without PPP were identified. PPP patients had a history of smoking more than the control group (45.07% vs. 36.36%, $p < 0.0001$), and more patients were overweight or obese (43.10% vs. 36.38%, $p = 0.0066$). Psoriasis, ankylosing spondylitis, rheumatoid arthritis, cardiometabolic diseases, type 1 diabetes, Graves disease, vitiligo, and alopecia areata were significantly more prevalent in patients with PPP (eTable 4).

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**eTable 1.** Validation Algorithms of PPP

| No. of dermatologist visits | Sensitivity (%) | Specificity (%) | PPV (%) | NPV (%) |
|---|---|---|---|---|
| ≥1 / 10 years | 96.13 | 79.18 | 74.50 | 97.00 |
| ≥2 / 10 years | 83.87 | 80.82 | 73.45 | 88.79 |
| ≥3 / 10 years | 74.19 | 85.71 | 76.67 | 84.00 |
| ≥4 / 10 years | 61.94 | 88.16 | 76.80 | 78.55 |
| ≥5 / 10 years | 49.68 | 89.80 | 75.49 | 73.83 |
| ≥6 / 10 years | 42.58 | 91.02 | 75.00 | 71.47 |
| ≥7 / 10 years | 35.48 | 91.43 | 72.37 | 69.14 |
| ≥8 / 10 years | 30.97 | 91.43 | 69.57 | 67.67 |
| ≥9 / 10 years | 27.10 | 92.65 | 70.00 | 66.76 |
| ≥10 / 10 years | 23.87 | 93.88 | 71.15 | 66.09 |

Abbreviations: PPP, Palmoplantar pustulosis; PPV, positive predictive value; NPV, negative predictive value.

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**eTable 2.** List of Collected *ICD-10* Codes of Studied Diseases and Comorbidities

| Diseases | ICD-10 code(s) |
|---|---|
| Palmoplantar pustulosis | L403 |
| Psoriasis vulgaris | L400, L408, L409 |
| Pompholyx | L301 |
| Inflammatory arthritis | |
| Psoriatic arthritis | L405, M070-073, M090 |
| Ankylosing spondylitis | M45 |
| Rheumatoid arthritis | M05, M06 |
| Enteropathic arthritis | M074-076, M091-092 |
| Juvenile arthritis | M08 |
| Cardiometabolic disease | |
| Type 2 diabetes mellitus | E11 |
| Hyperlipidemia | E78 |
| Hypertension | I10, I15 |
| Heart failure | I50 |
| Coronary heart disease | I20-22 |
| Myocardial infarction | I21, I22 |
| Cerebrovascular disease | I60-I69 |
| Autoimmune disease | |
| Endocrine autoimmune disease | |
| Type 1 diabetes mellitus | E10 |
| Graves disease | E050 |
| Hashimoto thyroiditis | E063 |
| Inflammatory bowel disease | |
| Crohn disease | K50 |
| Ulcerative colitis | K51 |
| Connective tissue disease | |
| Behcet's disease | M352 |
| Systemic lupus erythematosus | M32 |
| Sjogren's syndrome | M350 |
| Systemic sclerosis | M34 |
| Dermatopolymyositis | M33 |
| Dermatological disease | |
| Vitiligo | L80 |
| Alopecia areata | L63 |
| Hidradenitis suppurativa | L729 |

Abbreviations: ICD-10, International Classification of Diseases, 10th revision.

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**eTable 3.** Period Prevalence of Palmoplantar Pustulosis in Korea (2010-2019)

| Group | Prevalence rate, per 100,000 (95% CI)[a] | |
|---|---|---|
| | Crude | Age-standardized[b] |
| Total | 72.58 (71.84, 73.31) | 58.6 (57.97, 59.23) |
| Male | 70.19 (69.17, 71.21) | 57.06 (56.19, 57.94) |
| Female | 74.96 (73.91, 76.02) | 60.63 (59.71, 61.55) |

Abbreviations: CI, confidence interval.
[a]The period prevalence was calculated assuming that the entire population of Korea in 2015 was at risk.
[b]Age-standardized prevalence rates were estimated using world standard population data (WHO 2000-2025).

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**eTable 4.** Comparison Between Patients With PPP and Age- and Sex-Matched Controls Without PPP in the NHIS-NSC

| Characteristic | PPP (n=918) | Control[a] (n=3,672) | p value[b] |
|---|---|---|---|
| Age, year, mean (SD) | 53.78 (17.93) | 53.78 (17.92) | 1 |
| Sex, n(%) | | | |
| M | 460 (50.11) | 1,840 (50.11) | 1 |
| F | 458 (49.89) | 1,832 (49.89) | |
| Smoking history, n(%) | | | |
| Non-smoker | 362 (54.93) | 1,607 (63.64) | <0.0001 |
| Ex-smoker | 105 (15.93) | 408 (16.16) | |
| Current smoker | 192 (29.14) | 510 (20.2) | |
| Subtotal | 659 (100) | 2,525 (100) | |
| Alcohol consumption, n(%) | | | |
| Light | 76 (11.53) | 310 (12.28) | 0.7251 |
| Moderate | 483 (73.29) | 1,811 (71.72) | |
| Heavy | 100 (15.17) | 404 (16) | |
| Subtotal | 659 (100) | 2,525 (100) | |
| Weight status, n(%) | | | |
| Underweight or normal | 375 (56.9) | 1,609 (63.62) | 0.0066 |
| Overweight | 251 (38.09) | 813 (32.15) | |
| Obese | 33 (5.01) | 107 (4.23) | |
| Subtotal | 659 (100) | 2,529 (100) | |
| Comorbidities, prevalence rate (per 1,000) | | | |
| Psoriasis | 206.97 (190/918) | 10.08 (37/3,672) | <0.0001 |
| Psoriatic arthritis | 4.36 (4/918) | 0.54 (2/3,672) | 0.0169 |
| Ankylosing spondylitis | 10.89 (10/918) | 1.09 (4/3,672) | <0.0001 |
| Rheumatoid arthritis | 52.29 (48/918) | 17.16 (63/3,672) | <0.0001 |
| Enteropathic arthritis | NA | NA | NA |
| Juvenile arthritis | NA | NA | NA |
| Type2 diabetes mellitus | 196.08 (180/918) | 47.93 (176/3,672) | <0.0001 |
| Hyperlipidemia | 286.49 (263/918) | 77.34 (284/3,672) | <0.0001 |
| Hypertension | 355.12 (326/918) | 95.04 (349/3,672) | <0.0001 |
| Heart failure | 18.52 (17/918) | 7.9 (29/3,672) | 0.0039 |
| Coronary heart disease | 86.06 (79/918) | 24.24 (89/3,672) | <0.0001 |
| Myocardial infarction | 5.45 (5/918) | 2.45 (9/3,672) | 0.1733 |
| Cerebrovascular disease | 91.5 (84/918) | 25.87 (95/3,672) | <0.0001 |
| Type1 diabetes mellitus | 13.07 (12/918) | 3.81 (14/3,672) | 0.0008 |
| Graves disease | 15.25 (14/918) | 2.45 (9/3,672) | <0.0001 |
| Hashimoto thyroiditis | 6.54 (6/918) | 1.36 (5/3,672) | 0.0116 |
| Crohn disease | 3.27 (3/918) | 0.54 (2/3,672) | 0.0578 |
| Ulcerative colitis | 5.45 (5/918) | 1.36 (5/3,672) | 0.0326 |
| Behcet's disease | 1.09 (1/918) | 1.36 (5/3,672) | 1 |
| Systemic lupus erythematosus | 0 (0/918) | 0.54 (2/3,672) | 1 |
| Sjogren's syndrome | 0 (0/918) | 0.82 (3/3,672) | 1 |
| Systemic sclerosis | 0 (0/918) | 0 (0/3,672) | NA |
| Dermatopolymyositis | 1.09 (1/918) | 0 (0/3,672) | 0.2 |
| Vitiligo | 9.8 (9/918) | 0.82 (3/3,672) | <0.0001 |
| Alopecia areata | 21.79 (20/918) | 2.18 (8/3,672) | <0.0001 |
| Hidradenitis suppurativa | 0 (0/918) | 0.27 (1/3,672) | 1 |

Abbreviations: NA, not applicable; NHIS-NSC, the National Health Insurance Service-National Sample Cohort; PPP, palmoplantar pustulosis; SD, standard deviation.

[a]1:4 age- and sex- matched control.

[b]P value was calculated by comparing characteristics between two groups using the Student's t-test for continuous variables and the chi-square test or the Fisher's exact test for categorical variables.

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**eTable 5.** Risk of Palmoplantar Pustulosis in Various Conditions Compared With Pompholyx and Psoriasis Vulgaris

| | vs Pompholyx | | | | vs Psoriasis vulgaris | | | |
|---|---|---|---|---|---|---|---|---|
| | Univariable analysis | | Multivariable analysis[a] | | Univariable analysis | | Multivariable analysis[a] | |
| Characteristic | Crude OR (95% CI) | p value | Adjusted OR (95% CI) | p value | Crude OR (95% CI) | p value | Adjusted OR (95% CI) | p value |
| Smoking amount (PY) | | | | | | | | |
| 0 | Reference | | Reference | | Reference | | Reference | |
| < 10 | 0.94 (0.79-1.11) | 0.437 | 1.21 (1.02-1.44) | 0.0318 | 0.85 (0.72-1.01) | 0.0612 | 1.03 (0.87-1.23) | 0.7076 |
| < 20 | 1.14 (0.97-1.33) | 0.1249 | 1.42 (1.2-1.68) | <0.0001 | 0.94 (0.8-1.11) | 0.4604 | 1.19 (1.01-1.4) | 0.0431 |
| < 30 | 1.04 (0.88-1.23) | 0.6642 | 1.3 (1.1-1.54) | 0.0024 | 0.87 (0.74-1.03) | 0.1123 | 1.13 (0.95-1.34) | 0.1626 |
| >= 30 | 1.55 (1.5-1.6) | <0.0001 | 1.51 (1.45-1.58) | <0.0001 | 0.91 (0.88-0.94) | <0.0001 | 1.35 (1.3-1.41) | <0.0001 |
| Abdominal obesity (Waist circumference) | | | | | | | | |
| Normal | Reference | | Reference | | Reference | | Reference | |
| Abdominal obesity | 1.43 (1.4-1.47) | <0.0001 | 1.22 (1.18-1.25) | <0.0001 | 1.05 (1.02-1.07) | 0.0013 | 1.04 (1.02-1.07) | 0.0023 |
| Hemoglobin | | | | | | | | |
| Normal | Reference | | Reference | | Reference | | Reference | |
| Anemia | 0.96 (0.93-1) | 0.0506 | 0.91 (0.88-0.95) | <0.0001 | 1.03 (0.99-1.07) | 0.1708 | 0.88 (0.84-0.91) | 0.1708 |
| LDL-cholesterol | | | | | | | | |
| <100 mg/dL | Reference | | Reference | | Reference | | Reference | |
| <130 mg/dL | 1.01 (0.98-1.04) | 0.5002 | 0.99 (0.96-1.02) | 0.5732 | 1.06 (1.02-1.09) | 0.0007 | 1.06 (1.03-1.09) | 0.0005 |
| <160 mg/dL | 1.14 (1.1-1.19) | <0.0001 | 1.05 (1.01-1.09) | 0.0083 | 1.14 (1.1-1.18) | <0.0001 | 1.13 (1.09-1.17) | <0.0001 |
| <190 mg/dL | 1.25 (1.19-1.32) | <0.0001 | 1.09 (1.04-1.15) | 0.0009 | 1.18 (1.12-1.24) | <0.0001 | 1.15 (1.09-1.21) | <0.0001 |
| >190 mg/dL | 1.33 (1.22-1.44) | <0.0001 | 1.15 (1.06-1.25) | 0.0008 | 1.19 (1.1-1.29) | <0.0001 | 1.14 (1.05-1.24) | 0.0017 |
| HDL-cholesterol | | | | | | | | |
| <40 mg/dL | 1.62 (1.55-1.69) | <0.0001 | 1.26 (1.2-1.32) | <0.0001 | 1.02 (0.98-1.07) | 0.2767 | 1.16 (1.11-1.21) | <0.0001 |
| 40-60 mg/dL | 1.25 (1.21-1.28) | <0.0001 | 1.1 (1.06-1.13) | <0.0001 | 1.01 (0.98-1.04) | 0.5947 | 1.09 (1.05-1.12) | <0.0001 |
| >60 mg/dL | Reference | | Reference | | Reference | | Reference | |
| Aspartate transaminase (AST) | | | | | | | | |
| <40 IU/L | Reference | | Reference | | Reference | | Reference | |
| >40 IU/L | 1.26 (1.2-1.31) | <0.0001 | 1.11 (1.06-1.17) | <0.0001 | 0.82 (0.78-0.86) | <0.0001 | 0.87 (0.83-0.91) | <0.0001 |
| Alanine transaminase (ALT) | | | | | | | | |
| <40 IU/L | Reference | | Reference | | Reference | | Reference | |
| >40 IU/L | 1.17 (1.13-1.22) | <0.0001 | 1.12 (1.08-1.16) | <0.0001 | 0.84 (0.81-0.87) | <0.0001 | 0.96 (0.92-0.99) | <0.0001 |
| γ-glutamyltransferase (GGT) | | | | | | | | |
| Normal | Reference | | Reference | | Reference | | Reference | |
| High | 1.35 (1.3-1.4) | <0.0001 | 1.2 (1.16-1.24) | <0.0001 | 0.82 (0.8-0.85) | <0.0001 | 0.95 (0.91-0.98) | <0.0001 |
| Creatinine | | | | | | | | |
| Low or normal | Reference | | Reference | | Reference | | Reference | |
| High | 1.32 (1.21-1.45) | <0.0001 | 0.92 (0.84-1.02) | 0.107 | 0.68 (0.62-0.75) | <0.0001 | 0.7 (0.64-0.77) | <0.0001 |

Abbreviations: CI, confidence interval; OR, odds ratio; PPP, palmoplantar pustulosis; SD, standard deviation.
[a]Adjusted by age, sex, region of residence, income, and insurance type.

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**eTable 6.** Prevalence of Comorbidities in Palmoplantar Pustulosis, Psoriasis Vulgaris, and Pompholyx

| Comorbidities | Prevalence per 1,000 (No. of patients) | | | | | | |
|---|---|---|---|---|---|---|---|
| | PPP | | | | PSV (n=332,279) | Pompholyx (n=365,415) | p value[b] |
| | PSV(-) (n=28,978) | PSV(+) (n=8,421) | p value[a] | Total (n=37,399) | | | |
| Psoriasis | 0 (0) | 1000 (8,421) | <0.0001 | 225.17 (8,421) | 1000 (332,279) | 3.5 (1,280) | <0.0001 |
| Psoriatic arthritis | 2.31 (67) | 20.07 (169) | <0.0001 | 6.31 (236) | 11.49 (3,817) | 0.57 (209) | <0.0001 |
| Ankylosing spondylitis | 4.14 (120) | 9.86 (83) | <0.0001 | 5.43 (203) | 4.37 (1,451) | 2.36 (863) | <0.0001 |
| Rheumatoid arthritis | 30.89 (895) | 33.25 (280) | 0.273 | 31.42 (1,175) | 29.29 (9,732) | 23.35 (8,534) | <0.0001 |
| Enteropathic arthritis | 0.07 (2) | 0.24 (2) | 0.2206 | 0.11 (4) | 0.08 (25) | 0.03 (11) | 0.0142 |
| Juvenile arthritis | 0.1 (3) | 0.24 (2) | 0.3419 | 0.13 (5) | 0.21 (70) | 0.21 (76) | 0.6086 |
| Type2 diabetes mellitus | 156.33 (4,530) | 195.11 (1,643) | <0.0001 | 165.06 (6,173) | 153.15 (50,890) | 87.64 (32,026) | <0.0001 |
| Hyperlipidemia | 294.57 (8,536) | 365.63 (3,079) | <0.0001 | 310.57 (11,615) | 277.6 (92,240) | 216.83 (79,233) | <0.0001 |
| Hypertension | 290.46 (8,417) | 345.68 (2,911) | <0.0001 | 302.9 (11,328) | 294.58 (97,884) | 189.73 (69,330) | <0.0001 |
| Heart failure | 17.01 (493) | 19.59 (165) | 0.1128 | 17.59 (658) | 19.48 (6,473) | 8.98 (3,280) | <0.0001 |
| Coronary heart disease | 65.5 (1,898) | 76.71 (646) | 0.0003 | 68.02 (2,544) | 65.04 (21,612) | 38.75 (14,159) | <0.0001 |
| Myocardial infarction | 8.94 (259) | 10.81 (91) | 0.117 | 9.36 (350) | 9.51 (3,159) | 4.57 (1,670) | <0.0001 |
| Cerebrovascular disease | 72.92 (2,113) | 77.31 (651) | 0.1753 | 73.91 (2,764) | 73.73 (24,500) | 42.54 (15,544) | <0.0001 |
| Type1 diabetes mellitus | 8.28 (240) | 9.98 (84) | 0.1401 | 8.66 (324) | 10.28 (3,417) | 4.44 (1,623) | <0.0001 |
| Graves disease | 8.8 (255) | 13.18 (111) | 0.0003 | 9.79 (366) | 6.07 (2,016) | 7.46 (2,725) | <0.0001 |
| Hashimoto thyroiditis | 6.76 (196) | 6.18 (52) | 0.5579 | 6.63 (248) | 5.37 (1,783) | 7.28 (2,661) | <0.0001 |
| Crohn disease | 1.21 (35) | 1.31 (11) | 0.8205 | 1.23 (46) | 1.04 (344) | 0.78 (284) | 0.0002 |
| Ulcerative colitis | 2.48 (72) | 2.49 (21) | 0.9882 | 2.49 (93) | 2.58 (856) | 2.15 (785) | 0.001 |
| Behcet's disease | 1.62 (47) | 1.66 (14) | 0.9352 | 1.63 (61) | 1.17 (388) | 1.02 (373) | 0.0018 |
| Systemic lupus erythematosus | 0.97 (28) | 0.95 (8) | 0.9662 | 0.96 (36) | 1.41 (467) | 1.03 (375) | <0.0001 |
| Sjogren's syndrome | 1.35 (39) | 1.07 (9) | 0.5319 | 1.28 (48) | 1.52 (506) | 1.52 (557) | 0.5075 |
| Systemic sclerosis | 0.1 (3) | 0.12 (1) | 1 | 0.11 (4) | 0.43 (142) | 0.2 (73) | <0.0001 |
| Dermatopolymyositis | 0.28 (8) | 0.36 (3) | 0.7193 | 0.29 (11) | 0.42 (139) | 0.25 (91) | 0.0005 |
| Vitiligo | 9.49 (275) | 16.51 (139) | <0.0001 | 11.07 (414) | 19.41 (6,449) | 5.25 (1,918) | <0.0001 |
| Alopecia areata | 23.6 (684) | 20.78 (175) | 0.128 | 22.97 (859) | 27.81 (9,240) | 23.14 (8,455) | <0.0001 |
| Hidradenitis suppurativa | 0.9 (26) | 0.83 (7) | 0.8576 | 0.88 (33) | 1.02 (340) | 0.94 (345) | 0.4782 |

Abbreviations: PPP, palmoplantar pustulosis; PSV, psoriasis vulgaris.

[a]P value was calculated by comparing two groups (PPP without PSV and PPP with PSV group) using the chi-square test or the Fisher's exact test.

[b]P value was calculated by comparing three groups (PPP, PSV, and pompholyx group) using the chi-square test or the Fisher's exact test.

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**eTable 7.** Comparison Between Patients With Palmoplantar Pustulosis and Propensity Score–Matched Controls With Pompholyx[a]

| Characteristic | PPP (n=31,659) | Pompholyx (n=158,295) | p value[b] |
|---|---|---|---|
| Age, year, mean (SD) | 46.37 (16.32) | 46.38 (16.33) | 0.8854 |
| Age group, years, n(%) | | | |
| 0 - 19 | 2,363 (7.46) | 11,793 (7.45) | 1 |
| 20 - 39 | 7,413 (23.42) | 37,076 (23.42) | |
| 40 - 59 | 15,359 (48.51) | 76,756 (48.49) | |
| 60 - 79 | 6,249 (19.74) | 31,294 (19.77) | |
| 80 - | 275 (0.87) | 1,376 (0.87) | |
| Sex, n(%) | | | |
| M | 14,869 (46.97) | 74,311 (46.94) | 0.9443 |
| F | 16,790 (53.03) | 83,984 (53.06) | |
| Residence, n(%) | | | |
| Urban | 15,460 (48.83) | 77,187 (48.76) | 0.9216 |
| Suburban | 13,672 (43.19) | 68,539 (43.3) | |
| Rural | 2,527 (7.98) | 12,569 (7.94) | |
| Income, n(%) | | | |
| Low | 8,106 (25.6) | 40,320 (25.47) | 0.999 |
| Middle | 8,222 (25.97) | 41,255 (26.06) | |
| High | 15,331 (48.43) | 76,720 (48.47) | |
| Insurance type, n(%) | | | |
| Health insurance | 30,675 (96.89) | 153,551 (97) | 0.291 |
| Medical aid | 984 (3.11) | 4,744 (3) | |
| Comorbidities | Prevalence rate, per 1,000 (No. of patients) | | |
| Psoriasis | 222.65 (7,049) | 4.23 (670) | |
| Psoriatic arthritis | 6.41 (203) | 0.78 (124) | |
| Ankylosing spondylitis | 5.27 (167) | 2.78 (440) | |
| Rheumatoid arthritis | 28.87 (914) | 29.6 (4,685) | |
| Enteropathic arthritis | 0.13 (4) | 0.03 (5) | |
| Juvenile arthritis | 0.16 (5) | 0.17 (27) | |
| Type2 diabetes mellitus | 144.16 (4,564) | 116.52 (18,444) | |
| Hyperlipidemia | 289.33 (9,160) | 286.79 (45,398) | |
| Hypertension | 264.22 (8,365) | 252.38 (39,951) | |
| Heart failure | 13.05 (413) | 11.23 (1,778) | |
| Coronary heart disease | 55.5 (1,757) | 52.25 (8,271) | |
| Myocardial infarction | 7.61 (241) | 6.18 (979) | |
| Cerebrovascular disease | 58.78 (1,861) | 55.97 (8,859) | |
| Type1 diabetes mellitus | 7.68 (243) | 5.76 (912) | |
| Graves disease | 9.82 (311) | 7.8 (1,235) | |
| Hashimoto thyroiditis | 7.04 (223) | 7.68 (1,215) | |
| Crohn disease | 1.39 (44) | 0.8 (127) | |
| Ulcerative colitis | 2.62 (83) | 2.29 (362) | |
| Behcet's disease | 1.67 (53) | 1.16 (183) | |
| Systemic lupus erythematosus | 1.04 (33) | 1.02 (161) | |
| Sjogren's syndrome | 1.3 (41) | 1.78 (282) | |
| Systemic sclerosis | 0.13 (4) | 0.27 (43) | |
| Dermatopolymyositis | 0.28 (9) | 0.29 (46) | |
| Vitiligo | 10.71 (339) | 5.65 (894) | |
| Alopecia areata | 25.08 (794) | 23.84 (3,773) | |
| Hidradenitis suppurativa | 0.98 (31) | 0.96 (152) | |

Abbreviations: PPP, palmoplantar pustulosis; SD, standard deviation.
[a]Propensity score matching by age, sex, region of residence, income, and insurance type.
[b]P value was calculated by comparing demographic covariates between two groups using the Student's t-test for continuous variables and the chi-square test or the Fisher's exact test for categorical variables.

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**eTable 8.** Comparison Between Patients With Palmoplantar Pustulosis and Propensity Score–Matched Controls With Psoriasis Vulgaris[a]

| Characteristics | PPP (n=32,558) | Psoriasis vulgaris (n=162,790) | p value[b] |
|---|---|---|---|
| Age, year, mean (SD) | 48.35 (17.07) | 48.39 (17.05) | 0.7164 |
| Age group, years, n(%) | | | |
| 0 - 19 | 2,036 (6.25) | 9,973 (6.13) | 0.9272 |
| 20 - 39 | 7,376 (22.65) | 37,156 (22.82) | |
| 40 - 59 | 14,540 (44.66) | 72,536 (44.56) | |
| 60 - 79 | 7,886 (24.22) | 39,481 (24.25) | |
| 80 - | 720 (2.21) | 3,644 (2.24) | |
| Sex, n(%) | | | |
| M | 17,286 (53.09) | 86,651 (53.23) | 0.654 |
| F | 15,272 (46.91) | 76,139 (46.77) | |
| Residence, n(%) | | | |
| Urban | 15,674 (48.14) | 78,620 (48.3) | 0.5731 |
| Suburban | 14,007 (43.02) | 70,073 (43.05) | |
| Rural | 2,877 (8.84) | 14,097 (8.66) | |
| Income, n(%) | | | |
| Low | 8,240 (25.31) | 40,887 (25.12) | 0.9641 |
| Middle | 8,517 (26.16) | 42,569 (26.15) | |
| High | 15,801 (48.53) | 79,334 (48.73) | |
| Insurance type, n(%) | | | |
| Health insurance | 31,150 (95.68) | 156,095 (95.89) | 0.08 |
| Medical aid | 1,408 (4.32) | 6,695 (4.11) | |
| Comorbidities | Prevalence rate, per 1,000 (No. of patients) | | |
| Psoriatic arthritis | 6.08 (198) | 11.79 (1,920) | |
| Ankylosing spondylitis | 5.71 (186) | 4.21 (686) | |
| Rheumatoid arthritis | 29.39 (957) | 31.57 (5,140) | |
| Enteropathic arthritis | 0.12 (4) | 0.08 (13) | |
| Juvenile arthritis | 0.15 (5) | 0.22 (36) | |
| Type2 diabetes mellitus | 160.94 (5,240) | 159.36 (25,943) | |
| Hyperlipidemia | 299.04 (9,736) | 299.82 (48,807) | |
| Hypertension | 295.41 (9,618) | 306.21 (49,848) | |
| Heart failure | 17.08 (556) | 18.45 (3,004) | |
| Coronary heart disease | 67.54 (2,199) | 65.83 (10,716) | |
| Myocardial infarction | 9.89 (322) | 9.5 (1,547) | |
| Cerebrovascular disease | 71.84 (2,339) | 72.05 (11,729) | |
| Type1 diabetes mellitus | 8.82 (287) | 10.41 (1,694) | |
| Graves disease | 9.15 (298) | 6.57 (1,069) | |
| Hashimoto thyroiditis | 6.39 (208) | 6.55 (1,067) | |
| Crohn disease | 1.32 (43) | 0.93 (152) | |
| Ulcerative colitis | 2.64 (86) | 2.67 (434) | |
| Behcet's disease | 1.66 (54) | 1.29 (210) | |
| Systemic lupus erythematosus | 0.98 (32) | 1.6 (260) | |
| Sjogren's syndrome | 1.14 (37) | 1.68 (273) | |
| Systemic sclerosis | 0.12 (4) | 0.42 (69) | |
| Dermatopolymyositis | 0.31 (10) | 0.4 (65) | |
| Vitiligo | 10.75 (350) | 20.93 (3,408) | |
| Alopecia areata | 23.37 (761) | 27.02 (4,399) | |
| Hidradenitis suppurativa | 0.89 (29) | 1.09 (178) | |

Abbreviations: PPP, palmoplantar pustulosis; SD, standard deviation.
[a]Propensity score matching by age, sex, region of residence, income, and insurance type
[b]P value was calculated by comparing demographic covariates between two groups using the Student's t-test for continuous variables and the chi-square test or the Fisher's exact test for categorical variables.

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**eTable 9.** Subgroup Analysis Comparing Patients With Palmoplantar Pustulosis With Patients With Pompholyx and Psoriasis Vulgaris by Sex and Age

| Comorbidities | PPP vs Pompholyx | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Male | | Female | | <20 years | | 20-59 years | | ≥60 years | |
| | aOR (95% CI)[a] | p value | aOR (95% CI)[a] | p value | aOR (95% CI)[a] | p value | aOR (95% CI)[a] | p value | aOR (95% CI)[a] | p value |
| Psoriasis | 61 (55.74-66.77) | <0.0001 | 89.04 (80.42-98.58) | <0.0001 | 39.37 (22.91-67.66) | <0.0001 | 79.54 (62.02-102.01) | <0.0001 | 100.38 (84.09-119.81) | <0.0001 |
| Psoriatic arthritis | 7.48 (5.42-10.32) | <0.0001 | 8.43(6.43-11.06) | <0.0001 | NA | NA | 15.67 (3.45-71.09) | 0.0004 | 19.85 (10.54-37.41) | <0.0001 |
| Ankylosing spondylitis | 1.94 (1.56-2.41) | <0.0001 | 1.85 (1.38-2.46) | <0.0001 | NA | NA | 1.41 (0.56-3.51) | 0.4634 | 2.96 (2.07-4.24) | <0.0001 |
| Rheumatoid arthritis | 1.03 (0.91-1.17) | 0.6479 | 1.01 (0.94-1.1) | 0.7274 | NA | NA | 1.16 (0.64-2.07) | 0.6298 | 1.41 (1.1-1.81) | 0.007 |
| Enteropathic arthritis | 3.09 (0.59-16.25) | 0.1821 | 1.42(0.16-12.31) | 0.7521 | NA | NA | NA | NA | NA | NA |
| Juvenile arthritis | 1.93 (0.55-6.81) | 0.3087 | NA | NA | NA | NA | NA | NA | 7.55 (0.67-85.63) | 0.1027 |
| Type2 diabetes mellitus | 1.2 (1.14-1.25) | <0.0001 | 1.5 (1.43-1.58) | <0.0001 | 1.6 (0.49-5.27) | 0.4398 | 1.78 (1.2-2.65) | 0.0046 | 1.36 (1.16-1.59) | 0.0001 |
| Hyperlipidemia | 0.97 (0.94-1.01) | 0.1814 | 1.1 (1.06-1.15) | <0.0001 | 1.75 (0.87-3.53) | 0.1168 | 1.21 (0.95-1.54) | 0.117 | 1.11 (1.01-1.23) | 0.035 |
| Hypertension | 1.04 (1-1.08) | 0.0849 | 1.16 (1.11-1.21) | <0.0001 | 0.85 (0.26-2.76) | 0.7862 | 1.56 (1.16-2.1) | 0.0034 | 1.13 (1.01-1.27) | 0.0396 |
| Heart failure | 1.11 (0.96-1.27) | 0.1515 | 1.18 (1.03-1.35) | 0.0196 | NA | NA | 0.73 (0.1-5.39) | 0.758 | 2.11 (1.22-3.65) | 0.0073 |
| Coronary heart disease | 1.05 (0.98-1.12) | 0.1433 | 1.19 (1.1-1.29) | <0.0001 | NA | NA | 0.25 (0.04-1.81) | 0.1697 | 1.18 (0.84-1.65) | 0.3436 |
| Myocardial infarction | 1.12 (0.97-1.3) | 0.1333 | 1.35 (1.01-1.81) | 0.0443 | NA | NA | NA | NA | 0.38 (0.09-1.55) | 0.1775 |
| Cerebrovascular disease | 1.06 (0.99-1.14) | 0.0752 | 1.1 (1.03-1.18) | 0.0061 | 2.09 (0.26-16.83) | 0.4875 | 1.19 (0.52-2.73) | 0.6771 | 1.04 (0.73-1.47) | 0.8346 |
| Type1 diabetes mellitus | 1.18 (0.98-1.41) | 0.0746 | 1.54 (1.27-1.87) | <0.0001 | NA | NA | 2.19 (0.66-7.25) | 0.2006 | 1.05 (0.49-2.27) | 0.9034 |
| Graves disease | 0.92 (0.71-1.2) | 0.5451 | 1.39 (1.2-1.6) | <0.0001 | 1.64 (0.39-6.98) | 0.5002 | 0.78 (0.38-1.58) | 0.4905 | 1.33 (0.97-1.82) | 0.0731 |
| Hashimoto thyroiditis | 0.84 (0.56-1.25) | 0.382 | 0.94 (0.81-1.09) | 0.4051 | NA | NA | 0.87 (0.41-1.85) | 0.7138 | 1.04 (0.72-1.5) | 0.8444 |
| Crohn disease | 1.75 (1.09-2.8) | 0.0198 | 1.38 (0.71-2.7) | 0.3468 | 2.13 (0.26-17.5) | 0.4831 | 1.33 (0.41-4.33) | 0.6356 | 3.21 (1.6-6.46) | 0.0011 |
| Ulcerative colitis | 1 (0.73-1.37) | 0.9786 | 1.09 (0.75-1.58) | 0.6503 | 3.7 (0.43-31.94) | 0.2347 | 0.56 (0.14-2.3) | 0.4234 | 1.68 (1-2.84) | 0.0497 |
| Behcet's disease | 1.39 (0.87-2.23) | 0.1672 | 1.3 (0.88-1.93) | 0.188 | NA | NA | 1.31 (0.31-5.49) | 0.7145 | 1.46 (0.58-3.67) | 0.4191 |
| Systemic lupus erythematosus | 0.29 (0.04-2.17) | 0.2289 | 1.21 (0.82-1.79) | 0.3327 | NA | NA | 0.64 (0.09-4.67) | 0.6582 | 1.37 (0.55-3.4) | 0.5047 |
| Sjogren's syndrome | 0.45 (0.19-1.02) | 0.0565 | 0.73 (0.51-1.04) | 0.077 | NA | NA | NA | NA | 2.28 (1.03-5.04) | 0.0412 |
| Systemic sclerosis | NA | NA | 0.55 (0.2-1.53) | 0.255 | NA | NA | NA | NA | NA | NA |
| Dermatopolymyositis | 0.62 (0.19-2.04) | 0.4316 | 1.22 (0.52-2.89) | 0.6477 | NA | NA | NA | NA | 2.7 (0.6-12.28) | 0.1976 |
| Vitiligo | 1.77 (1.45-2.16) | <0.0001 | 1.94 (1.65-2.27) | <0.0001 | 2.53 (0.74-8.69) | 0.1398 | 1.55 (0.81-2.96) | 0.1868 | 2.62 (1.85-3.7) | <0.0001 |
| Alopecia areata | 0.84 (0.75-0.95) | 0.0047 | 1.15 (1.03-1.29) | 0.0103 | 1.76 (0.91-3.41) | 0.0957 | 1.14 (0.85-1.53) | 0.3707 | 0.93 (0.77-1.13) | 0.4662 |
| Hidradenitis suppurativa | 0.78 (0.43-1.41) | 0.4115 | 1.01 (0.59-1.73) | 0.9741 | 2.25 (0.27-18.76) | 0.4549 | 0.48 (0.07-3.51) | 0.4706 | 1.64 (0.58-4.63) | 0.3513 |

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**eTable 9.** Subgroup Analysis Comparing Patients With Palmoplantar Pustulosis With Patients With Pompholyx and Psoriasis Vulgaris by Sex and Age (continued)

| | PPP vs Psoriasis vulgaris | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Male | | Female | | <20 years | | 20-59 years | | ≥60 years | |
| Comorbidities | aOR (95% CI)[a] | p value | aOR (95% CI)[a] | p value | aOR (95% CI)[a] | p value | aOR (95% CI)[a] | p value | aOR (95% CI)[a] | p value |
| Psoriasis | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Psoriatic arthritis | 0.44 (0.35-0.55) | <0.0001 | 0.64 (0.53-0.78) | <0.0001 | NA | NA | 0.17 (0.05-0.53) | 0.0022 | 0.39 (0.26-0.59) | <0.0001 |
| Ankylosing spondylitis | 1.36 (1.11-1.67) | 0.0031 | 1.36 (1.03-1.81) | 0.0327 | NA | NA | 0.79 (0.32-1.94) | 0.6033 | 2.16 (1.52-3.07) | <0.0001 |
| Rheumatoid arthritis | 0.89 (0.79-1.01) | 0.0625 | 1.02 (0.95-1.11) | 0.5588 | NA | NA | 0.84 (0.47-1.52) | 0.5714 | 1.09 (0.85-1.4) | 0.4921 |
| Enteropathic arthritis | 1.95 (0.43-8.81) | 0.3863 | 0.61 (0.08-4.72) | 0.635 | NA | NA | NA | NA | 2.35 (0.27-20.21) | 0.438 |
| Juvenile arthritis | 2.01 (0.58-6.89) | 0.2691 | NA | NA | NA | NA | NA | NA | 7.18 (0.64-80.12) | 0.1094 |
| Type2 diabetes mellitus | 1.05 (1.01-1.1) | 0.0253 | 1.15 (1.1-1.21) | <0.0001 | 1.18 (0.36-3.89) | 0.7899 | 1.31 (0.88-1.94) | 0.1871 | 1.01 (0.87-1.19) | 0.8628 |
| Hyperlipidemia | 1.06 (1.02-1.1) | 0.0048 | 1.11 (1.07-1.16) | <0.0001 | 1.16 (0.58-2.33) | 0.6718 | 0.98 (0.77-1.25) | 0.8914 | 0.97 (0.88-1.07) | 0.5036 |
| Hypertension | 0.97 (0.93-1.01) | 0.1443 | 0.96 (0.92-1.01) | 0.097 | 1.16 (0.35-3.81) | 0.8042 | 1.27 (0.94-1.71) | 0.1137 | 0.91 (0.81-1.02) | 0.1155 |
| Heart failure | 0.91 (0.8-1.04) | 0.1683 | 0.95 (0.83-1.09) | 0.4735 | NA | NA | 0.47 (0.06-3.47) | 0.461 | 1.29 (0.76-2.2) | 0.353 |
| Coronary heart disease | 1.13 (1.06-1.2) | 0.0001 | 1.1 (1.02-1.19) | 0.0151 | NA | NA | 0.27 (0.04-1.97) | 0.1982 | 1.17 (0.84-1.64) | 0.3601 |
| Myocardial infarction | 1.09 (0.95-1.26) | 0.2267 | 1.06 (0.8-1.4) | 0.7034 | NA | NA | NA | NA | 0.45 (0.11-1.84) | 0.2652 |
| Cerebrovascular disease | 1.03 (0.96-1.1) | 0.4095 | 1.09 (1.02-1.17) | 0.0149 | 2.25 (0.26-19.67) | 0.4642 | 1.27 (0.55-2.92) | 0.5796 | 0.94 (0.66-1.33) | 0.7122 |
| Type1 diabetes mellitus | 0.91 (0.77-1.08) | 0.2721 | 0.96 (0.8-1.16) | 0.7018 | NA | NA | 1.24 (0.38-4.05) | 0.7176 | 0.64 (0.3-1.38) | 0.2569 |
| Graves disease | 1.1 (0.85-1.43) | 0.4611 | 1.51 (1.31-1.75) | <0.0001 | 1.63 (0.36-7.37) | 0.5275 | 0.73 (0.36-1.48) | 0.3802 | 1.32 (0.96-1.82) | 0.0877 |
| Hashimoto thyroiditis | 0.97 (0.65-1.44) | 0.8706 | 1.07 (0.92-1.25) | 0.3994 | NA | NA | 0.77 (0.36-1.65) | 0.4947 | 1.17 (0.8-1.7) | 0.4221 |
| Crohn disease | 1.58 (1-2.5) | 0.0494 | 1 (0.51-1.94) | 0.9884 | 1.26 (0.16-10.01) | 0.8248 | 0.87 (0.27-2.81) | 0.8124 | 2.4 (1.22-4.75) | 0.0116 |
| Ulcerative colitis | 1.05 (0.77-1.44) | 0.744 | 0.83 (0.57-1.2) | 0.3148 | 1.89 (0.23-15.52) | 0.554 | 0.44 (0.11-1.79) | 0.2501 | 1.6 (0.95-2.71) | 0.0791 |
| Behcet's disease | 1.61 (1.02-2.56) | 0.0413 | 1.11 (0.75-1.64) | 0.6158 | NA | NA | 1.3 (0.3-5.6) | 0.7267 | 1.11 (0.44-2.79) | 0.8226 |
| Systemic lupus erythematosus | 0.12 (0.02-0.88) | 0.0366 | 0.81 (0.55-1.19) | 0.2739 | NA | NA | 0.29 (0.04-2.08) | 0.217 | 0.69 (0.28-1.71) | 0.4223 |
| Sjogren's syndrome | 0.52 (0.23-1.18) | 0.1157 | 0.75 (0.53-1.07) | 0.1107 | NA | NA | NA | NA | 1.99 (0.88-4.48) | 0.0984 |
| Systemic sclerosis | NA | NA | 0.4 (0.15-1.11) | 0.0773 | NA | NA | NA | NA | NA | NA |
| Dermatopolymyositis | 0.58 (0.18-1.87) | 0.3631 | 0.65 (0.28-1.51) | 0.3192 | NA | NA | NA | NA | 1.98 (0.44-8.96) | 0.3764 |
| Vitiligo | 0.59 (0.49-0.7) | <0.0001 | 0.5 (0.43-0.58) | <0.0001 | 0.42 (0.13-1.35) | 0.1473 | 0.31 (0.16-0.58) | 0.0002 | 0.62 (0.44-0.85) | 0.0037 |
| Alopecia areata | 0.85 (0.76-0.95) | 0.0061 | 0.89 (0.79-0.99) | 0.0284 | 1.16 (0.6-2.24) | 0.6618 | 0.82 (0.61-1.09) | 0.169 | 0.77 (0.64-0.93) | 0.0063 |
| Hidradenitis suppurativa | 0.67 (0.37-1.2) | 0.18 | 1.04 (0.6-1.79) | 0.9025 | 3.69 (0.4-34.46) | 0.2525 | 0.69 (0.09-5.18) | 0.7172 | 1.01 (0.36-2.82) | 0.9792 |

Abbreviations: aOR, adjusted odds ratio; CI, confidence interval; NA, not applicable; PPP, palmoplantar pustulosis; SD, standard deviation.
[a]Adjusted by age, sex, region of residence, income, and insurance type.

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**eTable 10.** Subgroup Analysis Comparing Patients With Palmoplantar Pustulosis With Propensity Score–Matched Patients With Pompholyx and Psoriasis Vulgaris by Sex and Age[a]

| | PPP vs Pompholyx | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Male | | Female | | <20 years | | 20-59 years | | ≥60 years | |
| Comorbidities | aOR (95% CI)[b] | p value | aOR (95% CI)[b] | p value | aOR (95% CI)[b] | p value | aOR (95% CI)[b] | p value | aOR (95% CI)[b] | p value |
| Psoriasis | 59.41 (51.53-68.51) | <0.0001 | 77.15 (65.36-91.07) | <0.0001 | NA | NA | 109.73 (48.99-245.77) | <0.0001 | 121.27 (76.74-191.65) | <0.0001 |
| Psoriatic arthritis | 7.31 (4.92-10.84) | <0.0001 | 7.97 (5.63-11.29) | <0.0001 | NA | NA | NA | NA | 62.24 (7.64-506.74) | 0.0001 |
| Ankylosing spondylitis | 1.76 (1.36-2.27) | <0.0001 | 2.07 (1.47-2.93) | <0.0001 | NA | NA | 1.66 (0.39-6.95) | 0.4914 | 2.17 (1.37-3.44) | 0.001 |
| Rheumatoid arthritis | 1 (0.86-1.16) | 0.9619 | 1.01 (0.92-1.11) | 0.8749 | NA | NA | 1.32 (0.59-2.99) | 0.4993 | 1.48 (1.09-2) | 0.0131 |
| Enteropathic arthritis | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Juvenile arthritis | 1.48 (0.28-7.75) | 0.6406 | NA | NA | NA | NA | NA | NA | NA | NA |
| Type2 diabetes mellitus | 1.19 (1.12-1.25) | <0.0001 | 1.39 (1.3-1.47) | <0.0001 | NA | NA | 1.37 (0.66-2.82) | 0.3956 | 1.36 (1.09-1.7) | 0.0062 |
| Hyperlipidemia | 0.99 (0.94-1.04) | 0.627 | 1.01 (0.97-1.06) | 0.6306 | 0.93 (0.18-4.93) | 0.9331 | 1.09 (0.77-1.52) | 0.6365 | 1.02 (0.9-1.15) | 0.7442 |
| Hypertension | 1.07 (1.02-1.13) | 0.0054 | 1.06 (1.01-1.12) | 0.0198 | NA | NA | 1.38 (0.83-2.31) | 0.2173 | 1.03 (0.89-1.2) | 0.6842 |
| Heart failure | 1.26 (1.06-1.5) | 0.0081 | 1.01 (0.85-1.21) | 0.8972 | NA | NA | 0.51 (0.04-6.16) | 0.5974 | 1.62 (0.78-3.37) | 0.1966 |
| Coronary heart disease | 1.02 (0.95-1.11) | 0.5803 | 1.1 (1-1.21) | 0.0436 | NA | NA | 0.38 (0.03-4.32) | 0.4343 | 0.94 (0.61-1.44) | 0.7707 |
| Myocardial infarction | 1.05 (0.88-1.26) | 0.5874 | 1.59 (1.07-2.35) | 0.0208 | NA | NA | NA | NA | 0.21 (0.03-1.69) | 0.1415 |
| Cerebrovascular disease | 1.07 (0.98-1.16) | 0.1238 | 1.07 (0.98-1.16) | 0.1195 | NA | NA | 0.74 (0.23-2.37) | 0.6174 | 1.06 (0.7-1.61) | 0.7915 |
| Type1 diabetes mellitus | 1.19 (0.95-1.47) | 0.125 | 1.52 (1.2-1.93) | 0.0005 | NA | NA | 1.6 (0.25-10.18) | 0.6192 | 1.65 (0.6-4.51) | 0.3306 |
| Graves disease | 0.88 (0.65-1.17) | 0.3756 | 1.25 (1.06-1.48) | 0.0086 | 1.15 (0.01-97.91) | 0.9524 | 1.42 (0.58-3.46) | 0.4427 | 1.37 (0.93-2.02) | 0.1158 |
| Hashimoto thyroiditis | 0.77 (0.48-1.24) | 0.2781 | 1.01 (0.86-1.2) | 0.9026 | NA | NA | 0.81 (0.31-2.12) | 0.6703 | 1.12 (0.74-1.72) | 0.5907 |
| Crohn disease | 1.94 (1.12-3.37) | 0.0176 | 1.35 (0.65-2.82) | 0.4165 | NA | NA | 3.07 (0.38-24.78) | 0.2921 | 10.37 (2.11-51.06) | 0.004 |
| Ulcerative colitis | 1.16 (0.81-1.66) | 0.4207 | 1.23 (0.8-1.89) | 0.3413 | NA | NA | 1.14 (0.19-7) | 0.8894 | 1.72 (0.84-3.53) | 0.1369 |
| Behcet's disease | 1.39 (0.77-2.51) | 0.2781 | 1.4 (0.89-2.2) | 0.1493 | NA | NA | 1.56 (0.15-16.5) | 0.7136 | 1.7 (0.45-6.52) | 0.4369 |
| Systemic lupus erythematosus | 0.3 (0.04-2.4) | 0.2584 | 1.16 (0.75-1.8) | 0.5014 | NA | NA | NA | NA | 1.03 (0.34-3.12) | 0.9619 |
| Sjogren's syndrome | 0.45 (0.18-1.14) | 0.0922 | 0.77 (0.51-1.15) | 0.1945 | NA | NA | NA | NA | 3.02 (0.93-9.82) | 0.0663 |
| Systemic sclerosis | NA | NA | 0.88 (0.29-2.66) | 0.8256 | NA | NA | NA | NA | NA | NA |
| Dermatopolymyositis | 0.57 (0.13-2.6) | 0.4673 | 1.19 (0.43-3.26) | 0.7429 | NA | NA | NA | NA | 9.45 (0.64-138.71) | 0.1013 |
| Vitiligo | 1.76 (1.38-2.26) | <0.0001 | 2.02 (1.67-2.44) | <0.0001 | NA | NA | 1.79 (0.79-4.08) | 0.1635 | 2.46 (1.51-4.02) | 0.0003 |
| Alopecia areata | 0.84 (0.74-0.96) | 0.0101 | 1.22 (1.08-1.38) | 0.0014 | 2.18 (0.31-15.52) | 0.4369 | 1.03 (0.71-1.48) | 0.8958 | 0.99 (0.79-1.24) | 0.9337 |
| Hidradenitis suppurativa | 0.87 (0.43-1.76) | 0.6958 | 0.9 (0.49-1.66) | 0.7402 | NA | NA | 0.65 (0.06-6.98) | 0.7244 | 1.45 (0.27-7.84) | 0.6686 |

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**eTable 10.** Subgroup Analysis Comparing Patients With Palmoplantar Pustulosis With Propensity Score–Matched Patients With Pompholyx and Psoriasis Vulgaris by Sex and Age (continued)

| | PPP vs Psoriasis vulgaris | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Male | | Female | | <20 years | | 20-59 years | | ≥60 years | |
| Comorbidities | aOR (95% CI)[b] | p value | aOR (95% CI)[b] | p value | aOR (95% CI)[b] | p value | aOR (95% CI)[b] | p value | aOR (95% CI)[b] | p value |
| Psoriasis | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Psoriatic arthritis | 0.41 (0.33-0.53) | <0.0001 | 0.57 (0.45-0.72) | <0.0001 | NA | NA | 0.16 (0.05-0.54) | 0.0031 | 0.34 (0.21-0.55) | <0.0001 |
| Ankylosing spondylitis | 1.28 (1.02-1.61) | 0.0306 | 1.45 (1.04-2.01) | 0.0286 | NA | NA | 0.94 (0.33-2.68) | 0.9093 | 2.24 (1.39-3.6) | 0.0009 |
| Rheumatoid arthritis | 0.88 (0.78-1) | 0.0566 | 1.01 (0.92-1.11) | 0.857 | NA | NA | 0.78 (0.36-1.72) | 0.5403 | 1.2 (0.89-1.62) | 0.2349 |
| Enteropathic arthritis | 1.77 (0.27-11.69) | 0.5543 | 0.47 (0.04-5.23) | 0.5373 | NA | NA | NA | NA | 3.13 (0.09-108.65) | 0.5282 |
| Juvenile arthritis | 3.58 (0.51-25.07) | 0.1993 | NA | NA | NA | NA | NA | NA | NA | NA |
| Type2 diabetes mellitus | 1.01 (0.96-1.06) | 0.7265 | 1.03 (0.96-1.09) | 0.4132 | NA | NA | 1.16 (0.61-2.24) | 0.6504 | 0.98 (0.8-1.19) | 0.8123 |
| Hyperlipidemia | 0.98 (0.94-1.02) | 0.3987 | 0.99 (0.94-1.03) | 0.5344 | 1.15 (0.19-6.92) | 0.8761 | 0.82 (0.6-1.11) | 0.1997 | 0.93 (0.83-1.05) | 0.2455 |
| Hypertension | 0.93 (0.89-0.97) | 0.0009 | 0.94 (0.89-0.99) | 0.0215 | 0.83 (0.06-11.06) | 0.8872 | 1.3 (0.86-1.98) | 0.2168 | 0.92 (0.8-1.06) | 0.2493 |
| Heart failure | 0.87 (0.76-1.01) | 0.059 | 0.93 (0.79-1.1) | 0.3802 | NA | NA | NA | NA | 1.59 (0.81-3.14) | 0.178 |
| Coronary heart disease | 1.07 (1-1.15) | 0.05 | 0.98 (0.89-1.08) | 0.7097 | NA | NA | 0.28 (0.03-2.51) | 0.2571 | 1.21 (0.79-1.83) | 0.3812 |
| Myocardial infarction | 0.97 (0.83-1.13) | 0.6754 | 0.9 (0.63-1.27) | 0.5443 | NA | NA | NA | NA | 0.66 (0.14-3.17) | 0.6033 |
| Cerebrovascular disease | 1.02 (0.95-1.09) | 0.637 | 1.07 (0.98-1.16) | 0.1382 | NA | NA | 0.83 (0.25-2.72) | 0.7548 | 0.91 (0.6-1.39) | 0.6639 |
| Type1 diabetes mellitus | 0.87 (0.72-1.04) | 0.1215 | 0.98 (0.78-1.23) | 0.8487 | NA | NA | 1.22 (0.02-64.33) | 0.9216 | 0.53 (0.21-1.33) | 0.1756 |
| Graves disease | 1.06 (0.8-1.4) | 0.7087 | 1.47 (1.23-1.75) | <0.0001 | NA | NA | 0.64 (0.27-1.53) | 0.3182 | 1.33 (0.9-1.96) | 0.1511 |
| Hashimoto thyroiditis | 0.87 (0.57-1.34) | 0.5364 | 1.06 (0.89-1.27) | 0.5084 | NA | NA | 0.71 (0.27-1.86) | 0.4879 | 1.08 (0.7-1.67) | 0.724 |
| Crohn disease | 2.07 (1.21-3.56) | 0.0079 | 1.57 (0.74-3.33) | 0.2438 | NA | NA | 0.94 (0.23-3.83) | 0.9333 | 3.19 (1.14-8.91) | 0.0271 |
| Ulcerative colitis | 1.05 (0.75-1.46) | 0.7821 | 0.83 (0.54-1.27) | 0.3793 | NA | NA | 0.4 (0.08-1.95) | 0.256 | 1.36 (0.71-2.59) | 0.354 |
| Behcet's disease | 1.38 (0.81-2.38) | 0.24 | 1.2 (0.75-1.93) | 0.4496 | NA | NA | 0.72 (0.06-8.75) | 0.7962 | 2.87 (0.72-11.54) | 0.1371 |
| Systemic lupus erythematosus | 0.13 (0.02-0.95) | 0.0449 | 0.91 (0.59-1.4) | 0.6697 | NA | NA | 0.24 (0.03-2.15) | 0.1992 | 0.84 (0.3-2.39) | 0.743 |
| Sjogren's syndrome | 0.51 (0.21-1.24) | 0.1376 | 0.7 (0.46-1.08) | 0.1083 | NA | NA | NA | NA | 1.88 (0.66-5.32) | 0.2377 |
| Systemic sclerosis | NA | NA | 0.46 (0.16-1.32) | 0.1476 | NA | NA | NA | NA | NA | NA |
| Dermatopolymyositis | 0.69 (0.2-2.42) | 0.5647 | 0.77 (0.29-2.07) | 0.6013 | NA | NA | NA | NA | NA | NA |
| Vitiligo | 0.59 (0.49-0.71) | <0.0001 | 0.51 (0.43-0.61) | <0.0001 | 0.94 (0.12-7.11) | 0.9506 | 0.36 (0.18-0.71) | 0.0032 | 0.7 (0.48-1.02) | 0.0596 |
| Alopecia areata | 0.88 (0.78-1) | 0.0503 | 0.84 (0.74-0.96) | 0.0092 | 2.09 (0.47-9.22) | 0.3303 | 0.83 (0.58-1.18) | 0.2995 | 0.8 (0.64-0.99) | 0.0406 |
| Hidradenitis suppurativa | 0.6 (0.32-1.12) | 0.1062 | 1.02 (0.53-1.95) | 0.961 | NA | NA | NA | NA | 0.81 (0.21-3.06) | 0.7548 |

Abbreviations: aOR, adjusted odds ratio; CI, confidence interval; NA, not applicable; PPP, palmoplantar pustulosis; SD, standard deviation.
[a]Propensity score matching by age, sex, region of residence, income, and insurance type.
[b]Adjusted by BMI, smoking history, and alcohol consumption.

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**eTable 11.** Sensitivity Analysis of Patients With 1 or More Documented Dermatologist Visit During Study Period With a Diagnosis of PPP, Psoriasis Vulgaris, or Pompholyx

| | PPP vs Pompholyx | | | | PPP vs Psoriasis vulgaris | | | |
|---|---|---|---|---|---|---|---|---|
| | Univariable analysis | | Multivariable analysis[a] | | Univariable analysis | | Multivariable analysis[a] | |
| Comorbidities | Crude OR (95% CI) | p value | Adjusted OR (95% CI) | p value | Crude OR (95% CI) | p value | Adjusted OR (95% CI) | p value |
| Psoriasis | 106.78 (101.7-112.1) | <0.0001 | 86.24 (81.61-91.14) | <0.0001 | NA | NA | NA | NA |
| Psoriatic arthritis | 8.72 (7.61-10) | <0.0001 | 5.32 (4.56-6.21) | <0.0001 | 0.67 (0.6-0.75) | <0.0001 | 0.66 (0.58-0.76) | <0.0001 |
| Ankylosing spondylitis | 1.8 (1.6-2.03) | <0.0001 | 1.48 (1.3-1.69) | <0.0001 | 0.99 (0.88-1.11) | 0.8055 | 1.07 (0.94-1.22) | 0.3276 |
| Rheumatoid arthritis | 1.45 (1.39-1.52) | <0.0001 | 1.02 (0.98-1.07) | 0.3538 | 0.99 (0.94-1.03) | 0.4834 | 0.96 (0.92-1.01) | 0.115 |
| Enteropathic arthritis | 2.15 (0.76-6.07) | 0.1469 | 1.72 (0.52-5.72) | 0.3782 | 1.1 (0.39-3.1) | 0.8542 | 1.03 (0.31-3.4) | 0.9639 |
| Juvenile arthritis | 0.85 (0.52-1.41) | 0.5284 | 0.96 (0.51-1.83) | 0.9105 | 0.94 (0.56-1.57) | 0.8151 | 1.25 (0.65-2.42) | 0.5058 |
| Type2 diabetes mellitus | 2.07 (2.02-2.11) | <0.0001 | 1.22 (1.19-1.25) | <0.0001 | 0.99 (0.97-1.01) | 0.1955 | 1.07 (1.04-1.1) | <0.0001 |
| Hyperlipidemia | 1.66 (1.64-1.69) | <0.0001 | 1 (0.98-1.02) | 0.9766 | 1.05 (1.03-1.06) | <0.0001 | 1.07 (1.05-1.09) | <0.0001 |
| Hypertension | 1.93 (1.89-1.96) | <0.0001 | 1.07 (1.04-1.09) | <0.0001 | 0.94 (0.92-0.95) | <0.0001 | 0.98 (0.96-1) | 0.0428 |
| Heart failure | 2.22 (2.1-2.36) | <0.0001 | 1.17 (1.09-1.25) | <0.0001 | 0.86 (0.81-0.91) | <0.0001 | 0.97 (0.9-1.03) | 0.3045 |
| Coronary heart disease | 1.96 (1.9-2.02) | <0.0001 | 1.05 (1.02-1.09) | 0.0053 | 0.94 (0.91-0.97) | <0.0001 | 1.05 (1.01-1.08) | 0.0103 |
| Myocardial infarction | 2.32 (2.14-2.52) | <0.0001 | 1.18 (1.07-1.3) | 0.0007 | 0.91 (0.84-0.99) | 0.0211 | 1.04 (0.95-1.15) | 0.3629 |
| Cerebrovascular disease | 1.98 (1.93-2.04) | <0.0001 | 1.07 (1.03-1.1) | 0.0004 | 0.9 (0.87-0.93) | <0.0001 | 1.02 (0.98-1.05) | 0.3091 |
| Type1 diabetes mellitus | 2.1 (1.94-2.28) | <0.0001 | 1.27 (1.16-1.4) | <0.0001 | 0.82 (0.76-0.89) | <0.0001 | 0.93 (0.85-1.02) | 0.129 |
| Graves disease | 1.19 (1.1-1.29) | <0.0001 | 1.13 (1.03-1.23) | 0.0067 | 1.34 (1.24-1.46) | <0.0001 | 1.24 (1.14-1.36) | <0.0001 |
| Hashimoto thyroiditis | 0.9 (0.82-0.98) | 0.0172 | 0.83 (0.75-0.92) | 0.0002 | 1.07 (0.98-1.18) | 0.1441 | 0.92 (0.83-1.02) | 0.1211 |
| Crohn disease | 1.24 (0.98-1.57) | 0.0766 | 1.22 (0.9-1.65) | 0.2017 | 0.89 (0.7-1.13) | 0.3458 | 0.88 (0.65-1.19) | 0.4101 |
| Ulcerative colitis | 1.18 (1.01-1.37) | 0.0388 | 1.01 (0.85-1.2) | 0.9271 | 0.9 (0.77-1.05) | 0.1884 | 0.91 (0.76-1.08) | 0.2574 |
| Behcet's disease | 1.4 (1.16-1.7) | 0.0006 | 1.12 (0.9-1.39) | 0.312 | 1.1 (0.9-1.34) | 0.3417 | 1 (0.8-1.25) | 0.9845 |
| Systemic lupus erythematosus | 1.14 (0.92-1.4) | 0.2226 | 1.19 (0.94-1.51) | 0.1603 | 0.77 (0.63-0.95) | 0.0161 | 0.75 (0.59-0.96) | 0.0209 |
| Sjogren's syndrome | 1.11 (0.92-1.34) | 0.2616 | 0.85 (0.7-1.04) | 0.121 | 0.88 (0.73-1.06) | 0.1869 | 0.81 (0.66-0.99) | 0.0425 |
| Systemic sclerosis | 1.3 (0.81-2.1) | 0.2784 | 0.99 (0.6-1.65) | 0.9754 | 0.51 (0.32-0.83) | 0.0058 | 0.54 (0.33-0.9) | 0.0181 |
| Dermatopolymyositis | 1.65 (1.12-2.43) | 0.0109 | 1.35 (0.86-2.12) | 0.1902 | 0.83 (0.56-1.21) | 0.3304 | 0.76 (0.49-1.19) | 0.2313 |
| Vitiligo | 2.11 (1.95-2.28) | <0.0001 | 1.89 (1.73-2.07) | <0.0001 | 0.63 (0.58-0.68) | <0.0001 | 0.62 (0.56-0.67) | <0.0001 |
| Alopecia areata | 1.01 (0.96-1.06) | 0.6827 | 1.01 (0.95-1.07) | 0.8595 | 0.77 (0.73-0.81) | <0.0001 | 0.81 (0.77-0.86) | <0.0001 |
| Hidradenitis suppurativa | 0.83 (0.63-1.08) | 0.1645 | 0.78 (0.58-1.05) | 0.1023 | 0.72 (0.54-0.94) | 0.0164 | 0.72 (0.53-0.98) | 0.0354 |

Abbreviations: CI, confidence interval; NA, not applicable; OR, odds ratio; PPP, palmoplantar pustulosis.
[a]Adjusted by age, sex, region of residence, income, and insurance type.

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**eTable 12.** Sensitivity Analysis of Patients With 2 or More Documented Dermatologist Visits During Study Period With a Diagnosis of PPP, Psoriasis Vulgaris, or Pompholyx

| | PPP vs Pompholyx | | | | PPP vs Psoriasis vulgaris | | | |
|---|---|---|---|---|---|---|---|---|
| | Univariable analysis | | Multivariable analysis[a] | | Univariable analysis | | Multivariable analysis[a] | |
| Comorbidities | Crude OR (95% CI) | p value | Adjusted OR (95% CI) | p value | Crude OR (95% CI) | p value | Adjusted OR (95% CI) | p value |
| Psoriasis | 95.63 (90.41-101.16) | <0.0001 | 81.46 (76.47-86.78) | <0.0001 | NA | NA | NA | NA |
| Psoriatic arthritis | 10.21 (8.68-12.01) | <0.0001 | 6.95 (5.8-8.33) | <0.0001 | 0.58 (0.51-0.66) | <0.0001 | 0.58 (0.5-0.66) | <0.0001 |
| Ankylosing spondylitis | 2.1 (1.83-2.42) | <0.0001 | 1.69 (1.44-1.98) | <0.0001 | 1.12 (0.98-1.28) | 0.1111 | 1.2 (1.03-1.4) | 0.0213 |
| Rheumatoid arthritis | 1.38 (1.31-1.46) | <0.0001 | 1.01 (0.95-1.07) | 0.7044 | 1.05 (0.99-1.1) | 0.1066 | 0.97 (0.92-1.03) | 0.3703 |
| Enteropathic arthritis | 2.53 (0.73-8.73) | 0.1427 | 1.56 (0.35-7.02) | 0.5606 | 1.04 (0.31-3.42) | 0.9551 | 0.72 (0.17-3.08) | 0.6611 |
| Juvenile arthritis | 0.71 (0.35-1.45) | 0.3507 | 0.93 (0.37-2.32) | 0.8707 | 0.8 (0.39-1.64) | 0.5386 | 0.97 (0.39-2.46) | 0.9544 |
| Type2 diabetes mellitus | 2.04 (1.99-2.1) | <0.0001 | 1.28 (1.25-1.32) | <0.0001 | 1.04 (1.02-1.07) | 0.0012 | 1.08 (1.05-1.11) | <0.0001 |
| Hyperlipidemia | 1.63 (1.59-1.66) | <0.0001 | 1.02 (1-1.05) | 0.085 | 1.12 (1.1-1.14) | <0.0001 | 1.08 (1.06-1.11) | <0.0001 |
| Hypertension | 1.88 (1.84-1.92) | <0.0001 | 1.09 (1.06-1.12) | <0.0001 | 1 (0.98-1.02) | 0.9243 | 0.98 (0.95-1) | 0.1007 |
| Heart failure | 2.08 (1.93-2.23) | <0.0001 | 1.19 (1.09-1.29) | <0.0001 | 0.9 (0.84-0.96) | 0.0025 | 0.97 (0.9-1.05) | 0.472 |
| Coronary heart disease | 1.84 (1.77-1.91) | <0.0001 | 1.09 (1.04-1.14) | 0.0002 | 1 (0.96-1.04) | 1 | 1.1 (1.05-1.15) | <0.0001 |
| Myocardial infarction | 2.09 (1.89-2.32) | <0.0001 | 1.18 (1.05-1.33) | 0.0053 | 0.91 (0.82-1.01) | 0.0628 | 1.05 (0.93-1.17) | 0.4311 |
| Cerebrovascular disease | 1.84 (1.78-1.91) | <0.0001 | 1.07 (1.02-1.11) | 0.0036 | 0.96 (0.93-1) | 0.0354 | 1.04 (1-1.09) | 0.0674 |
| Type1 diabetes mellitus | 1.99 (1.79-2.21) | <0.0001 | 1.29 (1.15-1.45) | <0.0001 | 0.82 (0.74-0.9) | <0.0001 | 0.91 (0.81-1.01) | 0.0873 |
| Graves disease | 1.29 (1.17-1.42) | <0.0001 | 1.23 (1.1-1.37) | 0.0003 | 1.53 (1.39-1.69) | <0.0001 | 1.36 (1.21-1.52) | <0.0001 |
| Hashimoto thyroiditis | 0.87 (0.78-0.98) | 0.0183 | 0.85 (0.75-0.96) | 0.0099 | 1.13 (1-1.27) | 0.0456 | 0.95 (0.83-1.08) | 0.4224 |
| Crohn disease | 1.28 (0.95-1.73) | 0.1002 | 1.29 (0.9-1.86) | 0.172 | 0.9 (0.67-1.21) | 0.4964 | 0.99 (0.69-1.43) | 0.9651 |
| Ulcerative colitis | 1.09 (0.89-1.32) | 0.4121 | 0.95 (0.76-1.18) | 0.6388 | 0.86 (0.71-1.05) | 0.1447 | 0.87 (0.7-1.09) | 0.2189 |
| Behcet's disease | 1.37 (1.08-1.76) | 0.011 | 1.09 (0.83-1.45) | 0.534 | 1.19 (0.93-1.53) | 0.1684 | 1.03 (0.78-1.37) | 0.8356 |
| Systemic lupus erythematosus | 1.01 (0.76-1.34) | 0.9713 | 1.04 (0.75-1.44) | 0.8307 | 0.69 (0.52-0.92) | 0.0112 | 0.64 (0.46-0.89) | 0.0074 |
| Sjogren's syndrome | 0.82 (0.63-1.06) | 0.1284 | 0.67 (0.51-0.88) | 0.0045 | 0.78 (0.61-1.02) | 0.0662 | 0.69 (0.52-0.91) | 0.0092 |
| Systemic sclerosis | 0.94 (0.48-1.85) | 0.8572 | 0.72 (0.35-1.48) | 0.3696 | 0.39 (0.2-0.75) | 0.0052 | 0.39 (0.19-0.79) | 0.0092 |
| Dermatopolymyositis | 1.46 (0.91-2.35) | 0.1159 | 1.27 (0.75-2.14) | 0.3688 | 0.91 (0.57-1.45) | 0.682 | 0.87 (0.52-1.46) | 0.5919 |
| Vitiligo | 2.14 (1.95-2.35) | <0.0001 | 1.95 (1.74-2.17) | <0.0001 | 0.6 (0.54-0.65) | <0.0001 | 0.57 (0.52-0.64) | <0.0001 |
| Alopecia areata | 1.01 (0.94-1.07) | 0.8802 | 0.99 (0.93-1.07) | 0.8562 | 0.8 (0.75-0.85) | <0.0001 | 0.84 (0.78-0.9) | <0.0001 |
| Hidradenitis suppurativa | 0.85 (0.61-1.18) | 0.326 | 0.81 (0.56-1.17) | 0.2709 | 0.77 (0.55-1.07) | 0.1238 | 0.75 (0.52-1.09) | 0.1267 |

Abbreviations: CI, confidence interval; NA, not applicable; OR, odds ratio; PPP, palmoplantar pustulosis.
[a]Adjusted by age, sex, region of residence, income, and insurance type.

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**eTable 13.** Sensitivity Analysis of Patients With 4 or More Documented Dermatologist Visits During Study Period With a Diagnosis of PPP, Psoriasis Vulgaris, or Pompholyx

| | PPP vs Pompholyx | | | | PPP vs Psoriasis vulgaris | | | |
|---|---|---|---|---|---|---|---|---|
| | Univariable analysis | | Multivariable analysis[a] | | Univariable analysis | | Multivariable analysis[a] | |
| Comorbidities | Crude OR (95% CI) | p value | Adjusted OR (95% CI) | p value | Crude OR (95% CI) | p value | Adjusted OR (95% CI) | p value |
| Psoriasis | 30.72 (29.34-32.16) | <0.0001 | 27.98 (26.56-29.47) | <0.0001 | NA | NA | NA | NA |
| Psoriatic arthritis | 11.42 (9.28-14.06) | <0.0001 | 8.79 (6.99-11.06) | <0.0001 | 0.53 (0.46-0.6) | <0.0001 | 0.53 (0.46-0.62) | <0.0001 |
| Ankylosing spondylitis | 2.48 (2.1-2.94) | <0.0001 | 2.05 (1.69-2.49) | <0.0001 | 1.29 (1.1-1.51) | 0.0017 | 1.38 (1.15-1.65) | 0.0005 |
| Rheumatoid arthritis | 1.34 (1.25-1.43) | <0.0001 | 1.01 (0.94-1.09) | 0.7266 | 1.07 (1-1.15) | 0.0415 | 0.96 (0.89-1.04) | 0.3027 |
| Enteropathic arthritis | 3.59 (1.11-11.66) | 0.0334 | 2.32 (0.6-8.87) | 0.2208 | 1.71 (0.59-4.99) | 0.324 | 1.33 (0.39-4.53) | 0.6466 |
| Juvenile arthritis | 0.69 (0.25-1.91) | 0.4717 | 0.82 (0.19-3.51) | 0.7835 | 0.67 (0.24-1.84) | 0.4328 | 0.76 (0.18-3.24) | 0.7106 |
| Type2 diabetes mellitus | 2.05 (1.98-2.11) | <0.0001 | 1.37 (1.32-1.42) | <0.0001 | 1.11 (1.08-1.15) | <0.0001 | 1.1 (1.06-1.14) | <0.0001 |
| Hyperlipidemia | 1.65 (1.6-1.69) | <0.0001 | 1.08 (1.04-1.11) | <0.0001 | 1.22 (1.19-1.26) | <0.0001 | 1.12 (1.09-1.15) | <0.0001 |
| Hypertension | 1.84 (1.79-1.89) | <0.0001 | 1.12 (1.08-1.15) | <0.0001 | 1.07 (1.05-1.1) | <0.0001 | 0.98 (0.95-1.01) | 0.2055 |
| Heart failure | 1.98 (1.81-2.18) | <0.0001 | 1.17 (1.05-1.3) | 0.0044 | 0.95 (0.87-1.03) | 0.2058 | 0.95 (0.86-1.05) | 0.2861 |
| Coronary heart disease | 1.79 (1.7-1.87) | <0.0001 | 1.13 (1.07-1.19) | <0.0001 | 1.08 (1.03-1.14) | 0.0008 | 1.14 (1.08-1.2) | <0.0001 |
| Myocardial infarction | 2 (1.76-2.26) | <0.0001 | 1.17 (1.01-1.35) | 0.0366 | 1.02 (0.9-1.14) | 0.808 | 1.1 (0.96-1.26) | 0.1797 |
| Cerebrovascular disease | 1.77 (1.69-1.86) | <0.0001 | 1.1 (1.05-1.17) | 0.0004 | 1.03 (0.99-1.08) | 0.1548 | 1.06 (1.01-1.12) | 0.0233 |
| Type1 diabetes mellitus | 1.91 (1.67-2.19) | <0.0001 | 1.33 (1.15-1.55) | 0.0002 | 0.83 (0.73-0.94) | 0.0039 | 0.91 (0.79-1.04) | 0.1636 |
| Graves disease | 1.39 (1.24-1.57) | <0.0001 | 1.35 (1.18-1.55) | <0.0001 | 1.74 (1.54-1.96) | <0.0001 | 1.51 (1.32-1.73) | <0.0001 |
| Hashimoto thyroiditis | 0.95 (0.82-1.1) | 0.4847 | 1.01 (0.86-1.17) | 0.9409 | 1.31 (1.14-1.52) | 0.0003 | 1.13 (0.96-1.32) | 0.1339 |
| Crohn disease | 1.34 (0.93-1.94) | 0.119 | 1.29 (0.81-2.05) | 0.2876 | 1.06 (0.74-1.53) | 0.7381 | 1.12 (0.71-1.76) | 0.6332 |
| Ulcerative colitis | 1.11 (0.86-1.42) | 0.4238 | 1.01 (0.77-1.33) | 0.9383 | 0.92 (0.72-1.18) | 0.5194 | 0.92 (0.71-1.21) | 0.5577 |
| Behcet's disease | 1.67 (1.24-2.24) | 0.0007 | 1.37 (0.99-1.91) | 0.0615 | 1.51 (1.13-2.03) | 0.0053 | 1.35 (0.98-1.87) | 0.0684 |
| Systemic lupus erythematosus | 0.98 (0.67-1.45) | 0.9357 | 1.09 (0.7-1.7) | 0.693 | 0.73 (0.5-1.06) | 0.101 | 0.67 (0.44-1.03) | 0.0665 |
| Sjogren's syndrome | 0.91 (0.66-1.26) | 0.5822 | 0.69 (0.49-0.98) | 0.0403 | 0.91 (0.66-1.25) | 0.5698 | 0.76 (0.54-1.08) | 0.1206 |
| Systemic sclerosis | 0.66 (0.24-1.83) | 0.4231 | 0.56 (0.2-1.56) | 0.2672 | 0.34 (0.13-0.92) | 0.0338 | 0.38 (0.14-1.04) | 0.0605 |
| Dermatopolymyositis | 1.43 (0.77-2.63) | 0.2576 | 1.18 (0.6-2.32) | 0.6329 | 1.06 (0.58-1.92) | 0.854 | 0.95 (0.49-1.84) | 0.8832 |
| Vitiligo | 2.17 (1.93-2.44) | <0.0001 | 1.92 (1.67-2.2) | <0.0001 | 0.57 (0.51-0.63) | <0.0001 | 0.53 (0.47-0.6) | <0.0001 |
| Alopecia areata | 0.99 (0.91-1.07) | 0.7249 | 0.99 (0.91-1.08) | 0.8405 | 0.86 (0.79-0.93) | <0.0001 | 0.91 (0.84-1) | 0.0449 |
| Hidradenitis suppurativa | 0.99 (0.67-1.45) | 0.9526 | 1.03 (0.68-1.56) | 0.8911 | 0.97 (0.66-1.42) | 0.8746 | 1.02 (0.68-1.53) | 0.928 |

Abbreviations: CI, confidence interval; NA, not applicable; OR, odds ratio; PPP, palmoplantar pustulosis.
[a]Adjusted by age, sex, region of residence, income, and insurance type.

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**eTable 14.** Sensitivity Analysis of Patients With 5 or More Documented Dermatologist Visits During Study Period With a Diagnosis of PPP, Psoriasis Vulgaris, or Pompholyx

| | PPP vs Pompholyx | | | | PPP vs Psoriasis vulgaris | | | |
|---|---|---|---|---|---|---|---|---|
| | Univariable analysis | | Multivariable analysis[a] | | Univariable analysis | | Multivariable analysis[a] | |
| Comorbidities | Crude OR (95% CI) | p value | Adjusted OR (95% CI) | p value | Crude OR (95% CI) | p value | Adjusted OR (95% CI) | p value |
| Psoriasis | 21.11 (20.2-22.07) | <0.0001 | 19.14 (18.2-20.13) | <0.0001 | NA | NA | NA | NA |
| Psoriatic arthritis | 11.38 (9.08-14.28) | <0.0001 | 8.73 (6.82-11.18) | <0.0001 | 0.51 (0.44-0.59) | <0.0001 | 0.52 (0.44-0.61) | <0.0001 |
| Ankylosing spondylitis | 2.44 (2.02-2.94) | <0.0001 | 2.13 (1.73-2.63) | <0.0001 | 1.27 (1.07-1.51) | 0.0071 | 1.42 (1.17-1.72) | 0.0004 |
| Rheumatoid arthritis | 1.33 (1.24-1.44) | <0.0001 | 1.03 (0.94-1.11) | 0.5513 | 1.08 (1-1.16) | 0.0452 | 0.96 (0.88-1.04) | 0.272 |
| Enteropathic arthritis | 2.58 (0.68-9.72) | 0.162 | 2.38 (0.6-9.39) | 0.2156 | 1.36 (0.4-4.57) | 0.6208 | 1.33 (0.39-4.53) | 0.6465 |
| Juvenile arthritis | 0.74 (0.27-2.09) | 0.573 | 1.37 (0.4-4.76) | 0.6197 | 0.79 (0.28-2.19) | 0.6457 | 1.3 (0.38-4.43) | 0.671 |
| Type2 diabetes mellitus | 2.01 (1.94-2.08) | <0.0001 | 1.37 (1.31-1.43) | <0.0001 | 1.13 (1.09-1.17) | <0.0001 | 1.1 (1.05-1.14) | <0.0001 |
| Hyperlipidemia | 1.64 (1.6-1.69) | <0.0001 | 1.1 (1.06-1.13) | <0.0001 | 1.25 (1.21-1.28) | <0.0001 | 1.12 (1.09-1.16) | <0.0001 |
| Hypertension | 1.82 (1.76-1.87) | <0.0001 | 1.12 (1.08-1.16) | <0.0001 | 1.1 (1.07-1.13) | <0.0001 | 0.98 (0.95-1.01) | 0.2529 |
| Heart failure | 2.01 (1.81-2.22) | <0.0001 | 1.2 (1.07-1.35) | 0.0019 | 0.98 (0.9-1.08) | 0.7247 | 0.96 (0.87-1.08) | 0.5117 |
| Coronary heart disease | 1.76 (1.67-1.86) | <0.0001 | 1.13 (1.07-1.2) | <0.0001 | 1.11 (1.06-1.17) | <0.0001 | 1.14 (1.08-1.21) | <0.0001 |
| Myocardial infarction | 1.98 (1.72-2.27) | <0.0001 | 1.19 (1.02-1.4) | 0.0271 | 1.04 (0.92-1.18) | 0.5344 | 1.1 (0.95-1.28) | 0.1845 |
| Cerebrovascular disease | 1.77 (1.68-1.86) | <0.0001 | 1.11 (1.05-1.18) | 0.0006 | 1.07 (1.02-1.12) | 0.007 | 1.07 (1.01-1.13) | 0.0228 |
| Type1 diabetes mellitus | 1.76 (1.52-2.05) | <0.0001 | 1.27 (1.07-1.5) | 0.005 | 0.81 (0.71-0.93) | 0.0035 | 0.88 (0.75-1.02) | 0.0966 |
| Graves disease | 1.55 (1.36-1.75) | <0.0001 | 1.52 (1.32-1.75) | <0.0001 | 1.92 (1.69-2.18) | <0.0001 | 1.66 (1.44-1.91) | <0.0001 |
| Hashimoto thyroiditis | 0.95 (0.81-1.11) | 0.5 | 0.98 (0.83-1.16) | 0.7974 | 1.35 (1.15-1.58) | 0.0002 | 1.12 (0.95-1.32) | 0.1921 |
| Crohn disease | 1.21 (0.78-1.88) | 0.4056 | 1.26 (0.74-2.16) | 0.3983 | 0.86 (0.56-1.32) | 0.5011 | 0.98 (0.58-1.64) | 0.9291 |
| Ulcerative colitis | 1.12 (0.85-1.47) | 0.4187 | 1.06 (0.79-1.43) | <0.0001 | 0.91 (0.7-1.19) | 0.4936 | 0.94 (0.71-1.25) | 0.6724 |
| Behcet's disease | 1.7 (1.24-2.34) | 0.0011 | 1.42 (1-2.02) | 0.052 | 1.61 (1.18-2.2) | 0.0026 | 1.49 (1.05-2.09) | 0.0241 |
| Systemic lupus erythematosus | 1.01 (0.65-1.56) | 0.9756 | 1.05 (0.64-1.74) | 0.8366 | 0.73 (0.47-1.11) | 0.1385 | 0.63 (0.39-1.03) | 0.0636 |
| Sjogren's syndrome | 0.89 (0.63-1.27) | 0.52 | 0.67 (0.45-0.99) | 0.0441 | 0.92 (0.65-1.3) | 0.6289 | 0.72 (0.49-1.06) | 0.0976 |
| Systemic sclerosis | 0.95 (0.33-2.7) | 0.9202 | 0.77 (0.27-2.23) | 0.6311 | 0.4 (0.15-1.08) | 0.0712 | 0.45 (0.16-1.23) | 0.1177 |
| Dermatopolymyositis | 1.64 (0.85-3.17) | 0.1387 | 1.5 (0.72-3.13) | 0.2819 | 1.17 (0.63-2.2) | 0.6223 | 1.01 (0.5-2.02) | 0.9827 |
| Vitiligo | 2.18 (1.92-2.47) | <0.0001 | 1.94 (1.68-2.24) | <0.0001 | 0.57 (0.51-0.64) | <0.0001 | 0.54 (0.47-0.61) | <0.0001 |
| Alopecia areata | 0.99 (0.91-1.08) | 0.8557 | 0.98 (0.89-1.08) | 0.7433 | 0.89 (0.82-0.97) | 0.0074 | 0.95 (0.86-1.04) | 0.2555 |
| Hidradenitis suppurativa | 1.08 (0.71-1.63) | 0.7267 | 1.21 (0.78-1.88) | 0.4056 | 1.04 (0.69-1.56) | 0.844 | 1.13 (0.74-1.73) | 0.5789 |

Abbreviations: CI, confidence interval; NA, not applicable; OR, odds ratio; PPP, palmoplantar pustulosis.
[a]Adjusted by age, sex, region of residence, income, and insurance type.

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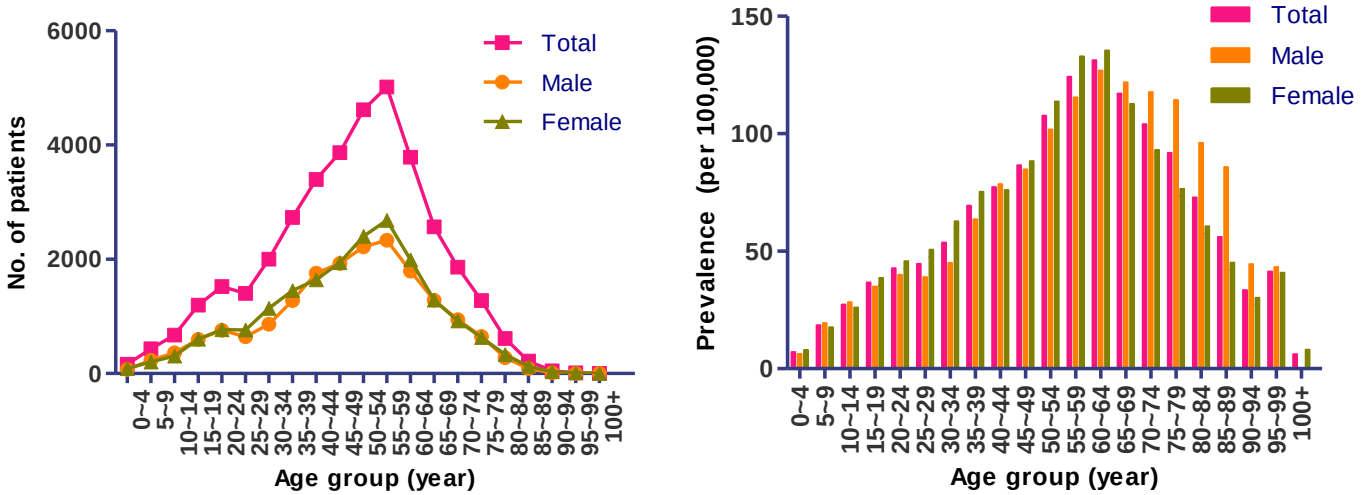
**eFigure 1.** Distribution and Prevalence of Patients With Palmoplantar Pustulosis by Age and Sex in the Korean Population

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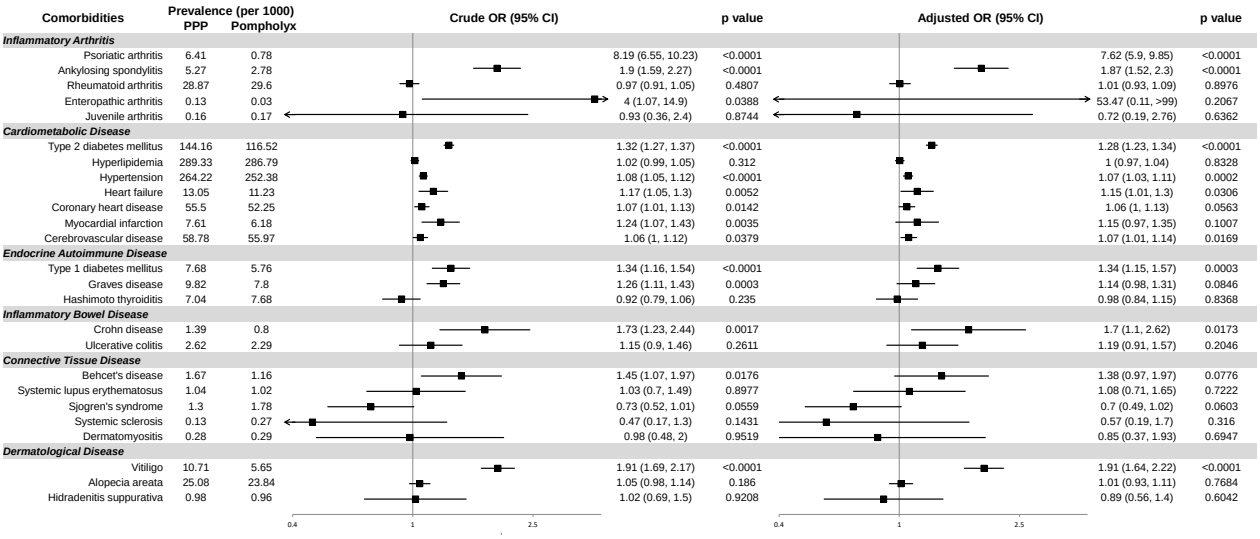
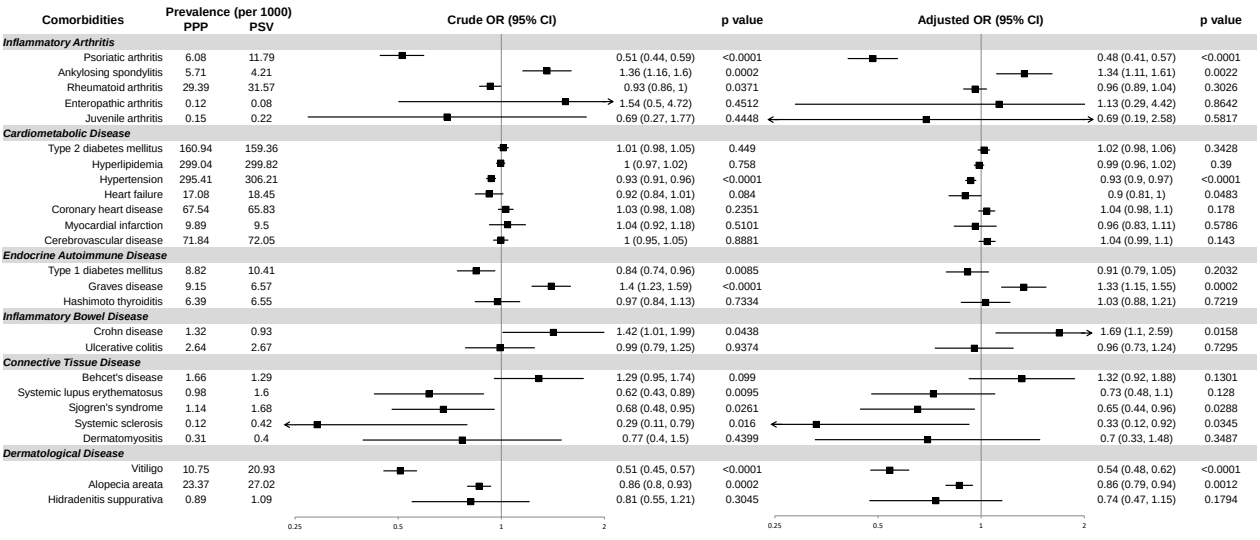
**eFigure 2.** Forest Plots of the Risks of Comorbidities in Patients With Palmoplantar Pustulosis Compared With Propensity Score–Matched Patients With Pompholyx or Psoriasis Vulgaris[a]

**PPP group (n=31,659) vs PS-matched pompholyx group (n=158,295)**




**PPP group (n=32,558) vs PS-matched psoriasis vulgaris group (n=162,790)**




Abbreviations: CI, confidence interval; OR, odds ratio; PPP, palmoplantar pustulosis; PS, propensity score; PSV, psoriasis vulgaris.

[a]Propensity score matching by age, sex, region of residence, income, and insurance type. Adjusted ORs were adjusted by BMI, smoking history, and alcohol consumption. Outstanding values over the range of plots were omitted.

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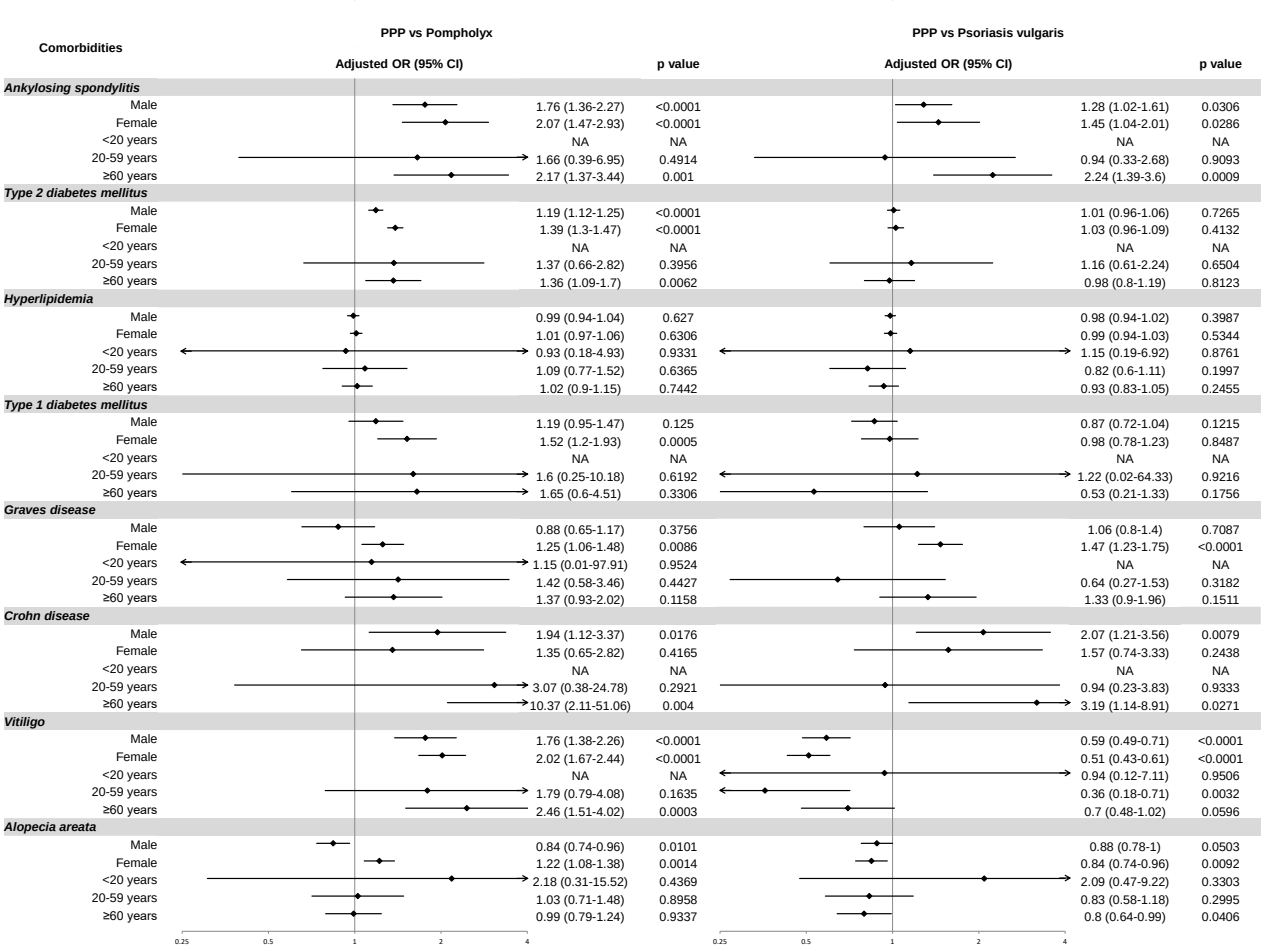
**eFigure 3.** Subgroup Analysis by Sex and Age After Propensity Score Matching[a]




Abbreviations: CI, confidence interval; OR, odds ratio; PPP, palmoplantar pustulosis; PSV, psoriasis vulgaris.

[a]Propensity score matching by age, sex, region of residence, income, and insurance type. Adjusted ORs were adjusted by BMI, smoking history, and alcohol consumption. Outstanding values over the range of plots were omitted.

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