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**Patient-Reported Impact of Dermatological Diseases and Mental Health**

Neuza da Silva<sup>1</sup>, Rachael Pattinson<sup>2</sup>, Allison Fitzgerald<sup>\*3</sup>, Nirohshah Trialonis-Suthakharan<sup>4</sup>, Jennifer Austin<sup>3</sup>, Christine Bundy<sup>5</sup>, Matthias Augustin<sup>1</sup>

<sup>1</sup>Institute for Health Services Research in Dermatology and Nursing (IVDP), University Medical Center Hamburg-Eppendorf (UKE), Hamburg, Germany

<sup>2</sup>School of Dentistry, Cardiff University, Cardiff, United Kingdom

<sup>3</sup>International Alliance of Dermatology Patient Organizations, Ottawa, Canada

<sup>4</sup>Patvocates, Munich, Germany

<sup>5</sup>School of Healthcare Sciences, Cardiff University, Cardiff, United Kingdom

**Introduction & Objectives:**

While the prevalences for depression and anxiety disorders are estimated at 3.8% and 4% of the global population, these can ascend to about 30% in the dermatology population. Variables related to disease and treatment play a proven, yet minor, role in explaining the high rates of psychiatric comorbidity, and, thus, additional psychological and social risk factors need to be identified. Using a newly developed and validated tool – the Patient-Reported Impact of Dermatological Diseases (PRIDD) – this study examined the associations between clinical characteristics, disease burden, and patient-reported outcomes (PROs) of mental health.

**Materials & Methods:**

Global Research on the Impact of Dermatological Diseases (GRIDD) was a cross-sectional online survey, available in 17 different languages, conducted between June 2023 and January 2024. Eligible participants were adults ( $\geq 18$  years) with a self-reported dermatological condition, recruited through patient organizations and social media platforms. Participants completed the PRIDD questionnaire (16 items assessing physical, life responsibilities, psychological, and social impact domains), the Patient Health Questionnaire (PHQ-9), the General Anxiety Disorder Assessment (GAD-7), and provided sociodemographic (e.g., age, sex) and disease-related information (e.g., primary diagnosis, comorbidities, disease severity).

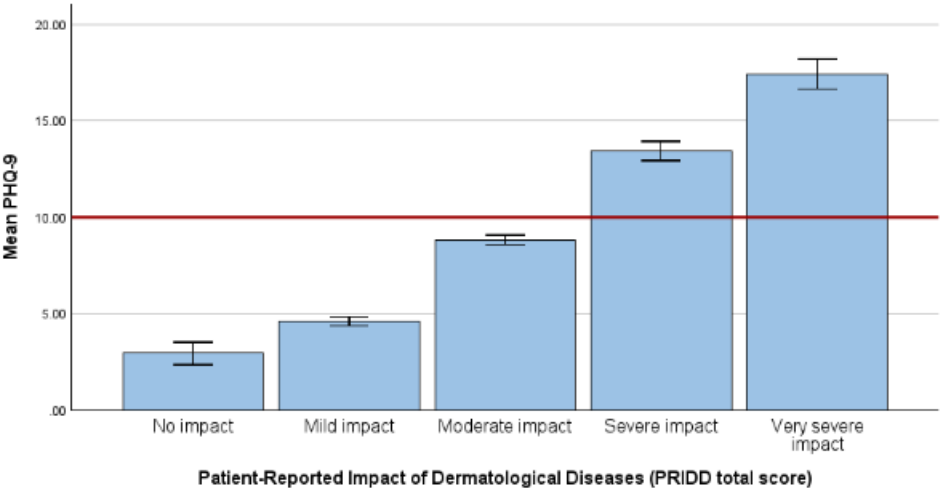
**Results:**

In total, 4138 participants completed the GRIDD survey and 3680 were retained for analyses, after excluding those who did not meet the inclusion criteria or had missing data in core variables. Participants were 76.4% female, mean age of  $48.7 \pm 15.7$  years (range 18-98), from 87 different countries, and across 114 dermatological conditions (e.g., 12.8% Lichen Sclerosus, 12.3% Psoriasis, 8.2% Hidradenitis Suppurativa, 7.5% Atopic Dermatitis, 6.9% Vitiligo). A total of 1349 (36.7%) respondents scored above the threshold for clinically significant depression (PHQ-9  $\geq 10$ ) and 956 (26.0%) for clinical anxiety (GAD-7  $\geq 10$ ). Higher impact of the dermatological condition on patients' lives, as measured by PRIDD, was moderately associated with more symptoms of depression and anxiety ( $r = 0.62$  and  $r = 0.56$ , respectively). Patients who reported severe and very severe disease burden also reported, on average, clinically significant depression and anxiety problems (Figures 1-2). Sociodemographic and disease characteristics explained, respectively, 3.9% and 20.1% of depression scores and 5.2% and 15.0% of anxiety scores; disease impact explained an additional 22.6% and 22.8% of the variance in depression and anxiety (Table 1).

**Conclusion:**

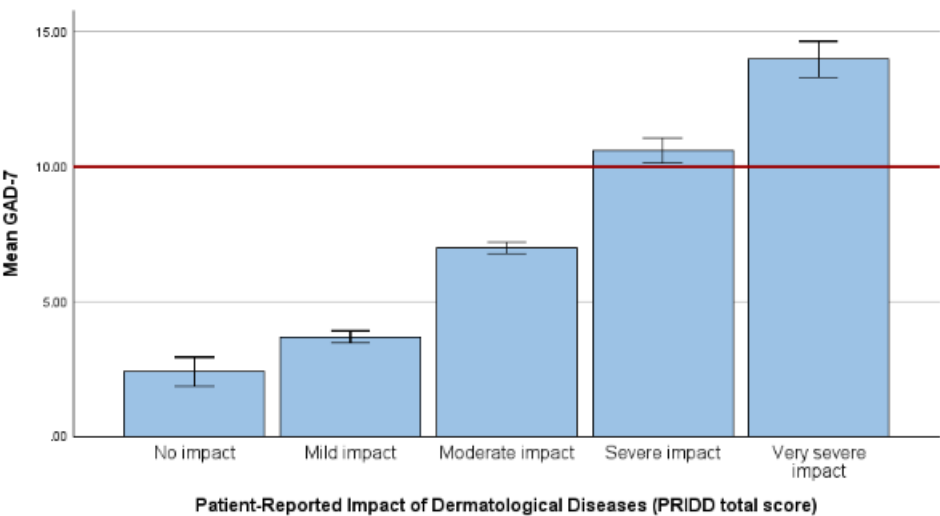
These results emphasize the importance of capturing the multidimensional burden of skin conditions on patients' lives, as it is a significant risk factor for mental health problems. The psychological and social impact of dermatological diseases should be assessed and managed in multidisciplinary primary and secondary care of dermatology patients.

Figure 1. Depression symptoms by disease impact category (PRIDD total score)



Error bars: 95% CI. PRIDD total score banding: 0.00 to 14.01 = no impact; 15.04 to 25.73 = mild impact; 26.14 to 34.26 = moderate impact; 34.89 to 39.69 = severe impact; 40.53 to 63.00 = very severe impact. PHQ-9: Patient Health Questionnaire, range from 0 to 27; the red line represents the cut-off point for clinical depression of PHQ-9  $\geq 10$  (sensitivity = 88% and specificity = 85%).

Figure 2. Anxiety symptoms by disease impact category (PRIDD total score)



Error bars: 95% CI. PRIDD total score banding: 0.00 to 14.01 = no impact; 15.04 to 25.73 = mild impact; 26.14 to 34.26 = moderate impact; 34.89 to 39.69 = severe impact; 40.53 to 63.00 = very severe impact. GAD-7: General Anxiety Disorder, range from 0 to 21; the red line represents the cut-off point for clinical anxiety of GAD-7  $\geq 10$  (sensitivity = 89% and specificity = 82%).

**Table 1.** Hierarchical regression analyses testing the associations between sociodemographic and disease characteristics, PRIDD dimensions and mental health outcomes.

|                                                                     | PHQ-9                                                        | GAD-7                                                        |
|---------------------------------------------------------------------|--------------------------------------------------------------|--------------------------------------------------------------|
|                                                                     | $\beta$                                                      | $\beta$                                                      |
| <b>Sociodemographic characteristics</b>                             | $\Delta R^2 = .039$<br>$\Delta F_{(3, 3115)} = 41.80^{***}$  | $\Delta R^2 = .052$<br>$\Delta F_{(3, 3115)} = 56.39^{***}$  |
| Age                                                                 | -.181 <sup>***</sup>                                         | -.214 <sup>***</sup>                                         |
| Biologic sex (1 = male vs. 0 = female)                              | -.059 <sup>***</sup>                                         | -.057 <sup>**</sup>                                          |
| Fitzpatrick skin type (0-6)                                         | .031                                                         | .028                                                         |
| <b>Disease characteristics</b>                                      | $\Delta R^2 = .201$<br>$\Delta F_{(8, 3107)} = 102.42^{***}$ | $\Delta R^2 = .150$<br>$\Delta F_{(8, 3107)} = 72.92^{***}$  |
| Rare disease (1 = yes vs. 0 = no)                                   | .066 <sup>***</sup>                                          | .038 <sup>*</sup>                                            |
| Years lived with the condition                                      | -.028                                                        | -.027                                                        |
| Disease severity (PGA 0-4)                                          | .331 <sup>***</sup>                                          | .299 <sup>***</sup>                                          |
| Visible areas affected (1 = yes vs. 0 = no)                         | -.009                                                        | -.006                                                        |
| Dermatological comorbidities (1 = yes vs. 0 = no)                   | .043 <sup>***</sup>                                          | .020                                                         |
| Physical or mental comorbidities (1 = yes vs. 0 = no)               | .194 <sup>***</sup>                                          | .142 <sup>***</sup>                                          |
| Patient organisation membership (1 = yes vs. 0 = no)                | -.026                                                        | -.043 <sup>**</sup>                                          |
| Satisfaction with the current healthcare (0-4)                      | -.120 <sup>***</sup>                                         | -.103 <sup>***</sup>                                         |
| <b>Patient-Reported Impact of Dermatological Conditions (PRIDD)</b> | $\Delta R^2 = .226$<br>$\Delta F_{(4, 3103)} = 327.14^{***}$ | $\Delta R^2 = .228$<br>$\Delta F_{(4, 3103)} = 309.41^{***}$ |
| Physical impact                                                     | .223 <sup>***</sup>                                          | .101 <sup>***</sup>                                          |
| Life responsibilities impact                                        | -.072 <sup>***</sup>                                         | -.122 <sup>***</sup>                                         |
| Psychological impact                                                | .263 <sup>***</sup>                                          | .450 <sup>***</sup>                                          |
| Social impact                                                       | .212 <sup>***</sup>                                          | .148 <sup>***</sup>                                          |
| <b>Model Summary</b>                                                | $R^2 = .465$<br>$F_{(15, 3103)} = 179.76^{***}$              | $R^2 = .429$<br>$F_{(15, 3103)} = 155.51^{***}$              |

PGA – Patient Global Assessment; PHQ – Patient Health Questionnaire; GAD – General Anxiety Disorder.  $\beta$  – Standardized Coefficients; \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

