

Supplementary Material

Treatment Patterns, Drug Survival, and Effectiveness of Tildrakizumab Among Patients with Prior Interleukin-17 Experience in the PPD CorEvitas Psoriasis Registry

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Figure S1. Study population

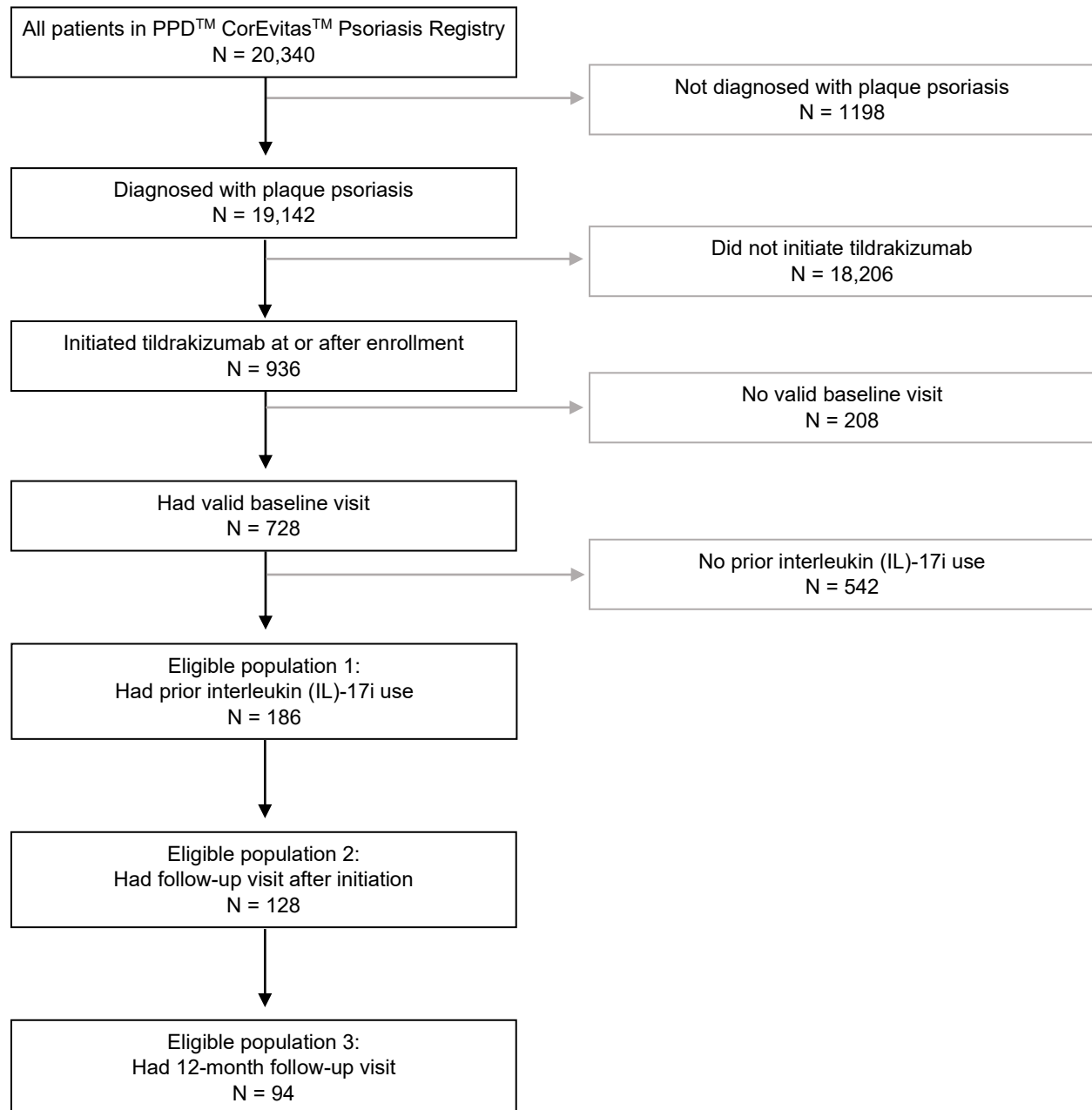


Table S1. Description of measures

Sociodemographic, Lifestyle, Comorbidity, Psoriasis, and Medication Measures	
Sociodemographic characteristics	• Age (years) • Sex (female, male) • Race (white, Black, other) • Ethnicity (Hispanic/Latino or non-Hispanic/Latino) • Health insurance plan type (private only, Medicare only, Medicaid only, Private plus Medicare, no insurance) • Education (no college or any college) • Work Status (full-time, part-time, student, disabled, retired, not working for pay)
Lifestyle characteristics	• Smoking status (never, former, current) • Current alcohol use (none, <1 drink per week, 1-3 drinks per week, 4-6 drinks per week, 1-2 drinks per day, >2 drinks per day) • Body height and weight • Body-mass index (BMI continuous and categorized using the CDC cut-offs for normal/underweight (under 25); Overweight (25.0 – 29.9); and Obese (30.0 and above))
History of comorbidities	• Psoriatic arthritis • Cancer • Infection (any infection, serious infection) • Cardiovascular disease (congestive heart failure, myocardial infarction, unstable angina, coronary artery disease, acute coronary syndrome, other cardiovascular disease) • Cerebrovascular disease (stroke/transient ischemic attack, peripheral arterial disease) • Hypertension • Hyperlipidemia • Diabetes • Metabolic syndrome • Peptic ulcer • Crohn's disease • Ulcerative colitis • Indeterminate inflammatory bowel disease and other gastrointestinal disorders • Depression • Anxiety • Number of comorbidities
Psoriasis disease characteristics	• Age at onset • Age at diagnosis • Duration of disease • Difficult to treat areas • Psoriasis morphologies • Psoriasis Epidemiology Screening Tool (PEST) score • Duration of psoriatic arthritis (if applicable) <i>Note: PEST is in the public domain</i>
Medications	• Prior therapies ○ Number of prior biologic therapies ○ Type of prior biologic therapy (TNFi, IL-17i, IL-12/23i, IL-23i) ○ Number of prior non-biologic systemic therapies ○ Type of non-biologic systemic therapies (acitretin, cyclosporine, methotrexate (MTX), apremilast, deucravacitinib)

	- Concomitant therapies - Non-biologic systemic therapies (acitretin, cyclosporine, methotrexate (MTX), apremilast, deucravacitinib)
Disease Activity Measures (Range)	
Psoriasis Area and Severity Index (PASI)	Description: - A composite score assessing disease severity and coverage developed for clinical research - Includes an assessment of body surface area (BSA) Components: PASI consists of 2 components: - Area Affected: assessed for 4 regions of the body - Head/neck (10% total BSA) - Upper extremities (20% total BSA) - Torso (30% total BSA) - Lower extremities (40% total BSA) - Severity: Lesions in each area are assessed for severity of 3 characteristics on a scale of 0 (none) to 4 (very severe) - Erythema (redness) - Induration (thickness) - Scaling Formula: - The sum of all three severity parameters is calculated for each region of the body, multiplied by the area score for that area and multiplied by weight of respective section (0.1 for head, 0.2 for arms, 0.3 for body and 0.4 for legs) and totaled Range: - Total PASI score ranges from 0 to 72 where 0 (no psoriasis) and 72 (the most severe psoriasis) Direction: - Higher PASI score indicates more severe disease Categories: - Mild: $0 \leq \text{PASI} \leq 5$ - Moderate: $5 < \text{PASI} \leq 12$ - Severe: $12 < \text{PASI} \leq 20$ - Very Severe: $20 < \text{PASI} \leq 72$ Response: - PASI75: At least 75% improvement (reduction) from baseline to follow-up - PASI90: At least 90% improvement (reduction) from baseline to follow-up - PASI100: Indicates resolution of all disease from baseline to follow-up <i>Note: PASI is in the public domain</i>
% Body Surface Area (BSA) (0 to 100%)	Description: - Current percent involvement of the patient's body that is affected by psoriasis - Score is a percentage where 1 patient handprint = 1% total BSA (includes palm, fingers and thumb) - Assessed for 4 regions of the body: - Head/neck - Upper extremities - Torso - Lower extremities Range:

	- The BSA score is a percentage ranging from 0% to 100% Direction: - Higher BSA score indicates more severe disease Categories: - Mild: BSA < 3% - Moderate: 3% ≤ BSA ≤ 10% - Severe: BSA > 10% Response: - BSA<1: Achieving BSA <1 - BSA<3: Achieving BSA < 3 - BSA75: At least 75% improvement (reduction) from baseline to follow-up <i>Note: BSA is in the public domain</i>
Investigator's Global Assessment (IGA)	Description: - Physician reported degree of redness, scaling and thickness of psoriasis lesions Range: 0-4 where 0 (clear) & 4 (severe disease) Direction: - Higher IGA score indicates more severe disease Categories: 0= Clear (No signs of psoriasis, post inflammatory hyperpigmentation may be present) 1= Almost clear (No thickening; normal to pink coloration; no to minimal focal scaling) 2= Mild Disease (Just detectable to mild thickening; pink to light red coloration; predominantly fine scaling) 3= Moderate Disease (Clearly distinguishable to moderate thickening; dull to bright red; moderate scaling) 4= Severe Disease (Severe thickening with hard edges; bright to deep dark red coloration; severe/coarse scaling covering almost all or all lesions) Response: - IGA 0/1: Proportion achieving of IGA 0 (clear) or 1 (almost clear) among those with baseline IGA>1 <i>Note: IGA is used courtesy of Novartis</i>
Patient-Reported Outcomes Measures (Range)	
Patient Global Assessment (PGA)	Description: Patient reported assessment of disease severity Values 0 (clear) to 4 (severe) Values/Components: 0 = Clear, 1 = Almost Clear, 2 = Mild, 3 = Moderate, 4 = Severe Direction: Higher value indicates worse condition <i>Note: PGA is in the public domain</i>
Dermatology Life Quality Index (DLQI, 0 to 30)	Description: Patient's perception of the impact of skin problems on different aspects of their health-related quality of life in the past week 10 questions in 6 subscale scores

	• Symptoms and feelings • Daily activities • Leisure • Work or school • Personal relationships • Side effects of treatments Total score: 0 - 30 where 0 (best) and 30 (worst) Categories: 0-1: No effect at all on patient's life 2-5: Small effect on patient's life 6-10: Moderate effect on patient's life 11-20: Very large effect on patient's life 21-30: Extremely large effect on patient's life Direction: Higher score indicates greater the impact on quality of life <i>Note: DLQI was used with permission. © Dermatology Life Quality Index. A Y Finlay, G K Khan, April 1992</i>
Patient Skin Pain Assessment (0 to 10)	Description: A patient-reported pain measure on a 0-10 visual analog scale (VAS) where patients are asked to rate their worst skin pain over the past 24 hours (0=no pain; 10=worst imaginable pain) Range: 0-10 VAS where 0=no pain and 10=worst imaginable pain Direction: Higher score indicates more severe pain <i>Note: the skin pain VAS is in the public domain</i>
Patient Fatigue Assessment (0 to 10)	Description: A patient-reported fatigue measure on a 0-10 VAS where patients are asked to rate their worst level of fatigue (weariness, tiredness) in the past 7 days (0=no fatigue; 10=worst imaginable fatigue) Range: 0-10 VAS where 0=no fatigue and 10=worst imaginable fatigue Direction: Higher score indicates higher fatigue <i>Note: the fatigue VAS is in the public domain</i>
Peak Pruritus (itch, 0-10)	Description: A patient-reported itch measure on a 0-10 VAS where patients are asked to rate their worst itch in the past 24 hours (0=no itch; 10=worst imaginable itch) Range: 0-10 VAS where 0=no itch and 10=worst imaginable itch Direction: Higher score indicates more severe itch <i>Note: the itch VAS is in the public domain</i>
Euro-Quality of Life (QoL) 5-Dimension 3 Level (EQ-5D-3L)	Description: • A standardized measure of health-related quality of life comprised of 5 domains: mobility, self-care, usual activities, pain/discomfort, and anxiety/depression • Each dimension has 3 levels:

	○ no problems (0) ○ some problems (1) ○ extreme problems (2) Range: • 0 to 2 Interpretation: • Higher scores indicate poorer health <i>Note: the EQ-5D-3L is used with permission. © The Medical Outcomes Trust (MOT), Health Assessment Lab (HAL) and QualityMetric Incorporated</i>
EQ Health Status	Description: • A patient-reported health measure on a vertical 0-100 visual analog scale (VAS) where patients are asked to rate how good or bad their health is today (0=worst imaginable health; 100=best imaginable health) Range: • 0-100 VAS Direction: • Higher score indicates better health <i>Note: the EQ is used with permission. © The Medical Outcomes Trust (MOT), Health Assessment Lab (HAL) and QualityMetric Incorporated</i>
Work Productivity and Activity Impairment (WPAI, 0 to 100%)	Description: Respondents are asked questions concerning impairment due to psoriasis Questions: 1 = Currently employed? 2 = Hours missed due to psoriasis? 3 = Hours missed other reasons? 4 = Hours actually worked? 5 = Degree problem affected productivity while working (0 to 10 numeric rating scale [NRS])? 6 = Degree problem affected regular activities (0-10 NRS)? Scores: Multiply scores by 100 to express in percentages: • Absenteeism (work time missed): $Q2/(Q2+Q4)$ • Presenteeism (impairment while working): $Q5/10$ • Work productivity loss (overall work impairment): $Q2/(Q2+Q4)+[(1-(Q2/(Q2+Q4)))(Q5/10)]$ • Activity impairment: $Q6/10$ Range: Current employment: yes/no 0 - 100% Direction: High numbers indicate greater impairment and less productivity <i>Note: the WPAI is in the public domain</i>

Table S2. All baseline patient characteristics for IL-17i-experienced tildrakizumab initiators in the PPD CorEvitas Psoriasis Registry

	Prior Use of IL-17i (N=186)
<i>Demographics/socioeconomic characteristics</i>	
Age (years), mean (SD)	56.9 (14.3)
Sex (Female), n (%)	101 (54.3%)
Race, n (%)	
White	152 (81.7%)
Black/African American	7 (3.8%)
Other	27 (14.5%)
Ethnicity (Hispanic), n (%)	11 (6.1%)
Health insurance, n (%)	
Private Only	74 (43.8%)
Medicare Only	58 (34.3%)
Private + Medicare	18 (10.7%)
Medicaid	19 (11.2%)
No Insurance	0 (0.0%)
Education (Any College), n (%)	61 (32.8%)
Work status, n (%)	
Full-time	73 (39.5%)
Part-time	15 (8.1%)
Not working for pay	12 (6.5%)
Student	0 (0.0%)
Disabled	20 (10.8%)
Retired	65 (35.1%)
<i>Lifestyle characteristics</i>	
Smoking history, n (%)	
Never smoked	70 (38.3%)
Former smoker	74 (40.4%)
Current smoker	39 (21.3%)
Current alcohol use, n (%)	
None	70 (39.5%)
< 1 drink per week	45 (25.4%)
1-3 drinks per week	28 (15.8%)
4-6 drinks per week	14 (7.9%)
1-2 drinks per day	8 (4.5%)
> 2 drinks per day	12 (6.8%)
Body height (cm), mean (SD)	169.5 (10.4)
Body weight (kg), mean (SD)	90.6 (22.2)
BMI (kg/m ²), mean (SD)	31.3 (6.6)
BMI (kg/m ²) category (n%) ^a	
BMI < 25 (Underweight/normal)	28 (16.1%)

BMI 25 - < 30 (Overweight)	49 (28.2%)
BMI ≥ 30 (Obese)	97 (55.7%)
<i>History of comorbidities, n (%)</i>	
Cancer ^b	13 (7.0%)
Infection ^c	100 (53.8%)
- Serious infection	19 (10.2%)
Cardio/cerebrovascular disease ^d	30 (16.1%)
- Cardiovascular disease	30 (16.1%)
-- Congestive heart failure	8 (4.3%)
-- Myocardial infarction	7 (3.8%)
-- Unstable angina	2 (1.1%)
-- Coronary artery disease	8 (4.3%)
-- Acute coronary syndrome	0 (0.0%)
-- Other CVD	14 (7.5%)
- Cerebrovascular disease	6 (3.2%)
-- Stroke/Transient ischemic attack	4 (2.2%)
-- Peripheral arterial disease	2 (1.1%)
Hypertension	81 (43.5%)
Hyperlipidemia	66 (35.5%)
Diabetes	41 (22.0%)
Metabolic syndrome	2 (1.1%)
Peptic Ulcer	2 (1.1%)
Crohn's Disease	0 (0.0%)
Ulcerative Colitis	1 (0.5%)
Indeterminate IBD and other GI disorders	26 (14.0%)
Depression	37 (19.9%)
Anxiety	44 (23.7%)
Number of comorbidities, n (%) ^e	
0	121 (65.1%)
1	48 (25.8%)
2 +	17 (9.1%)
<i>Disease characteristics</i>	
Psoriasis morphology, n (%)	
Guttate	5 (2.7%)
Erythrodermic	8 (4.3%)
Pustular (localized)	1 (0.5%)
Pustular (generalized)	2 (1.1%)
Inverse/intertriginous	25 (13.4%)
Psoriasis location, n (%)	
Scalp	74 (39.8%)
Nail	23 (12.4%)
Palmoplantar	28 (15.1%)
Genital	16 (8.6%)

Age at psoriasis symptom onset (years), mean (SD)	35.0 (17.5)
Age at psoriasis diagnosis (years), mean (SD)	37.6 (17.0)
PsO duration (years), mean (SD)	19.1 (14.9)
PsO disease duration category, n (%)	
0 - < 5 years	36 (19.6%)
5 - < 10 years	24 (13.0%)
10 - < 15 years	22 (12.0%)
15 - < 20 years	24 (13.0%)
≥ 20 years	78 (42.4%)
Psoriatic Arthritis (PsA), n (%)	103 (55.4%)
PsA duration (years) among subjects with PsA, mean (SD)	9.6 (9.3)
PEST, n (%)	
0	34 (18.7%)
1	35 (19.2%)
2	33 (18.1%)
3	36 (19.8%)
4	21 (11.5%)
5	23 (12.6%)
PEST 3+, n (%)	80 (44.0%)
<i>Disease activity *</i>	
BSA (%), mean (SD)	13.0 (16.5)
BSA category, n (%)	
Mild disease [0,3)	48 (25.8%)
Moderate disease [3,10)	75 (40.3%)
Severe disease [10,100]	63 (33.9%)
PASI (0 - 72), mean (SD)	6.0 (6.2)
PASI > 10, n (%)	44 (23.7%)
Investigator Global Assessment, mean (SD)	2.4 (1.1)
IGA category, n (%)	
0: Clear	18 (9.7%)
1: Almost clear	17 (9.1%)
2: Mild	51 (27.4%)
3: Moderate	80 (43.0%)
4: Severe	20 (10.8%)
<i>Treatment characteristics</i>	
Concomitant therapy, n (%)	
With systemic therapy	19 (10.2%)
With topical agents	68 (36.6%)
With phototherapy	3 (1.6%)
Biologic experience, n (%) ^f	
0 previous biologic agents	0 (0.0%)
1 previous biologic agent	49 (26.3%)
2 previous biologic agents	41 (22.0%)

3+ previous biologic agents	96 (51.6%)
Prior biologic class, n (%)	
TNFi	22 (11.8%)
IL-12/23i	4 (2.2%)
IL-23i	29 (15.6%)
IL-17i	115 (61.8%)
Non-biologic experience, n (%) ^g	
0 previous non-biologic agents	65 (34.9%)
1 previous non-biologic agent	72 (38.7%)
2+ previous non-biologic agents	49 (26.3%)
Overall itch/pruritus (VAS range 0-100)	186
Mean (SD)	45.4 (35.1)
Median (Q1, Q3)	47.5 (10.0, 75.0)
Overall fatigue (VAS range 0-100)	185
Mean (SD)	38.2 (31.4)
Median (Q1, Q3)	35.0 (7.0, 63.0)
Overall skin pain (VAS range 0-100)	185
Mean (SD)	29.8 (32.1)
Median (Q1, Q3)	15.0 (0.0, 59.0)
Patient global assessment (VAS range 0-100)	186
Mean (SD)	42.9 (30.3)
Median (Q1, Q3)	45.0 (15.0, 70.0)
WPAI summary scores ^h	
Currently employed, n (%)	87 (46.8%)
Absenteeism	81
Mean (SD)	5.7 (20.4)
Presenteeism	78
Mean (SD)	9.4 (14.4)
Work productivity loss	78
Mean (SD)	11.2 (16.6)
Activity impairment	184
Mean (SD)	23.2 (28.7)
Percent of work hours missed due to psoriasis	85
Mean (SD)	2.1 (9.9)
Median (Q1, Q3)	0.0 (0.0, 0.0)
Percent of impairment while working due to psoriasis	78
Mean (SD)	9.4 (14.4)
Median (Q1, Q3)	4.5 (0.0, 15.0)
Overall % of work hours affected by psoriasis	84
Mean (SD)	36.9 (16.8)
Median (Q1, Q3)	40.0 (30.0, 44.2)
Percent of daily activities impacted by psoriasis	184
Mean (SD)	23.2 (28.7)

Median (Q1, Q3)	10.0 (0.0, 40.0)
DLQI (0 - 30)	185
Mean (SD)	7.2 (6.8)
Median (Q1, Q3)	5.0 (2.0, 11.0)
DLQI Effect on life, n (%)	
0-1: None	40 (21.6%)
2-5: Small	55 (29.7%)
6-10: Moderate	42 (22.7%)
11-20: Very large	37 (20.0%)
21-30: Extremely large	11 (5.9%)
Patient health state today (VAS range 0-100)	185
Mean (SD)	69.7 (18.9)
Median (Q1, Q3)	75.0 (57.0, 85.0)
EQ-5D-3L categorical domains, n (%) ⁱ	
Walking	77 (41.8%)
Self-care	24 (13.0%)
Usual activities	69 (37.3%)
Pain/discomfort	118 (63.8%)
Anxiety/depression	75 (40.5%)
Problems with sleeping, n (%)	28 (15.2%)

^aBased on the CDC cut-offs for normal/underweight (under 25); Overweight (25.0 – 29.9); and Obese (30.0 and above).

^bCancer includes lymphoma, lung, breast, skin [melanoma], and any other cancers.

^cInfections include joint/bursa, cellulitis/skin, sinusitis, candida, diverticulitis, sepsis, pneumonia, bronchitis, gastroenteritis, meningitis/encephalitis, urinary tract, upper respiratory, TB, and other. Infections resulting in hospitalization or administration of IV antibiotics indicated as a serious infection.

^dCardio/cerebrovascular disease includes baseline history of any of the following: cardiac revascularization procedure, ventricular arrhythmia, cardiac arrest, myocardial infarction, acute coronary syndrome, unstable angina, coronary artery disease, and congestive heart failure; cerebrovascular disease includes baseline history of any of the following: stroke, TIA, peripheral vascular disease, and peripheral arterial disease.

^eThe number of comorbidities is a sum of the following physician reported comorbidities: myocardial infarction, congestive heart failure, peripheral vascular disease, cerebrovascular disease (stroke or transient ischemic attack), chronic obstructive pulmonary disease, peptic ulcer, diabetes mellitus, lymphoma, cancer, and liver disease.

^fPrior biologic use does not include subject's current biologic, if applicable.

^gPrior non-biologic systemic use does not include subject's current non-biologic systemic therapy, if applicable.

^hAbsenteeism, presenteeism, and work productivity loss are restricted to patients currently employed.

ⁱReported as n (%) with moderate/severe impairment for each domain.

Abbreviations: BMI, body mass index; BSA, body surface area; CVD, cardiovascular disease; DLQI, Dermatology Life Quality Index; EQ-5D-3L, Euro-Quality of Life 5 Dimension 3 Level; GI, gastrointestinal; IBD, inflammatory bowel disease; IGA, Investigator's Global Assessment; IL-17i, interleukin-17 inhibitor; PASI, Psoriasis Area and Severity Index; PEST, Psoriasis Epidemiology Screening Tool; PsO, psoriasis; SD, standard deviation; VAS, visual analog scale; WPAI, Work Productivity and Activity Impairment.