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## Improved quality of life among patients with psoriasis after supervised climate therapy at the Canary Islands

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A total of 559 Norwegian patients with psoriasis completed the Dermatology Life Quality Index questionnaire and a dermatologist assessed psoriasis severity before and after climate therapy. There was no control group. A clinically important improvement in quality of life after climate therapy is demonstrated. Improvement in disease severity is significantly related to improvement in quality of life. (*J Am Acad Dermatol* 2002; 47:314-6.)

Psoriasis may have a profound effect on quality of life (QoL) aspects such as physical, psychological, and social areas in life.<sup>1-4</sup> Regardless of the time of onset, the patients face a lifelong struggle to eradicate the scaling plaques that could be a source of problems in all aspects of life. Compliance with current time-consuming, cosmetically unacceptable, and stressing antipsoriasis treatment is a major problem.<sup>5</sup> Thus any regimen that makes the patient's life easier is valuable. Consequently, the aim of therapy is to optimize psoriasis-related QoL, emotional functioning, and the patients' ability to cope with the disease, and with treatment and its consequences. Climate therapy is supplemental to those patients who require hospitalization and frequent intensive outpatient care. Research shows that climate therapy commonly has a beneficial effect on psoriasis severity and is highly appreciated by most patients suffering from psoriasis.<sup>6</sup> However, most evaluative research among patients with psoriasis has focused on the effects of treatment regimens on the clinical severity of the disease. Little attention has been paid to the effect of different treatment regimens on QoL. So far, no studies appear to have focused on the effects of climate treatment abroad on QoL among psoriasis patients. Therefore the aim

of the present article is to answer the following questions: (1) Will psoriasis patients undergoing climate therapy on the Canary Islands actually report improved QoL after treatment? (2) Is improvement in disease severity before and after climate treatment related to improvement in QoL?

### METHODS

The sample consists of Norwegian patients with psoriasis who underwent climate therapy during 1994 to 1996, including 229 patients from the season 1994/95 and 230 patients from the season 1995/96. Patients were primarily selected by psoriasis severity assessed by Psoriasis Severity Index (PSI 1994/95) or Psoriasis Area and Severity Index (PASI 1995/96).<sup>6,7</sup> The Norwegian Health Authorities have covered costs of the therapy since the start in 1976, and treatment is now situated at The Norwegian Health Center on the Canary Islands. A Nordic medical team consisting of a dermatologist, 3 nurses, and a sport-and-leisure leader supervised the 3-week treatment. The health care program comprises (1) sun exposure, (2) sea bathing, (3) psychosocial and physical stimulation in a relaxing atmosphere, and (4) education. During the treatment course patients normally have approximately 100 hours of sunbathing, and only emollients and sunscreens are applied.

The present study has a pre-posttest design with one group using the following measures: PSI, PASI, global assessment of psoriasis and arthritis severity (7-point Likert scale) and the Dermatology Life Quality Index (DLQI).<sup>6-8</sup>

Paired *t* tests were used to assess the differences in mean pre- and posttreatment values for psoriasis severity and QoL. SD effect sizes were calculated by the following standardized response mean (SRM)

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**Table I.** Pretest and posttest scores, threshold values, and SRM values for quality of life and psoriasis severity\*

DLQI items (range 0-3) (higher scores = worse QoL)	Pretest scores descriptive	Posttest scores descriptive	% No impact on QoL (pre)	% No impact on QoL (post)	SRM
Season 1994/95					
Itchy, sore, painful, or stinging skin	2.4 (0.7)	0.4 (0.6)	0.9	61.8	2.2
Embarrassed or self-conscious	1.8 (0.8)	0.3 (0.5)	6.2	77.1	1.7
Shopping or looking after your home or garden	1.3 (0.9)	0.4 (0.7)	20.1	72.7	0.8
Clothes you wear	2.1 (0.9)	0.6 (0.8)	7.4	61.3	1.3
Social or leisure activities	1.6 (1.0)	0.3 (0.7)	15.1	77.8	1.1
Sport	1.6 (1.1)	0.2 (0.5)	17.5	84.6	1.3
Working or studying	0.8 (1.0)	0.1 (0.6)	51.5	95.2	0.6
Problems with partner, close friends, or relatives	1.4 (0.9)	0.2 (0.5)	16.7	83.1	1.1
Sexual difficulties	1.0 (1.1)	0.2 (0.7)	40.2	88.2	0.7
Treatment	2.2 (0.8)	0.9 (1.0)	4.1	45.4	1.0
Total DLQI score (higher scores = poorer QoL)	1.7 (0.6)	0.4 (0.4)	—	—	1.9
PSI (higher scores = more severe)	6.1 (5.0)	1.3 (2.0)	—	—	1.1
Season 1995/96					
Itchy, sore, painful, or stinging skin	2.0 (0.8)	1.5 (1.0)	4.3	18.5	0.4
Embarrassed or self-conscious	1.5 (1.0)	1.0 (0.9)	15.9	32.8	0.5
Shopping or looking after your home or garden	1.3 (1.0)	0.7 (0.8)	18.5	47.0	0.6
Clothes you wear	1.8 (1.0)	1.2 (1.0)	10.8	26.7	0.5
Social or leisure activities	1.4 (1.0)	0.9 (1.0)	17.2	41.4	0.4
Sport	1.3 (1.1)	0.8 (1.0)	23.3	37.5	0.4
Working or studying	0.8 (1.0)	0.3 (0.6)	53.9	78.4	0.4
Problems with partner, close friends, or relatives	1.3 (1.0)	0.8 (0.9)	23.7	46.1	0.5
Sexual difficulties	1.1 (1.1)	0.5 (0.8)	31.9	53.0	0.5
Treatment	2.1 (0.9)	1.5 (1.0)	6.9	17.7	0.5
Total DLQI score (higher scores = poorer QoL)	1.5 (1.0)	0.9 (0.7)	—	—	0.7
PASI (higher scores = more severe)	11.6 (8.8)	2.3 (3.8)	—	—	1.2

Data are expressed as means with standard deviations in parentheses.

\*For explanation of SRM formula, see Methods section. Psoriasis severity and quality of life (all items and total score) were significantly improved ( $P < .001$ ).

formula: score difference/SD difference.<sup>9</sup> The relationship between the magnitude of changes in disease severity and the magnitude of changes in QoL were analyzed by multiple linear regression.

## RESULTS

The mean age of the patients was 48 years (SD, 13.4; range, 23-82 years), and 60% of the sample from the season 1994/95 were men; for 1995/96 the mean age was 50 years (SD, 13.4; range, 22-86 years) and 59% were men. In 1994/95 the effect on psoriasis severity was evaluated by the dermatologist as 91.5% much better or completely healed, 7.5% partial improvement, 0.5% unchanged, and 0.5% worse. The same figures from 1995/96 were 89.6%, 9.2%, 0.7%, and 0.5%, respectively. During 1994/95, 62% of the patients reported that they suffered from arthritis as did 58% during 1995/96. Self-assessment of

joint problems after climate therapy was reported as 76% asymptomatic or much better, 14% partial improvement, 10% unchanged and no worse in 1994/95. The figures from 1995/96 were 80%, 13%, 8%, and 0%, respectively. The patients most frequently reported improvement in arthritis-related pain, number of affected joints, and restriction of joint mobility after treatment. Results of the paired *t* test analyses showed that psoriasis severity and QoL were significantly improved ( $P < .001$ ). Table I shows the pretest and posttest scores, threshold values, and SRM values for both samples. The highest mean difference for QoL was found in the sample from 1994/95. Areas such as the patients' perception of physical symptoms, embarrassment, and problems with treatment show the highest mean differences in the sample from 1994/95. For the season 1995/96,

the areas that show the highest mean differences before and after the test are problems with treatment, daily activities, and physical symptoms. SRM values for QoL items range from 2.2-0.6 in the sample 1994/95, and from 0.4-0.7 in the sample 1995/96. Multiple regression analyses show that the level of QoL after treatment, controlled for QoL before treatment, is statistically significant related to the level of disease severity after treatment, controlled for the level of disease severity before treatment in both samples (1994/95  $\text{st.}\beta$  0.34,  $P < .01$ ; 1995/96  $\text{st.}\beta$  0.21,  $P < .01$ ). The majority of patients improved in both disease severity and QoL.

## DISCUSSION

To our knowledge, this is the first study confirming improved QoL after climate therapy among patients with psoriasis. We also confirm the clinical efficacy on psoriasis severity and arthritis symptoms. However, statistically significant changes in QoL parameters do not necessarily indicate clinical relevance. A central issue in the interpretation of QoL scores is whether changes in QoL are great enough to be of clinical importance. QoL results are essentially qualitative, and clinical relevance of the findings is a subject of debate. One of the simplest forms of presentation and interpretation is to show the percentage of patients above a specific threshold value. Alternatively, standardized estimations of effect size could be applied in the interpretation of the results.<sup>10</sup> According to Cohen<sup>9</sup> the mean change divided by the SD difference would serve as an "effect size index" that is suitable to detect important clinical changes. Cohen<sup>9</sup> states that effect sizes of 0.20 to 0.50 are regarded as small effects, 0.50-0.80 as moderate effects, and  $>0.80$  is regarded as large effects. Consequently, the SRM value for QoL in the present study could be interpreted as a large effect in the sample 1994/95, and as a moderate effect in the sample 1995/96. With regard to disease severity, the effect sizes are large for both samples (Table I). Previous annual reports from the Norwegian climate therapy program have also demonstrated a substantial clinical improvement of psoriasis severity assessed by a dermatologist similar to results presented in this study.<sup>11</sup> Few studies have focused on effects of different treatment regimens on the QoL in psoriasis patients. However, significant improvement in QoL has been reported in relation to different medical treatment of psoriasis, in accordance with the findings in our study.<sup>12-15</sup>

The 1994/95 season showed better improvement in QoL than the season of 1995/96. The improvement in the condition of psoriasis patients after climate therapy may be influenced by psychologic

factors such as mental relaxation, as well as the excitement and mental stimulation provided by traveling. Reports from 1995/96 indicate that patients were not satisfied with the relocation of the treatment center this season with new behavioral routines and stricter control from the treatment team.

Further research on the effect of climate therapy on QoL is necessary. Control groups such as patients undergoing other treatment modalities, the use of psoriasis-specific QoL questionnaires, and valid and reliable questionnaires that could be compared across patient groups (eg, SF-36), and the assessment of long-term effects should be included in future designs.

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