

The Psoriasis Life Stress Inventory: A Preliminary Index of Psoriasis-related Stress

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The psychosocial impact of psoriasis may result in significant daily stress for the patient. We present a questionnaire, the Psoriasis Life Stress Inventory (PLSI), which provides a rating of psoriasis-related stress. Two hundred and seventeen psoriasis patients endorsed a list of psoriasis-related items they had experienced over the previous one month and rated the degree of stress associated with each item on a 4-point scale. The final version of the PLSI consisted of 15 items, each of which had been endorsed by at least 15% of patients. A PLSI score of ≥ 10 (range 0 to 43) delineated patients with greater overall psoriasis severity ($p=0.007$), more cosmetically disfiguring psoriasis ($p<0.01$), greater number of flare-ups of psoriasis ($p=0.009$) and greater pruritus severity ($p=0.001$). This preliminary instrument provides a clinically useful index of psoriasis-related stress and needs to be tested among patients from different centers and in prospective studies.

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The psychosocial impact of psoriasis (1–8) can result in significant daily stress for the patient (2, 3, 5), which arises largely as a result of the cosmetic disfigurement and social stigma (2, 3, 5, 6) associated with psoriasis. The psoriasis-related daily stress represents chronic, recurrent, low-grade stress or hassles that occur largely as a result of having to live with a chronic, disfiguring disease. There is a large body of literature (4–6, 8–15) that supports the role of stressful life events in precipitating and/or exacerbating psoriasis. The studies on stress and psoriasis (4) have focused mainly on the role of major stressful life events, such as the death of a loved one, in the onset or exacerbation of the disease. Some reports (5, 17) suggest, however, that chronic, recurring, low-grade stress or daily hassles play a greater role in adversely affecting the course of a disease (17) including psoriasis (2, 3, 5), in comparison to the acute, severe and relatively short-lived stress resulting from most major life events (18, 19).

In this report we present a questionnaire, the Psoriasis Life Stress Inventory (PLSI) (5, 20), that provides a rating of the daily hassles or recurrent low-grade stress associated with having to live with psoriasis. Finlay et al. (1, 21) have developed a 10-item instrument that measures the psychosocial disability associated with psoriasis. Their instrument, the Psoriasis Disability Index, has addressed the effect of psoriasis on daily activities such as working around the house or garden, preparation of food, choice of clothes and colors, use of public transport, frequent need to change or wash clothes, problems at

the hairdresser's and having to take more baths than usual; the effect of psoriasis on work and leisure activities such as difficulties with playing sports, use of communal bathing or changing facilities or increased smoking or consumption of alcohol; and the effect of treatments such as the house getting messy. Other investigators (7, 8) have similarly (1) evaluated a range of psychosocial problems associated with psoriasis, as part of a more global measure of psoriasis-related disability. The PLSI was developed with the view of obtaining an index of the stress associated with having to cope with these various (1–3, 5–9, 11) psoriasis-related events. For example, an individual with disfiguring psoriasis affecting an easily visible body region may avoid using public transportation. However, the individual who depends on public transportation to earn his livelihood is likely to find this psoriasis-related event more stressful. We believe that the concept of psoriasis-related stress is important, since experiencing a psoriasis-related event may not be equally stressful for all patients. Psoriasis-related stress is therefore likely to be a more accurate indicator of the psychosocial disability associated with psoriasis for any particular patient.

MATERIAL AND METHODS

We studied 217 consecutive consenting psoriasis inpatients ($n=139$) and outpatients ($n=78$), to obtain patients with a wide range of psoriasis severity. The inpatients (72 males and 67 females, mean \pm SE age of 47.2 ± 1.4 years, mean \pm SE percentage of total body surface area (TBSA) affected by psoriasis $52 \pm 2\%$) and outpatients (41 males and 37 females, mean \pm SE age of 49.4 ± 1.8 years, $\leq 30\%$ of TBSA affected by psoriasis) were all patients at the Department of Dermatology, University of Michigan Hospitals, Ann Arbor. This study was part of a larger survey of psychosocial factors in psoriasis. Exclusion criteria were other concomitant dermatologic or medical disorders. For the inpatients, the dermatologic assessments and psychosocial ratings were obtained within the first week of admission at the onset of treatment. The outpatients were recruited from a database of patients attending the Dermatology Outpatient Service at the University of Michigan, and only the patients who had been clinically documented as having $\leq 30\%$ of their TBSA affected by psoriasis were included in the study. The study was approved by the Institutional Review Board at the University of Michigan and a written informed consent was obtained from all participants, who were all unpaid volunteers. Demographic data including age, sex, number of years affected by psoriasis and number of previous flare-ups of psoriasis were obtained from all patients.

Dermatologic ratings

The dermatologic ratings reported in this study were all patients' self-ratings. In two previous studies (5, 20), the relation between the PLSI scores and clinician ratings of psoriasis severity, percentage TBSA affected and location of the psoriasis were examined among the inpatients who are reported in this study (Table I). In contrast, in the current study, the patients' self-ratings of overall psoriasis severity and severity of psoriasis in individual body regions are considered. We

Table I. Responses ($n = 217$) to the psoriasis life stress inventory (PLSI) (5, 20)

Event, and % of patients who experienced the event 1 month previously	Stress rating on a 4-point scale			
	"0" = "not at all"	"1" = "slight degree"	"2" = "moderate degree"	"3" = "a great deal"
1. Inconvenienced by the shedding of your skin, 66%	4.7%	31.8%	28.7%	34.8%
2. Feeling self-conscious among strangers, 52%	1.8%	35.1%	35.1%	27.9%
3. Feeling that you have to set aside a large part of your time to take care of your psoriasis, 51%	4.9%	24.3%	38.8%	32.0%
4. Not going to a public place (e.g. swimming pool, health club, restaurant) when you would have liked to, 50%	9.9%	21.8%	21.8%	46.5%
5. Wearing unattractive or uncomfortable clothes in order to cover certain regions of the body, 46%	5.3%	29.8%	34.0%	30.9%
6. Having to avoid sunbathing in the company of others, 44%	7.1%	20.2%	20.2%	52.4%
7. Fear of having serious side-effects from medical treatments, 31%	3.2%	46.0%	27.0%	23.8%
8. People treating you as if your skin condition is contagious, 29%	8.2%	29.5%	29.5%	32.8%
9. Avoiding social situations, 28%	3.4%	39.0%	33.9%	23.7%
10. Strangers (children or adults) making rude or insensitive remarks about your appearance, 27%	5.5%	36.4%	25.5%	32.7%
11. Not enough money to pay medical bills, 22%	6.7%	35.6%	11.1%	46.7%
12. Feeling like an "outcast" or "social misfit" a great deal of the time, 22%	4.3%	34.0%	31.9%	29.8%
13. People making a conscious effort not to touch you, 18%	7.9%	34.2%	31.6%	26.3%
14. Hairdresser or barber appearing reluctant to cut your hair, 15%	3.4%	17.2%	41.4%	37.9%
15. People implying that your skin condition may be due to AIDS, leprosy or a venereal disease, 15%	30.0%	6.7%	26.7%	36.7%

believe that it is important to consider the patient's self-ratings when examining the relation between the PLSI score and psoriasis severity, since the psychosocial impact of psoriasis is a largely subjective experience. Global patient self-ratings of psoriasis severity were obtained from their responses on a 10-point scale (rating of "1" denoted "not at all" and a rating of "10" denoted "very severe") to the following items: "overall redness of skin rash", "overall scaling or shedding of skin", "overall thickness of psoriasis plaques", "itching due to psoriasis" and "overall severity of psoriasis". Using the same 10-point scale described above, the patients also rated the psoriasis severity affecting each of their individual body regions.

Items of psoriasis life stress inventory

Fifteen of the original 41 items, each of which had been endorsed by at least 15% of the 217 patients (Table I), were included in the final version of the PLSI. The items in this inventory were primarily based upon our clinical experience in a field test with 50 patients. The 15-item inventory addressed potentially stressful minor life events which could be classified into 2 categories: (1) those resulting from the cosmetic disfigurement and social stigma associated with having psoriasis, for example, feeling self-conscious in a public place; (2) those associated with having to cope with the physical aspects of the disease and its treatments, for example, shedding of the skin. The patients endorsed the events from the inventory that they had experienced over the previous one month by checking a "Yes" or "No" to the question "Did this happen in the past one month?" (Table I). Secondly, when an event was endorsed as having occurred, the patients rated the degree of stress associated with the event using a 4-point scale where a rating of "0" denoted "not at all", "1" denoted "slight degree", "2" denoted "moderate degree", and "3" denoted "a great deal". The time scale of one month is similar to that used by others (1) and assumes most patients will accurately recall the events that they endorsed.

Psoriasis-related stress score

The overall psoriasis-related stress score was derived from the sum of all stress ratings. If a patient did not experience a particular event, a stress score of "0" was assigned to that event. Alternately, if an event occurred but no stress was experienced as a result of it, a stress score of "0" was also assigned to that event. The total stress score could therefore theoretically range from 0 to 45. To categorize the PLSI score, the total PLSI score was cut at a value of 10, and patients with scores less than 10 were classified as having "low" PLSI scores in comparison to those with scores ≥ 10 , who were classified as having "high" PLSI scores. The value of 10 was chosen because this cut off value discriminated between the "high" and "low" stress groups in a manner consistent with an earlier report (5), where the high stress reactors had a more cosmetically disfiguring disease and a greater number of flare-ups of psoriasis. The "low" (i.e. PLSI score < 10) and "high" (i.e. PLSI score ≥ 10) stress groups represented 52% and 48% of the patients, respectively.

Statistical analysis

Pearson product-moment correlations were used to examine the relation between the various patient self-rated indices of psoriasis severity and the PLSI score (Table I). When examining differences between the low (i.e. PLSI score < 10) and high (i.e. PLSI score ≥ 10) stress groups, a two sample *t*-test was used to compare continuous variables and a chi-square test was used to compare categorical variables.

RESULTS

Table I summarizes the percentage of patients ($n = 217$) who endorsed each of the 15 life events associated with psoriasis, and the degree of stress associated with the event. The psoriasis-

related stress score (PLSI score) ranged from 0 to 43, with a (mean \pm SD) score of 11.5 (\pm 10.0).

Construct validity

We examined the relation between the PLSI scores and the patient rated measures of psoriasis severity (all rated on a 10-point scale) among both inpatients and outpatients. There was a direct correlation between the PLSI score and patient self-ratings of "overall redness of skin rash" (mean \pm SD score: 5.8 ± 3.0 ; $r=0.15$, $p=0.04$), "overall scaling or shedding of skin" (mean \pm SD score: 4.9 ± 3.0 ; $r=0.20$, $p=0.008$), "overall thickness of psoriasis plaques" (mean \pm SD score: 5.3 ± 2.6 ; $r=0.17$, $p=0.02$), "itching due to psoriasis" (mean \pm SD score: 5.1 ± 2.8 ; $r=0.24$, $p=0.001$), and "overall severity of psoriasis" (mean \pm SD score: 6.3 ± 2.5 ; $r=0.19$, $p=0.01$). There was a direct correlation ($r=0.17$ to 0.31 , $p<0.05$) between the PLSI scores and psoriasis severity affecting the following individual body regions: scalp ($r=0.23$, $p=0.003$); face ($r=0.20$, $p=0.02$); neck ($r=0.23$, $p=0.006$); chest ($r=0.28$, $p=0.0002$); right arm ($r=0.26$, $p=0.0009$); right forearm ($r=0.31$, $p=0.0001$); right hand ($r=0.18$, $p=0.02$); left arm ($r=0.23$, $p=0.003$); left forearm ($r=0.29$, $p=0.0002$); left hand ($r=0.17$, $p=0.04$); back ($r=0.28$, $p=0.0003$); and abdomen ($r=0.25$, $p=0.001$). Psoriasis severity affecting the shoulder, hips, groin region, thighs, legs and feet did not correlate significantly with the PLSI scores. Most of the body regions that correlated significantly with the PLSI scores also tended to be associated with greater cosmetic disfigurement.

Furthermore, comparison of the groups with a low (i.e. <10) PLSI score versus a high (i.e. ≥ 10) PLSI score revealed that a PLSI score of ≥ 10 delineated a subgroup of patients with greater overall severity of psoriasis ($p=0.007$) and greater psoriasis severity ($p<0.01$) in body regions that led to the greatest cosmetic disfigurement. These findings are consistent with the hypothesis that patients with more cosmetically disfiguring psoriasis and greater psoriasis severity would experience greater social stigma and hence greater stress as a result of their disease, and also greater stress associated with the physical aspects of psoriasis and its treatments.

Reliability

Cronbach's alpha for all 15 items of the PLSI was 0.90, indicating a high degree of internal consistency within the items.

Prediction of clinical course using the PLSI

In our earlier report (5) we observed a direct correlation ($r=0.29$, $p<0.05$) between the PLSI score and a retrospective rating of the number of flare-ups of psoriasis. In this study, analysis including the less severely affected outpatients also revealed a direct correlation ($r=0.20$, $p=0.03$) between the PLSI score and the number of previous flare-ups of psoriasis. In another report (20) we had observed a direct correlation between the PLSI score and pruritus severity among inpatients with psoriasis. Analysis including the less severely affected outpatients in this study further confirmed a direct correlation ($r=0.24$, $p=0.001$) between PLSI scores and pruritus severity.

DISCUSSION

We have described the PLSI, a 15-item questionnaire that generally takes 10 to 15 min to complete and may be used to delineate the subgroup of patients (i.e. those with a PLSI score of ≥ 10) who experience a greater degree of stress in association with their psoriasis. The importance of the concept of psoriasis-related stress lies in the finding that stress or daily hassles resulting from the psychosocial impact of psoriasis may in turn adversely affect the course of the disease (2, 3, 5, 17). The PLSI represents an index of the psychosocial morbidity associated with psoriasis, which can be the most bothersome feature of psoriasis for many patients (9). The PLSI may further provide a measure of the efficacy of the dermatologic therapies for psoriasis, since an important component of a favorable treatment outcome in psoriasis is the improvement in the overall psychosocial morbidity associated with the disease. This preliminary questionnaire needs to be tested among patient samples from different centers and in prospective studies.

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