SKIN

RESEARCH LETTER

Regional Variation in DLQI 0/1 Within the CorEvitas Psoriasis Registry 6-months Following Biologic Initiation

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Recently, we identified geographic variation in treatment patterns and outcomes among psoriasis patients across the United States (US) enrolled in the CorEvitas Psoriasis Registry.[1] As there is a predictive correlation between reductions in psoriasis area severity index (PASI) and the Dermatology Life Quality Index (DLQI) scores among psoriasis patients treated in clinical trials with biologics,[2] we assessed for geographic differences in achieving DLQI 0/1 among US patients initiating a biologic therapy in 2018 in the CorEvitas Psoriasis Registry, a multicenter registry of psoriasis patients under the care of a dermatologist. Informed consent of human subjects was obtained.

There were 737 new biologic initiations (mean age 50.3 years, 48.0% women) in 2018 occurring at a CorEvitas visit that had a subsequent 6-month follow-up, 644 of whom had DLQI > 0 at baseline.[1] Baseline mean DLQI scores did not vary significantly among geographic regions, *p=0.072* (Table I). Overall, 42.7% of patients achieved DLQI 0/1 at 6-months. The Pacific region reported the smallest proportion achieving this target (26.9%) followed by the East South Central (ESC) (34.3%) and West South Central (WSC) (40.9%) with a range of 26.9-51.1% across all regions (*p=0.005*). In logistic regression models adjusted for age, sex, race, and BMI, the Pacific had 61% lower odds of achieving DLQI 0/1 compared to the Northeast (Odds Ratio 0.39, 95% CI: 0.21-0.71) (Table I). In analyses stratified by biologic therapy class, patients in the Pacific and the ESC were less likely to achieve DLQI 0/1 compared to the Northeast among IL-12/23 & IL-23 inhibitor initiators (OR 0.23, 95% CI: 0.08-0.65 and 0.23, 95% CI: 0.07-0.76, respectively) (Table II).

As patient-reported-outcomes become more commonplace, consistent monitoring of DLQI will be increasingly important. In a number of countries, DLQI is now part of reimbursement eligibility criteria.[3] Previous work has shown that DLQI scores are directly associated with measures of disease severity and parallel treatment response.[2] Our prior study found that patients in the ESC, WSC, and Pacific regions were less likely to achieve PASI75 compared to the Northeast (the region with the greatest proportion of patients achieving treatment targets).[1] These geographic regions also had the lowest proportion of patients achieving DLQI 0/1 at the 6-month follow-up visit, consistent with prior observed correlations between these outcome

Table 1. Baseline DLQI and odds ratios (95% CI) for achieving DLQI0/1 response at 6-months follow-up by US Census region in the Corrona Psoriasis Registry, 2018

Region	DLQI at Baseline[1]		DLQI0/1 Response at 6-months	
	Mean (SD)	Median (Q1, Q3)	% (Responders/total)	Adjusted OR (95% CI)[2]
Northeast	8.1 (6.2)	6.0 (3.0, 12.0)	45.7 (90/197)	Ref
Pacific	9.0 (5.6)	9.0 (4.0, 14.0)	26.9 (25/93)	0.39 (0.21, 0.71)**
Mountain/West North Central	6.9 (5.6)	5.5 (2.2, 10.8)	49.4 (39/79)	1.15 (0.68, 1.96)
West South Central	8.7 (5.8)	8.0 (4.0, 12.0)	40.9 (18/44)	0.92 (0.47, 1.82)
East North Central	7.1 (5.6)	5.5 (2.0, 11.0)	51.1 (24/47)	1.26 (0.64, 2.47)
East South Central	7.5 (6.0)	6.5 (3.0, 11.0)	34.3 (34/99)	0.71 (0.42, 1.19)
South Atlantic	7.2 (5.8)	5.5 (3.0, 10.0)	52.9 (45/85)	1.47 (0.86, 2.51)
Overall	7.8 (5.9)	7.0 (3.0, 12.0)	42.7 (275/644)	--

[1] P-value = 0.072 from Kruskal-Wallis test.
[2]OR (95% CI) from multivariable logistic regression adjusted for age, sex, race, BMI, and baseline BSA. Generalized Estimating Equation (GEE) were used to account for clustering.
**Significant at p<0.01

Table 2. Odd ratios (95% CI) for achieving DLQI response 6-months following biologic initiation for US Census regions in the Corrona Psoriasis Registry in 2018, stratified by biologic class

	TNFi		IL-17i		IL-12/23i+IL-23i	
Region	% (Responders/total)	Adjusted OR (95% CI)[1]	% (Responders/total)	Adjusted OR (95% CI)[1]	% (Responders/total)	Adjusted OR (95% CI)[1]
Northeast	35.3 (6/17)	Ref	35.6 (26/73)	Ref	54.2 (58/107)	Ref
Pacific	29.2 (7/24)	0.79 (0.17, 3.61)	24.4 (11/45)	0.47 (0.18, 1.21)	23.1 (6/26)	0.23 (0.08, 0.65)
Mountain/ West North Central	45.5 (10/22)	1.14 (0.28, 4.56)	60.6 (20/33)	2.38 (1.00, 5.70)	37.5 (9/24)	0.60 (0.23, 1.57)
West South Central	50.0 (3/6)	1.22 (0.16, 9.57)	47.1 (8/17)	1.76 (0.58, 5.34)	33.3 (7/21)	0.53 (0.19, 1.46)
East North Central	62.5 (5/8)	2.09 (0.32, 13.54)	57.1 (12/21)	2.40 (0.87, 6.64)	38.9 (7/18)	0.52 (0.18, 1.49)
East South Central	30.0 (6/20)	0.68 (0.16, 2.96)	40.7 (24/59)	1.39 (0.66, 2.90)	20.0 (4/20)	0.23 (0.07, 0.76)
South Atlantic	28.6 (4/14)	0.61 (0.12, 3.01)	55.0 (22/40)	2.11 (0.95, 4.71)	61.3 (19/31)	1.54 (0.65, 3.64)

[1]OR (95% CI) from multivariable logistic regression adjusted for age, sex, race, BMI, and baseline BSA. Firth adjustments were utilized to address quasi-separation.

measures.[2] Yet, after controlling for age, sex, race, and BMI, only the Pacific was statistically significantly less likely to achieve DLQI 0/1. Reasons for inconsistency among the Pacific, ESC, and WSC with respect to odds of achieving DLQI 0/1 are not yet known. We suspect several variables may contribute, including genetic heterogeneity or

lifestyle characteristics not captured as part of the registry.
Limitations of this study include that the CorEvitas registry is not a random, population-based, representative sample. The impact of seasonal/climate related variables, genetic heterogeneity, and dietary factors were not considered in this analysis. When analyzing outcomes by drug class in the fully adjusted model, sample sizes were small and therefore need to be interpreted with caution.

Despite these, with the use of real-world data, we show that improvement of DLQI scores at 6-months of treatment for psoriasis is not geographically uniform across the US. Regions that had the lowest proportions of achieving PASI75[1] also had the lowest proportions of patients achieving DLQI 0/1; yet when fully adjusted only patients in the Pacific region were less likely to achieve DLQI 0/1, suggesting factors beyond treatment response impact patient quality of life.

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