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Evaluation of the Dermatology Life Quality Index scoring modification, the DLQI-R score, in two independent populations

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The 10-item Dermatology Life Quality Index (DLQI) is an easily administered health-related quality of life instrument often utilized in dermatologic studies, including clinical trials for psoriasis.¹ However, there have been questions regarding how best to score ‘not relevant’ responses (NRRs) on the DLQI since these can be common and could lead to underestimation of the impact on quality of life. Recently, Rencz and colleagues proposed a scoring modification for the DLQI, the DLQI-R score, in which the traditional DLQI score is multiplied by a conversion factor that increases with the number of NRRs.² In their reanalysis of 242 patients involved in two cross-sectional surveys conducted in Hungary, they found that the DLQI-R displayed moderate correlation with Psoriasis Area Severity Index (PASI) scores and EQ-5D-3L index values, with higher correlation coefficients than the traditional DLQI score. However, the performance characteristics of the DLQI-R scoring modification in other populations is uncertain.

To validate the DLQI-R, a cross-sectional reanalysis was conducted using data from the Vascular Inflammation in Psoriasis (VIP) trial (a multi-center clinical trial of patients with moderate to severe psoriasis) and the Dermatology Clinical Effectiveness Research Network (DCERN, a multi-center observational study of psoriasis patients being seen in routine clinical practice).^{3,4} The DLQI and DLQI-R scores were each calculated, and their construct validity assessed using Spearman’s rank order correlations with PASI scores, Psoriasis Global Assessment (PGA) scores, and EQ-5D-3L scores. Stieger’s Z was used to evaluate for significant differences between correlation coefficients calculated for the DLQI and DLQI-R. In addition, due to the relatively low DLQI scores in the DCERN population, a secondary analysis was conducted including only patients with a DLQI score of five or greater. This study was approved by the University of Pennsylvania Institutional Review Board.

Among 1,628 patients in DCERN, 11.9% had one NRR (95% CI 10.3–13.4%), 5.3% had two NRRs (95% CI 4.2–6.4%), 2.6% had three NRRs (95% CI 1.8–3.3%), and 2.3% had

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four or more NRRs (95% CI 1.5–3.0%). Among baseline data for 96 patients in the VIP trial, 22.7% had one NRR (95% CI 14.3–31.0%), 6.2% had two NRRs (95% CI 1.4–11.0%), 7.2% had three NRRs (95% CI 2.1–12.3%), and 2.1% had four or more NRRs (95% CI –0.8–5.0%). In DCERN, the mean DLQI and DQLI-R scores were 4.8 (SD 5.6) and 5.2 (SD 6.2), respectively. In the VIP trial, the mean baseline DLQI and DLQI-R scores were 12.5 (SD 6.1) and 13.5 (SD 6.3), respectively. In both DCERN and VIP, there were no significant differences between the DLQI and DLQI-R for the PASI and PGA score correlation coefficients. In DCERN, the DLQI-R had stronger correlation than the DLQI with EQ-5D-3L visual analog scale (VAS) scores ($p=0.04$) and EQ-5D-3L index values ($p<0.001$). In VIP, there were no significant differences between the DLQI and DLQI-R for the EQ-5D-3L VAS scores or index values correlation coefficients (Table 1). Similar findings were observed in the DCERN population for those with a DLQI score of five or greater.

This study aimed to validate the DLQI-R scoring modification proposed by Rencz and colleagues in an independent population of patients with psoriasis. In these two cohorts, the DLQI-R scored approximately one point higher than the DLQI. Compared to the DLQI, the DLQI-R correlated significantly better with the EQ-5D-3L in DCERN but not in the VIP population. There were no significant differences in the correlation with PASI and PGA scores between the DLQI and DLQI-R, with the point estimates favoring the DLQI. These results contrast with those of Rencz and colleagues, who reported that the DLQI-R correlated better with all outcome measures evaluated.

The differences observed between the DLQI and DLQI-R as assessed by Spearman's rank correlation were generally small, often differing by less than 0.03. Given the inconsistent performance of the DLQI-R and small differences compared to the DLQI, additional refinement and validation for the DLQI-R should be considered before using it in place of the extensively validated DLQI.¹ Finally, given that the DLQI-R results in higher scores than the DLQI, it should be cautiously applied to estimations of psoriasis severity, since prior cutoffs, such as a DLQI score greater than 10 used to define moderate-to-severe psoriasis, were defined based on the traditional DQLI scoring system.⁵

The DLQI-R is an interesting scoring modification for the DLQI to better evaluate NRRs. However, in this study in two large cohorts of patients with psoriasis, the performance of the DLQI-R was inconsistent, and it is difficult to recommend its use in the place of the traditional DLQI scoring approach at this time.

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Table 1:

Correlation between DLQI, DLQI-R and PASI score, PGA score, EQ-5D-3L visual analog score, and EQ-5D-3L index values.

	DCERN DLQI>=5 (N=589)		VIP (N=96)		Renez et al. ² (N=242)	
	DLQI	DLQI-R	DLQI	DLQI-R	DLQI	DLQI-R
DLQI score, mean (SD)	4.8 (5.6)	5.2 (6.2)	10.6 (5.7)	11.5 (6.3)	12.5 (6.1)	13.5 (6.3)
Spearman's Rho PGA-avg	0.406	0.405	0.188	0.187	0.145	0.097
Spearman's Rho PASI	0.467	0.465	0.286	0.280	0.231	0.192
Spearman's Rho EQ-5D VAS	-0.359 [*]	-0.365 [*]	-0.328	-0.343	-0.222	-0.244
Spearman's Rho EQ-5D-3L IV	-0.403 ^{***}	-0.414 ^{***}	-0.461 ^{**}	-0.491 ^{**}	-0.533	-0.512

^{*} p<0.05,

^{**} p<0.01,

^{***} p<0.001.

Comparisons are between DLQI and DLQI-R Spearman's rank order correlation coefficients as assessed by Stieger's Z. VIP: Vascular Inflammation in Psoriasis trial; DCERN: Dermatology Clinical Effectiveness Research Network; DLQI: Dermatology Life Quality Index; PASI: Psoriasis Area Severity Index; PGA: Psoriasis Global Assessment.