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Author: Patryk Łakuta, Kamil Marcinkiewicz, Beata Bergler-Czop, Ligia Brzezińska-Wcisło, Anna Słomian

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Associations between site of skin lesions and depression, social anxiety, body-related emotions and feelings of stigmatization in psoriasis patients

Patryk Łakuta1,2, Kamil Marcinkiewicz1, Beata Bergler-Czop3, Ligia Brzezińska-Wcisło4, Anna Słomian5

1Department of Psychology, SWPS University of Social Sciences and Humanities, Warsaw, Poland
2Institute of Psychology, University of Silesia, Katowice, Poland
3Department of Cardiology, Institute of Cardiology, Warsaw, Poland
4Department of Dermatology, Medical University of Silesia, Katowice, Poland
5Group of Provincial Psychological Outpatients Clinics, Katowice, Poland

Abstract

Introduction: Research has demonstrated a link between psoriasis and a multitude of psychological impairments; however, relatively few studies have examined the importance of site of skin lesions for negative psychological outcomes in psoriasis patients.

Aim: To investigate relationships between anatomical location of psoriatic lesions and experiences of stigmatization, negative emotional attitude towards the body, depression and social anxiety.

Material and methods: Adult psoriasis patients (N = 193) completed the Stigmatization Scale, the Body Emotions Scale, the Beck Depression Inventory and the Social Anxiety Questionnaire. The body surface area index was used to assess the location and extent of psoriasis.

Results: Feelings of stigmatization were found to be most closely related to the presence of psoriatic lesions on the chest, and the arms and hands. Higher levels of social anxiety were found to be most closely related to the location of psoriatic lesions on the head and neck. Negative emotional attitude towards the body was found to be most closely related to the location of psoriatic lesions on the arms and hands, and on the head and neck. Higher levels of depressive symptoms were most closely related to the presence of psoriatic lesions on the head and neck, the arms and hands, and the genital area.

Conclusions: The presence of psoriatic lesions on the head, neck, and chest, and also on the arms and hands and the genital area, should alert clinicians to a higher risk of psychological impairments. This may help to better recognize and prevent cumulative life course impairment.

Key words: body image, depression, psoriasis, social anxiety, stigmatization.

Introduction

Psoriasis is a chronic inflammatory skin disease, affecting men and women equally, with an estimated prevalence of 2–3% in Europeans [1]. Psoriasis may involve all sites of the body, including facial and genital skin. As with other dermatoses, visible disfigurement can serve as a stressor in itself and, furthermore, triggers a negative reaction in others, resulting in feelings of stigmatization [2, 3], which jointly can cause much of the readily measurable psychosocial burden of the disease. Psoriasis strongly affects many facets of patients’ quality of life, including physical, psychological, social, sexual, and economic aspects [4–7].

To date, an extensive literature describes the co-occurrence of psoriasis and depression, anxiety, suicidal ideation, and negative body image [6–12]. However, the negative impact of psoriasis on patients’ lives, including psychosocial disability, is often unrecognized and under-treated [13, 14]. This is an important issue to consider, because psychological comorbidities associated with psoriasis have been found to be associated with poor treatment adherence, poor therapeutic response, and inferior outcomes [15–17]. Moreover, it has been found that in patients with psoriasis, depression is associated with increased risk of myocardial infarction, stroke, and cardio-
Associations between site of skin lesions and depression, social anxiety, body-related emotions and feelings of stigmatization in psoriasis patients

The aim of this study was to investigate the importance of location of the skin lesions for experiences of stigmatization, negative body image emotions, social anxiety and depressive symptoms in patients with psoriasis.

Material and methods

Participants and procedure

Subjects were recruited from the Dermatology Clinic of the Silesian Medical University in Katowice, the Polish Association of Psoriasis Patients in Bydgoszcz and the Union of Psoriasis Associations in Poland. Inclusion criteria were age ≥ 18, psoriasis diagnosed by a dermatologist, at least 1 year of disease duration, and informed consent. Ethical approval was granted by the Ethics Committee of the University of Silesia. The recruitment took place between November 2014 and February 2015.

In total, 193 of 202 received responses fulfilled the criteria adopted in this study. More than one-fifth of the respondents (21.2%) were members of psoriasis patients’ associations. No statistically significant differences were found between the members (n = 41) vs. the non-members (n = 152) regarding socio-demographic, psychological, and psoriasis-related variables (all p-values ≥ 0.10).

Measures

Depression was measured by the Beck Depression Inventory (BDI) [27, 28]. The BDI is a self-report scale consisting of 21 items. All of the 21 items corresponding to the depressive symptoms are summed to give a single score for the BDI. The total scores can range from 0 to 63, with higher scores indicating more severe depressive symptoms. The Polish validated version shows good reliability and content validity [29]. A score of 0–11 indicates no or minimal depression; 12–26 indicates mild depression; 27–49 indicates moderate depression; 50–63 indicates severe depression. The reliability of the BDI in the current study was α = 0.92.

The Social Anxiety Questionnaire (SAQ) is a 12-item, Likert-type self-report measure of social anxiety according to the Clark and Wells’ model of social phobia [30]. The SAQ consists of three factors: Symptoms of Social Anxiety (e.g., “The anxiety which I feel in social situations significantly disrupts my occupational or academic functioning and other social activities”), Negative Self-image (e.g., “I think about myself as an ineffectual, socially unattractive person”), and Excessive Processing of the Self as a Social Object (e.g., “During social situations I keep thinking about how I look and how others judge me”). The SAQ shows good psychometric properties [31]. Prior research with this measure has indicated good reliability and construct validity. The SAQ was significantly correlated with anxiety, self-focused rumination, feelings of loneliness and low self-esteem. In the current sample the internal consistency for the SAQ was α = 0.95, and for the subscales it ranged from 0.87 to 0.89.
The Stigmatization Scale is a 6-item scale assessing the experiences and feelings of stigmatization caused by skin diseases [32]. Respondents answered the statements on a 4-grade scale, ranging from 0 (not at all) to 3 (always). The total scores can range from 0 to 18, with higher scores indicating higher levels of stigmatization. Example of an item: “Other people avoid me due to my skin disease”. We used the Polish validated version of the scale [33]. The internal consistency of the scale in the current sample was $\alpha = 0.88$.

The emotional attitude towards the body was measured using the 9-item Body Emotions Subscale of the Body Ego Questionnaire [34]. Patients answered the statements on a 5-point scale. The Body Emotions Subscale ranges from 9 to 45, with higher scores reflecting a more negative emotional attitude toward the body. An example of an item from the Body Emotions Subscale is as follows: “Sometimes I hate the way I look”. In our sample the internal consistency for this subscale was $\alpha = 0.90$.

Sociodemographic data were collected along with baseline disease characteristics such as age at onset of psoriasis, diagnosis by physician, duration of the disease, family history of psoriasis, and self-assessed severity of the disease. The disease severity was defined based on the body surface area (BSA) index. Body surface area is a simple and commonly used instrument referring to the percentage of body surface area involvement [35]. Body surface area is also used as a self-reported measure of the severity of psoriasis [36, 37]. Patients were instructed to estimate psoriasis coverage using the rule of nine and the palmar site of the hand as equivalent to 1% of the BSA. The respondents reported the surface area of their skin affected by psoriasis including head and neck, arms and hands, chest, abdomen, upper back, lower back, thighs, lower legs and genital area. In general, BSA under 5% indicates mild involvement, 5–10% is defined as moderate, and over 10% is considered severe.

**Table 1. Baseline characteristics ($N = 193$)**

| Parameter | Value |
|-----------|-------|
| Age, mean ± SD [years] | 34.6 ±12.1 |
| Sex, n (%): | |
| Female | 132 (68.4) |
| Male | 61 (31.6) |
| Education, n (%): | |
| Primary | 2 (1.0) |
| Technical/vocational | 21 (11.0) |
| Secondary | 85 (44.0) |
| Higher education | 85 (44.0) |
| Marital status, n (%): | |
| Single | 62 (32.1) |
| Married/cohabiting | 104 (53.9) |
| Divorced | 21 (10.9) |
| Widowed | 6 (3.1) |
| Work, n (%): | |
| Employed | 129 (66.8) |
| Unemployed | 19 (9.8) |
| Student | 24 (12.4) |
| Retired | 21 (10.9) |
| Age at onset of psoriasis, mean ± SD [years] | 19.6 ±10.6 |
| Duration of psoriasis, mean ± SD [years] | 16.8 ±11.9 |
| Body surface area (BSA), mean (range) | 21.2 (1–82) |
| BSA involvement, n (%): | |
| < 5% | 30 (15.5) |
| 5–10% | 52 (27.0) |
| > 10% | 111 (57.5) |

**Statistical analysis**

Correlations between variables were calculated using Pearson’s correlation coefficient. Group differences were analyzed using the $t$-test and $\chi^2$ test. To identify the location of skin lesions associated with psychological impairments four stepwise multiple linear regression models with depression, social anxiety, stigmatization and negative emotional attitude towards the body as dependent variables were performed. All statistical analyses were run under the statistical package Statistica (StatSoft Inc.), version 12.

**Results**

**Characteristics of the sample**

The sample consisted of 193 psoriasis patients, and 68.4% ($n = 132$) of them were women. As shown in Table 1, participants’ age range was 20–67 years ($M = 36.4 \pm 12.1$). The mean age at onset of psoriasis was 19.6 ±10.6 years, varying between 0 and 54 years of age. The mean duration of psoriasis was 16.8 ±11.9 years, varying between 1 and 53 years. Plaque psoriasis was the most common type of psoriasis, which was reported in 175 (90.7%) cases. More than one-third of the respondents (36.8%) reported nail involvement. In addition, joint complaints were present in 18.6% of the patients. Table 2 shows the number of patients with involvement of particular body sites. Almost half of the respondents (48.7%) reported psoriatic involvement of the genital skin, whereas more than half of the respondents (81.3%) reported presence of skin lesions on the head and neck (Table 2).

At the time of this study, 84 (43.5%) patients reported mild, and 31 (16.1%) patients presented moderate depressive symptoms as defined by the BDI. High levels of social anxiety were observed in 64 (33.2%) cases.
Associations between location of skin lesions and psychological outcomes

Psoriatic involvement of all investigated parts of the body was statistically significantly related to feelings of stigmatization and negative emotional attitude towards the body. As shown in Table 2, the strongest association was observed between experiences of stigmatization and presence of psoriatic lesions on the arms and hands \((r = 0.34; \ p < 0.0001)\) and the chest \((r = 0.33; \ p < 0.0001)\). The negative emotional attitude towards the body was most closely related to the presence of lesions on the arms and hands \((r = 0.27; \ p < 0.0001)\), the head and neck \((r = 0.25; \ p < 0.0001)\), and the chest \((r = 0.24; \ p < 0.001)\). Depressive symptoms were significantly related to the presence of skin lesions on the head and neck \((r = 0.28; \ p < 0.0001)\), the genital skin \((r = 0.25; \ p < 0.0001)\), and the upper back \((r = 0.25; \ p < 0.0001)\). Social anxiety was significantly associated with the presence of psoriatic lesions on the head and neck \((r = 0.18; \ p < 0.05)\), and the chest \((r = 0.15; \ p < 0.05)\). Moreover, subjective severity of the disease based on body surface area involvement was significantly associated with all of the psychological outcome variables (Table 2). Correlation coefficients ranged from 0.15 to 0.31 \((p < 0.05)\).

To examine the relative contribution of location of psoriatic lesions to depression, social anxiety, negative emotional attitude towards the body and stigmatization, four stepwise multiple linear regressions were performed. The results are presented in Table 3. As shown in this table, the location of psoriatic lesions on the head and neck \((p < 0.01)\), the genital skin \((p < 0.05)\), and on the arms and hands \((p < 0.05)\) was most closely associated with depression, accounting for 12% of the variance. The main contributor to depression was the presence of lesions on the head and neck, accounting for 8% of the variance in the BDI scores.

Regression analysis for social anxiety revealed that only the location of psoriatic lesions on the head and neck was statistically significant in accounting for the variance of this variable (approximately 3%). Other body regions did not reach statistical significance.

Regression analysis for feelings of stigmatization indicated that the location of psoriatic lesions on the arms and hands \((p < 0.01)\), and the chest \((p < 0.01)\) was statistically significant in accounting for the variance (approximately 15% of explained variance).

Regression analysis revealed that the main contributors to the negative emotional attitude towards the body were the presence of skin lesions on the arms and hands \((p < 0.01)\), and presence on the head and neck \((p < 0.01)\), accounting for 12% of the variance.

Discussion

Although there is strong evidence for the link between psoriasis and psychological disorders [6–10] relatively few studies have examined the relationships between anatomical location of skin lesions and psychological comorbidities in patients with psoriasis. The results of the present study highlight the importance of the occurrence of lesions in different body regions for feelings and experiences of stigmatization, negative emotional attitude towards the body, social anxiety and depressive symptoms. The location of psoriatic lesions on the head and neck was the main contributor to depression, social anxiety and negative emotional attitude to the body. The location of lesions on the arms and hands was a significant contributor to feelings of stigmatization, negative emotional attitude toward the body, and depression. Additionally, the genital involvement makes a significant contribution to the variance in depression, whereas the presence of psoriatic lesions on the chest

### Table 2. Correlations between site of psoriatic lesions and depression, social anxiety, experiences of stigmatization and negative emotional attitude to the body

| Involvement of particular body sites | N (%) | Depression | Social anxiety | Stigmatization | Negative emotional attitude to the body |
|-------------------------------------|-------|------------|---------------|----------------|----------------------------------------|
| Head and neck                       | 157 (81.3) | 0.28*** | 0.18* | 0.15* | 0.25*** |
| Arms and hands                      | 164 (85.0) | 0.22** | 0.13 | 0.34*** | 0.27*** |
| Chest                               | 101 (52.3) | 0.24** | 0.15* | 0.33*** | 0.24** |
| Abdomen                             | 111 (57.5) | 0.19** | 0.13 | 0.20** | 0.15* |
| Upper back                          | 98 (50.8) | 0.25*** | 0.10 | 0.16* | 0.21** |
| Lower back                          | 130 (67.4) | 0.19** | 0.12 | 0.26*** | 0.23** |
| Thighs                              | 108 (56.0) | 0.13 | 0.13 | 0.28*** | 0.21** |
| Knees, lower legs, ankles           | 117 (60.6) | 0.16* | 0.05 | 0.26*** | 0.17* |
| Genital area                        | 94 (48.7) | 0.25*** | 0.13 | 0.16* | 0.22** |
| BSA total                           | 193 (100) | 0.28*** | 0.15* | 0.31*** | 0.30*** |

***p < 0.001, **p < 0.01, *p < 0.05.
was a significant contributor to experiences of stigmatization. Moreover, according to current knowledge [6–10], our results show high rates of psychological impairments in patients with psoriasis. In this study 16.1% of patients reported moderate depressive symptoms. Mild depressive symptoms were present in 43.5% of the patients. Furthermore, high levels of social anxiety were observed in 33.2% of the respondents.

To date, only a few studies have been conducted on the relationship between location of psoriatic lesions and psychological impairment in patients with psoriasis. However, it has been reported that patients with visible psoriatic lesions reported poorer physical and mental health [20], which is consistent with the findings of our study. In addition, our results are in agreement with the findings reported by Picardi et al. [19], who found that in dermatological patients the presence of skin lesions localized on the face and hands is associated with a very large increase in the prevalence of psychiatric disorders. Furthermore, our results indicated that genital involvement may be a risk factor for depression in patients with psoriasis. We also detected that the genital involvement is significantly related to feelings of stigmatization, which is consistent with previous research, where dermatological patients with genital lesions felt significantly more stigmatized than those without genital skin affected [21]. Moreover, these results are also in line with previous findings highlighting the association between the involvement of the genital area and poor quality of life, higher levels of psychological distress, and sexual dysfunction [38–40].

The unique contribution of this study is the analysis of patients’ subjective perceptions of their skin disease that allowed for identification of psychologically sensitive anatomic locations of skin lesions associated with feelings of stigmatization, depressive symptoms, negative body-related emotions, and social anxiety. However, our results need to be viewed in the light of several limitations. First, our study was cross-sectional; therefore, we cannot prove causality, and the findings need to be replicated in a prospective study. Second, women are over-represented in our sample (68.4% as opposed to 32.6%), which may limit the generalizability of the results. Moreover, our sample also included the members of psoriasis patients’ associations (21.2% of the sample). It may be speculated that these patients may have (by the very fact of their membership) considerable concern regarding their disease or they might suffer from more severe psoriasis and/or have a greater psychosocial burden of the disease. However, in this study no significant differences were found between the members vs. the non-members. Finally, a limitation of this study is the exclusive reliance on the self-report questionnaires. Future research could extend our findings by including both clinician-assessed location and severity of psoriatic lesions and those self-assessed by patients.

Conclusions

We identified ‘sensitive’ body regions affected by psoriasis associated with negative mental health, including symptoms of depression, social anxiety, negative emotions about one’s own appearance, and feelings of stigmatization. The most important result of our study is that the presence of psoriatic lesions on the head, neck,

Table 3. Results from four multiple linear regression models with depression, social anxiety, stigmatization and negative emotional attitude toward the body as dependent variables

| Variable                          | β   | ΔR² | FΔR²   | F  | R²  | Adj. R² |
|----------------------------------|-----|-----|--------|----|-----|---------|
| **Depression:**                  |     |     |        |    |     |         |
| Head and neck                    | 0.23** | 0.08 | 15.75*** |   | 0.14 | 0.12    |
| Genital area                     | 0.16*  | 0.04 | 7.78**  |   |     |         |
| Arms and hands                   | 0.15*  | 0.02 | 4.58*   |   |     |         |
| **Social anxiety:**              |     |     |        |    |     |         |
| Head and neck                    | 0.17*  | 0.03 | 5.95*   |   |     |         |
| Chest                            | 0.11  | 0.01 | 2.59    |   |     |         |
| **Stigmatization:**             |     |     |        |    |     |         |
| Arms and hands                   | 0.24** | 0.11 | 24.33*** |   | 0.16 | 0.15    |
| Chest                            | 0.23** | 0.05 | 9.69**  |   |     |         |
| **Negative emotional attitude to the body:** |     |     |        |    |     |         |
| Arms and hands                   | 0.22** | 0.08 | 15.21*** |   | 0.14 | 0.12    |
| Head and neck                    | 0.20** | 0.05 | 10.90** |   |     |         |
| Genital area                     | 0.11  | 0.01 | 2.14    |   |     |         |

***p < 0.001, **p < 0.01, *p < 0.05.
Associations between site of skin lesions and depression, social anxiety, body-related emotions and feelings of stigmatization in psoriasis patients

and chest, and also on the arms and hands and in the genital area, should alert clinicians to the higher risk for psychological impairments in patients with psoriasis. This may help to better recognize the problem and earlier in the disease course provide patients comprehensive management to prevent cumulative life course impairment in psoriasis. Future research should aim to further explore the nature of the relationship between site of skin lesions and psychological impairments in patients with psoriasis.

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Conflict of interest

The authors declare no conflict of interest.

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