CLINICAL REPORT

Health-related Quality of Life in Psoriasis: Important Role of Personal Resources

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Many patients with psoriasis demonstrate psychological disturbances, including decreased health-related quality of life (HRQoL). The aim of this study was to evaluate selected personal resources and HRQoL in 168 in-patients with psoriasis vulgaris. The following questionnaires were used: Skindex-29, General Health Questionnaire, Coping with Skin Disease Scale, Acceptance of Illness Scale, Life Orientation Test, Multidimensional Health Locus of Control Scale and General Self-Efficacy Scale. It was demonstrated that younger patients experienced fewer problems in psychosocial functioning, and that they showed a correlation between worse HRQoL and both external powerful others and external chance domains in locus of health control. Subjective self-evaluation of health correlated with HRQoL irrespective of patient's age. Coping with stress strategies hopelessness/ helplessness and distraction/catastrophization correlated with worse overall HRQoL, whereas fighting spirit strategy correlated with better overall HRQoL. Hopelessness/helplessness coping strategy, somatic symptoms, disease acceptance, psoriasis severity and patient's age explained 61% of overall HRQoL variance. Psychomedical interventions designed for psoriatic patients should take into account the above variables. *Key words: psoriasis; health-related quality of life; personal resources.*

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Psoriasis is a chronic skin disease involving up to 3% of the population worldwide (1). Published data indicate considerably decreased health-related quality of life (HRQoL) in psoriatic patients compared with patients with other chronic diseases, including diabetes, ischaemic heart disease and cancer (2).

Psoriatic patients demonstrate high anxiety levels, low self-esteem and impaired self-control over their behaviour and emotions, such as shame, hopelessness, anger and embarrassment (3, 4). Psoriasis, as a chronic disease, adversely affects patient's self-confidence, can make them feel dirty and sexually unattractive, and pa-

tients may be regarded by society as lacking in personal hygiene. Psoriatic patients may be afraid of exposing their body in public, and feel stigmatized during swimming pool and beach activities, hairdresser or beauty salon procedures (4, 5).

Patients' reactions towards their disease are very diverse, and depend on the clinical picture, disease symptoms, psychological approach to illness perception, personality traits, including personal resources, temperamental features, coping with stress strategies and numerous situation factors (6, 7).

HRQoL can be defined as a functional effect of a disease and its treatment, as evaluated by the patient (8). HRQoL mostly reflects ways in which patients regard their health status and other non-medical aspects of their life. HRQoL evaluation elucidates the disadvantages of the disease and the self-constraints imposed by the disease on the patients. Thus, it ultimately can be used to define the needs or support measures offered to these patients as rehabilitation and psycho-education programmes.

Personal resources (PR) are crucial components in coping with stressful life events on an everyday basis. They could be defined as general features of external, interpersonal and personal world that play a regulatory role in obtaining/maintaining proper health status. PR prevent stressors triggering, further block development of chronic stress, and favour effective coping with stress strategies. PR are specific functional abilities that may be present in both the environment, the person, and their mutual interactions. PR can be further divided into external (physical, biological and social factors) and internal (spiritual, psychological and biological factors) (6, 8).

The aim of our study was to describe the correlation between selected personal resources and HRQoL in psoriatic patients, and further differentiate the predictors of HRQoL in the course of the disease. Thus, we examined 5 hypotheses: (*i*) Males, older patients, more highly educated people and those who were married or co-habiting report better HRQoL (Skindex-29); (*ii*) Patients presenting higher levels of optimism, internal health locus of control and higher self-efficacy have better HRQoL (Skindex-29); (*iii*) The less severe the skin lesions the better the patients' subjective health evaluation (GHQ-28), and the shorter the disease duration the better the patients' HRQoL (Skindex-29); (*iv*) The more often

active coping with the disease strategies employment and higher disease acceptance the better the patients' HRQoL (Skindex-29); and (*v*). Some of the evaluated variables could be considered as predictors of HRQoL in psoriasis.

MATERIALS AND METHODS

The study comprised 168 in-patients with psoriasis vulgaris (56 females, 112 males) recruited at the Department of Dermatology and Venereology, Medical University of Lodz, between January 2003 and September 2005. The majority of patients, i.e. 155 (93%), presented with lesions located on the exposed areas (face, neck, head, hands). Mean ± standard deviation (SD) patient's age was 40 ± 13 years (range 17–70 years), disease duration 15 ± 12 years (range 1–52 years). Primary and professional education was characteristic for 106 patients, whereas 62 presented secondary or university education. Ninety patients were single and 78 were in a relationship.

The severity of the disease was evaluated with the Psoriasis Area and Severity Index (PASI) as mean ± SD 14.4 ± 8.7 (range 1.8–43.0). The patients were treated with phototherapy (ultraviolet B; UVB) and local ointments. No biological methods were employed.

The study was approved by the Medical University of Lodz Bioethics Committee and the patients gave their informed consent to participate in the study.

Questionnaires

Skindex-29. Skindex-29 is a tool designed to evaluate dermatology-specific HRQoL (by Chren et al. (9), Polish adaptation by Steuden and Janowski (10)). It is composed of 29 items assessing symptoms, emotional and functioning domains. The higher the score the worse the HRQoL.

The *General Health Questionnaire-28* (GHQ-28) by Bridges & Goldberg (11) (Polish adaptation by Makowska & Merecz (12)) examines psychological distress. It evaluates: (*i*) somatic symptoms; (*ii*) anxiety and insomnia; (*iii*) functional disturbances; and (iv) depression. The GHQ-28 comprises 28 items.

The *Coping with Skin Disease Scale* (SRS-DER, Miniszewska, (8)) was elaborated to evaluate coping with stress strategies in dermatological patients. SRS-DER was based on the Mental Adjustment to Cancer Scale (MAC, by Watson et al., Polish adaptation by Juczynski (13)). SRS-DER measures 3 coping with skin disease strategies: (*i*) hopelessness/helplessness; (*ii*) fighting spirit; and (*iii*) distraction/catastrophization. The total score for each scale ranges from 6 to 36 points. The higher the result the more often is the behaviour characteristic for this particular coping strategy encountered.

The *Acceptance of Illness Scale* (AIS; by Felton et al. (14); Polish adaptation by Juczynski (13)) is composed of statements describing negative consequences of ill health status, which reflect limitations imposed by the disease, lack of self-sufficiency, feelings of dependence on other people and decreased self-esteem. AIS measures the degree of acceptance of illness. The lower the score the worse the acceptance of illness and the stronger feelings of psychological distress are reported.

The *Life Orientation Test* (LOT-R) is designed to express generalized expectations of positive life events and measures optimism. This test has 10 items and scores from 0 to 24 points: the higher the score the higher the level of optimism is reported (13, 15).

The *Multidimensional Health Locus of Control Scale* (MHLC) contains 18 items and measures beliefs concerning generalized expectations in 3 dimensions of health locus of control, i.e. internal (control over one's health depends on oneself), external powerful others (one's health results from others' influence, especially healthcare providers) and external chance (status of one's health is ruled by coincidence or other undefined external factors). Scores in each of the 3 subscales range from 6 to 36 points; the higher the score the higher conviction that this particular subscale exerts its impact on one's health status (13, 16).

The *Generalized Self-Efficacy Scale* (GSES) is based on conceptions of expectations and self-efficacy. The stronger the conviction of self-efficacy, the higher the tendency towards more difficult tasks and the stronger the commitment observed in the examined group of patients. This scale has 10 items; the higher the score the better the individual self-efficacy is recorded (13, 17).

Statistical analysis

Statistical analysis was performed using SPSS package for Windows. Mean (M), standard deviation (SD) and Pearson's correlation coefficients (*r*) are presented. The strength of the correlations was assessed as weak if *r* was between 0.2 and 0.4, and as moderate when r ranged between 0.41 and 0.7. The distribution of the obtained results did not significantly differ from normal distribution. The Student's *t*-test (T) and stepwise regression analysis were employed. Statistical significance was set at $p < 0.05$.

RESULTS

HRQoL assessment in relation to sociodemographic variables

HRQoL was associated neither with sex (females vs. males) nor education level (primary and professional vs. secondary and university education) nor civil status (singles vs. couples). The detailed results are shown in Table I.

We divided the examined patients into 2 age groups: <40 years of age and ≥40 years (age of the patients at the time of our study). It should be noted that pso-

Table I. *Quality of life evaluated by Skindex-29 in relation to sex, educational level, civil status and age in the examined psoriasis vulgaris patients*

| Skindex-29 | Sex | | | Educational level | | | Civil status | | | Age* | | |
	Males *n*=112 Mean ± SD	Females *n*=56 Mean ± SD	*t*-test	Prim/Prof *n*=106 Mean ± SD	Sec/Univ *n*=62 Mean ± SD	*t*-test	Couples *n*=78 Mean ± SD	Singles *n*=90 Mean ± SD	*t*-test	<40 years Mean ± SD	≥40 years Mean ± SD	*t*-test
Symptoms	19.5 ± 6.1	19.7 ± 5.3	–0.232	19.8 ± 6.0	19.4 ± 5.6	0.392	20.2 ± 5.8	19.1 ± 5.9	1.290	17.6 ± 5.3	21.6 ± 5.7	–4.693
Emotions	31.3 ± 9.4	30.8 ± 9.5	0.335	31.7 ± 9.6	30.1 ± 9.1	1.000	31.7 ± 8.8	30.6 ± 9.9	0.731	28.5 ± 8.6	33.6 ± 9.5	–3.632
Functioning	35.2 ± 11.4	34.5 ± 11.4	0.416	35.7 ± 11.6	33.8 ± 11.0	1.011	35.2 ± 10.9	34.8 ± 11.8	1.181	32.0 ± 10.4	37.9 ± 11.6	–3.453
Total	86.1 ± 24.1	84.9 ± 23.3	0.214	87.1 ± 24.2	83.4 ± 23.1	0.975	87.1 ± 23.2	84.5 ± 34.3	0.692	78.1 ± 21.3	93.1 ± 23.9	–4.278

*$p < 0.001$. All other values are non-significant.
Prim/Prof: Primary/professional; Sec/Univ: Secondary/university; SD: standard deviation.

riasis developed in all the patients before the age of 40 years. We observed that younger patients reported lower results in all domains of Skindex-29, indicating better overall HRQoL, better functioning, lower level of negative emotions, and less frequently reported symptoms such as itching, pain or burning sensation (all $p < 0.001$) (Table I). The younger group was also less frustrated and embarassed by their disease. This group also demonstrated fewer problems in social contacts, at work or in hobby activities (Table I).

HRQoL and the examined resources

In everyday approach, 40 years of age is regarded to be a so-called turning point in adult life. When examining socio-demographic variables, age was the only differentiating factor for HRQoL. Thus, we performed further analyses in both age groups separately (<40 years of age and ≥ 40 years).

Beliefs and expectations

Optimism, both in younger and older patients, correlated with all HRQoL domains. The higher ability to experience positive emotions and expect positive events presented by the patients, the better was their HRQoL (weak to moderate correlation: $r = -0.46$ and $r = -0.30$ for younger and older group, respectively). Higher optimism levels correlated with less shame and embarassed feelings in social contacts originating in the disease itself (weak to slightly moderate correlation: $r = -0.45$ and -0.25 for younger and older group,

respectively). Patients reporting higher optimism levels reported less itching, pain and skin irritation as well as fewer sleep problems (weak correlations: $r = -0.37$ and -0.27 for younger and older group, respectively) (Table II).

When assessing locus of health control, younger patients were more often convinced that external chance (i.e. coincidence) determined their health status. In this group, external chance correlated with worse HRQoL in all dimensions, however correlation coefficients were of weak or slightly moderate strength. Younger patients also reported influence of others (i.e. external powerful others in locus of health control) on their health status in the following dimensions of Skindex-29: emotions, functioning and total score, which correlated with worse HRQoL (all $r = 0.28$ denoting weak correlations). In the older group of psoriatic patients, no significant correlation in locus of health control dimensions and HRQoL was observed. Higher conviction about internal control does not correlate with HRQoL ($p > 0.05$) (Table II).

When analysing self-efficacy, both studied groups demonstrated significant, albeit weak, correlation between this parameter and functioning, together with total HRQoL score. This means that the stronger the conviction in self-efficacy in difficult situations, the better the HRQoL total score and the less frequent are reports on difficulties in psychosocial functioning. The younger group demonstrated weak correlation between self-efficacy and physical symptoms ($r = 0.33$). This means that the stronger the belief in self-efficacy the less frequently somatic symptoms are reported by the patients.

Table II. *Correlations, expressed as Pearson's correlation coefficients, between Skindex-29 domains and personal resources in patients with psoriasis vulgaris divided according to the age groups*

	Symptoms		Emotions		Functioning		Total	
Personal resources	<40 years	≥40 years	<40 years	≥40 years	<40 years	≥40 years	<40 years	≥40 years
Beliefs and expectations								
Self efficacy	–0.33**	–0.17	–0.14	–0.34b	–0.23*	–0.21*	–0.26*	–0.28**
Locus of health control								
Internal	–0.09	–0.04	–0.16	–0.07	–0.12	–0.03	–0.14	–0.03
External powerful others	0.14	0.14	0.28*	0.17	0.28*	0.17	0.28*	0.19
External chance	0.32**	0.02	0.33**	0.04	0.40***	–0.02	0.41***	0.01
Optimism	–0.37***	–0.27*	–0.46***	–0.30**	–0.45***	–0.25*	–0.50***	–0.31**
Objective health status evaluation								
Disease severity (PASI)	0.06	0.31**	0.12	0.19	0.23*	–0.35**	0.17	0.32**
Disease duration	0.32**	–0.17	0.14	–0.20	0.19	–0.13	0.23*	–0.18
Subjective general health status evaluation (GHQ-28)								
Somatic symptoms	0.53***	0.51***	0.41***	0.53***	0.43***	0.33**	0.50***	0.49***
Anxiety, insomnia	0.53***	0.44***	0.56***	0.49***	0.53***	0.25*	0.61***	0.42***
Functional disturbances	0.50***	0.30**	0.41***	0.32**	0.48***	0.19	0.52***	0.28**
Depression	0.44***	0.45***	0.52***	0.41***	0.56***	0.46***	0.59***	0.50***
Total	0.61***	0.51***	0.58***	0.52***	0.60***	0.39***	0.68***	0.52***
Adjustment to disease								
Disease acceptance	–0.33**	–0.21*	–0.47***	–0.36**	–0.42***	–0.39***	–0.48***	–0.39***
Coping with stress strategies								
Hopelessness/helplessness	0.38***	0.49***	0.71***	0.70***	0.50***	0.64***	0.62***	0.70***
Fighting spirit	–0.24*	–0.29**	–0.20	–0.19	–0.30**	–0.29**	–0.29**	–0.29**
Distraction/catastrophization	0.30**	0.12	0.34**	0.21*	0.18	0.29**	0.30**	0.25*

*$p<0.05$; **$p<0.01$; ***$p<0.001$.
PASI: Psoriasis Area and Severity Index.

The older group of patients, who reported the higher level of self-efficacy, also less frequently experienced negative emotions (weak negative correlation *r*=–0.34) (Table II).

Objective health status evaluation

Objective disease severity evaluation expressed as PASI score correlated with psychosocial functioning, i.e. the more severe the disease the more problems at work and in social interactions in their everyday lives were reported by both groups of patients (weak correlations). In the older group, the severity of the disease also correlated with more severe physical symptoms and worse general HRQoL (weak correlations) (Table II).

When analysing disease duration, group correlation, albeit weak, was reported only in the younger patients, between both physical symptoms (*r*=0.32) and total HRQoL score (*r*=0.23) (Table II).

Subjective health status evaluation

In both patient groups examined, subjective evaluation of general health status demonstrated correlation with all HRQoL dimensions (all correlations of moderate strength). Positive self-evaluation of one's health denotes positive quality of life and *vice versa*. Stronger psychological stress (depression in GHQ-28) correlates moderately with worse HRQoL in all dimensions. This means that patient's complaints, such as headaches and malaise, and an urgent desire to improve one's health status correlate with skin symptoms, negative emotions originating in the disease itself and restrictions in everyday functioning (Table II).

Anxiety and insomnia, being the result of one's preoccupations and leading to general irritation, overwork, tension, problems with decision-taking and difficulties in everyday functioning, also correlate with all HRQoL dimensions (worse quality of life) (Table II). Correlation coefficients vary between weak and moderate strength.

Adjustment to disease

Both examined groups demonstrated negative, weak to moderate, correlations between disease acceptance and all HRQoL dimensions, i.e. the better the disease acceptance the better the reported HRQoL in all the studied dimensions. In other words, patients who accepted their disease and its constraints imposed on everyday life, reported fewer physical complaints and negative emotions, more rewarding social interactions and better everyday functioning (Table II).

Out of the coping with stress strategies, in both the examined groups of patients hopelessness/helplessness correlated moderately with all HRQoL dimensions. This means that the higher tendency to surrender to helplessness/hopelessness feelings, the more difficulties in social contacts, more problems in everyday life, and more skin

and health complaints. In contrast, fighting spirit coping strategy correlated with less frequent physical symptoms, better psychosocial functioning, and better overall HRQoL in both the examined patients groups; however, correlation coefficients were of weak strength. Furthermore, employment of distraction/catastrophization coping strategy correlated with worse physical symptoms (more skin complaints) in the younger group, and more problems in social interactions in the older group (both correlations of weak strength). In addition, both groups showed positive correlation, albeit still weak, between distraction/catastrophization strategy and negative emotions and overall HRQoL (Table II).

Predictors of HRQoL

The final step in the performed analysis was to search for predictors of psoriasis patients HRQoL. Regression analysis (Table III) entered the following independent variables: beliefs and expectations (self-efficacy, locus of health control, optimism), objective health status evaluation (PASI, disease duration), subjective health status evaluation (general health status), disease adjustment (disease acceptance and coping with stress strategies) and age of the studied patients. It was revealed that 5 variables, i.e. hopelessness/helplessness coping with stress strategy, somatic symptoms, disease acceptance, disease severity (PASI) and age of the patients, explain 61% of overall HRQoL variance (Table III).

DISCUSSION

The European Federation of Psoriasis Patient Associations (EUROPSO) interviewed 17,990 people with psoriasis, and revealed that 77% reported problems caused by the disease itself (5). The majority of available data focus on HRQoL evaluation in relation to disease parameters, such as severity, duration, and lesion location, and seem to implement HRQoL assessment in treatment evaluation, mainly of biologic type (18, 19). A comparatively low number of research groups are interested in factors influencing HRQoL, patients functioning or other psychological variables (20).

Table III. *Stepwise regression analysis of the examined variables in psoriasis vulgaris patients*

Variable in model	Beta	SEBeta	B	SEB	t-test	p-value
Helplessness/hopelessness	0.46	0.05	2.44	0.30	5.13	<0.001
Somatic symptoms	0.25	0.25	1.39	0.31	4.43	<0.001
Disease acceptance	–0.18	–0.18	–0.57	0.17	–3.35	<0.001
Disease severity (PASI)	0.16	0.16	–0.45	0.13	3.37	<0.001
Age of the patients	0.11	0.11	0.20	0.09	2.16	<0.05
Constant			42.13	8.20	5.13	<0.001

Model characteristics: R=0.78; R²= 0.61; F=52.33; *p*<0.001.
PASI: Psoriasis Area and Severity Index; R²: multiple regression analysis coefficient; Beta: beta coefficient; SEBeta: standard error of beta; B: factor B; SEB: standard error of B.

Our results demonstrated that younger patients report better HRQoL than older patients. Sex, education level and civic status do not differentiate the examined patients in terms of HRQoL. Younger patients less frequently complain of physical symptoms, including irritation, itching or stinging of the skin. They also less often report/experience negative emotions resulting from their disease, including preoccupations about health deterioration, humiliation feelings, low spirit, irritation, frustration or anger. Younger patients also present fewer problems in psychosocial functioning, namely sleep disturbances, feeling lonely, constraints in social interactions. Thus, our first hypothesis, that males, older patients, more highly educated people and couples evaluate their HRQoL as better, was not confirmed. The results obtained are in accordance with Fortune et al. (21), who demonstrated the same HRQoL in both female and male patients with psoriasis. De Korte et al. (4) also did not observe any correlation between sex and HRQoL. Others, however, found significantly worse HRQoL in female than male psoriatic patients (10, 22–25). Observations concerning correlations between patient's age and HRQoL are also inconsistent. Some researchers found worse HRQoL in older patients (10), whereas others demonstrated the opposite (24).

External powerful others and external chance in locus of health control correlated with worse HRQoL in younger patients (albeit correlation coefficients were of weak strength). It is probable that stronger belief in medical health providers efficacy is linked with higher focus on the disease itself and more painful disappointment in case of its relapse. In other words, if one believes that only other people's actions can improve one's health status, when treatment fails, this could lead to depressed mood. The correlation between believing in external chance domain in locus of health control and worse evaluation of quality of life is not surprising; lack of control is usually associated with poor well-being (13). Thus, our second hypothesis, that patients with higher optimism, internal locus of health control and higher self-efficacy report better HRQoL, was only partly confirmed.

In both groups of patients, disease severity correlated weakly with difficulties in psychosocial functioning, whereas in the older group it also correlated weakly with physical symptoms and overall HRQoL. Notably, over time younger patients also report more physical complaints and worse overall HRQoL. It seems that 40 years of age could be regarded as a turning point in re-assessment of the disease by patients with psoriasis.

Subjective evaluation of one's health status correlates with HRQoL in both patients' groups. The better the patient's health status assessment the better their HRQoL, the worse the patient health evaluation the worse their HRQoL (correlation coefficients of moderate strength). Thus, our third hypothesis that patients

with less severe disease and shorter duration, who assess their health as favourable and better evaluate their HRQoL, was partly confirmed.

There is inconsistency in the published data concerning the correlation between disease severity and HRQoL. Some authors did not demonstrate such a correlation (21), whereas others did (2, 20, 25). The location of the lesions on visible parts of the body has a strong influence on HRQoL (21, 25). It is worth emphasizing that most of our patients (93%) presented with visible skin lesions (on the face, neck, head and hands). It may be assumed that younger patients regard their appearance as extremely important in everyday life, and thus they report a strong negative impact of the disease on social contacts and role performance. In contrast, older patients, not surprisingly, concentrate most on their health status.

When discussing adjustment to the disease, expressed as disease acceptance and understood as acceptance of the limitations imposed by the health status, such as dependence on others in everyday life, positive correlation with all HRQoL dimensions was demonstrated in both age groups. Thus our fourth hypothesis, that patients preferring active coping with stress strategies, who further accept their disease report better HRQoL was confirmed. Our final hypothesis was also confirmed because 5 of the tested variables can be considered as predictors of HRQoL in skin disorders (hopelessness/helplessness coping with stress strategy, somatic symptoms, disease acceptance, disease severity and age of the patients).

Scharloo et al. (26) showed the importance of active coping with stress for a better adaptation to the disease. The authors also demonstrated that passive coping with stress correlated with worse functioning in psoriatic patients. Rapp et al. (20) reported that such coping strategies as informing others of one's disease, hiding lesions or putting corrective camouflage or avoiding social contacts correlated with worse HRQoL. The researchers also noted that strategies focused on emotions, such as dreaming about a better life, also correlated with worse HRQoL. Fortune et al. reported the less frequent use of active coping with stress strategies in psoriatic patients (27).

Our previous results have already clearly indicated that increased optimism, lower conviction of others' influence on one's health, and less frequently employed coping strategy concentration on emotions are associated with a higher level of acceptance of one's illness (6, 7).

Thus, it seems fully justifiable to search for further psychological parameters, such as needs, personal values, anxiety, maturity or social support, which could influence HRQoL in psoriatic patients.

Analysis of factors influencing HRQoL in psoriatic patients should not neglect treatment methods, despite inconsistencies in the published data (19, 28). It should be emphasized that messy treatment with anthralin results in patients feeling dirty. Subsequently, these patients may

report lower HRQoL in comparison with other psoriatic patients on less messy biologic regimens (29).

Based on the above data, one can easily conclude that quality of life is a complicated issue and requires further interdisciplinary research investigating numerous medical and psychological aspects of psoriasis. Nonetheless, the results of the present study may form the basis for psychological intervention employment in psoriatic patients.

Regarding study limitations, the examined groups comprised only those patients who were hospitalized at the dermatology ward, who generally presented with more severe disease than out-patients. Moreover, the vast majority of patients studied (93%) presented with visible skin lesions.

In conclusion, concerning psycho-medical interventions, one should concentrate on older patients with more severe disease, who present lower disease acceptance and report more somatic symptoms and preference for hopelessness/helplessness coping strategy. Psychological activities for psoriatic patients should take into account patient's beliefs, expectations and disease adjustment. Such an approach involves intervening to enhance self-efficacy and optimism in psoriasis patients, combined with teaching efficient active coping with stress and disease acceptance.

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