Report

Quality of life instrument for Turkish people with skin diseases

Mehmet Salih Gurel, MD, Medaim Yanik, MD, Zeynep Simsek, PhD, Mahmut Kati, MD, and Ahmet Karaman MD

From the Department of Dermatology Psychiatry and Public Health Medical Faculty of Harran University, Sanliurfa, Turkey

Correspondence
Mehmet Salih Gurel
Harran Universitesi
Arastirma Hastanesi
Dermatology AD
63100 Sanliurfa
Turkey
E-mail: gurelm@bigfoot.com

Abstract

Background and objective To develop a new, short, self-administrated subjective quality of life (QOL) instrument for Turkish people with skin diseases.

Patients and methods The 11-item questionnaire of QOL instrument was developed from 200 consecutive dermatological patients' replies. The reliability and validity of the instrument was tested on data gathered from 278 patients with skin diseases attending a dermatology outpatient department and 49 normal subjects. Construct validity was assessed by an exploratory factor analyses and comparisons between patients rated severe and not severe, as well as between normal and patient groups. Reliability was assessed from the internal consistency of the scales and the correlations were made between scores from a 7–10-day retest by using intraclass correlation coefficient.

Results Factor analyses found six separate dimensions of QOL involving skin disease: social life, emotional life, daily activity, symptoms, cognitive life and sexual life. In addition, 81.3% of common variance was explained by the above factors, all of which correlated with the scale scores of the instrument. The instrument scales were internally consistent (Cronbach's α = 0.77–0.84) and scale scores were reproducible after 7–10 days (ICC = 0.63–0.88). Significantly, correlations between scale scores and physician's assessment of the severity of the skin disease were found. Significant differences between diagnostic groups were observed with higher scores for patients with psoriasis, urticaria and acne than those with eczema in the emotional life domain ($P < 0.05$). In the sexual life domain, however, the eczema group had higher scores than patients with psoriasis, urticaria or acne ($P < 0.01$).

Conclusion The instrument provides valid and reliable assessments of QOL in Turkish patients with skin disease.

Introduction

Quality of life (QOL) assessment collects information from a patient's perspective about the impact of disease on daily living and provides a systematic and scientific basis for evaluating the benefits of treatment in terms of what patients value.[1] Measures of QOL have particular significance for dermatological conditions because, although not generally life-threatening, they frequently have a major impact on patients' psychosocial state, social relationships and everyday activities.[2,3] A Turkish QOL instrument (TQL) for skin disease was created in order to construct a simple, practical method of measuring QOL in routine clinical practice. This paper describes the development, and validity and reliability testing of a new TQL instrument for skin disease.

Patients and Methods

Development of questionnaire

We decided to develop a Turkish QOL questionnaire based on a number of published works.[1,3–6] Subsequently, 200 outpatients older than 14 years that were literate and attending the Dermatology Outpatients Clinic of Harran University's Medical Faculty, Sanliurfa, were given a sheet of paper with the following sentence: "Please write down freely all the ways in which your skin condition affects you. Please include the effects of your skin problems on your feelings and personal relationships, daily and social activities, and how much your skin disease affects your life?" All patients answered the questionnaire. Each answer was analyzed by identifying different aspects of life quality impairment. Three researchers (two psychiatrists and one dermatologist) independently reviewed the items recorded. The total number of recorded items was 201 and they were classified into the main categories of the most commonly identified aspects of QOL impairment. Finally, an 11-question TQL instrument for skin disease was developed based on these items.

The questionnaire was initially given to 40 patients and minor modifications were made based on their comments. The final version of the questionnaire was designed to fit on one side of an A4 size sheet of paper. The space at the top of the sheet is

designed for a patient's record number, age, sex, marital status, educational status, occupation, patient-assessed disease severity score, and the diagnosis and disease severity score of the patient assessed by a physician.

The TQL consists of 11 questions, each related to a different aspect of skin disease and QOL. An 11-item TQL was conceptualized to measure two major domains: psychosocial and physical. Within these domains, six dimensions were identified: psychosocial effects that are cognitive, social, and emotional; and physical effects related to physical discomfort or limitations in physical function, sexual life and daily activities.

All questions were phrased positively and assigned a five-point Likert scale, as always = every time, often = frequently, sometimes = rarely, and never = not at all. Answers were scored from 0 to 4 according to the grading, with always = every time representing the highest score and poorest quality of life. The lower the score, the better the quality of life. The total score range possible ranged between 0 and 44.

The nature of the study was explained to each patient and the TQL instrument was given to patients for completion in an outpatient clinic. The questionnaire was completed by the patients in a self-administered and unaided fashion. Patients were told to answer all questions with reference to their experiences over the last month.

Two hundred and eighty-nine patients attending the outpatient clinic were asked to complete the new TQL. The questionnaires were completed by 280 patients (nine declined) during July and August 2001. Only those aged between 14 and 57 years that were literate were included in the assessment. Questionnaires were eliminated if more than five of 11 items were left blank or if the responses to all the items were the same; as a result, two patients were excluded from the study. Finally, 278 patients were evaluated by TQL assessment. Patients also answered questions about their socio-demographic status. Dermatological diagnoses were collected from medical records.

A control group of 49 healthy persons was randomly selected from among relatives that accompanied patients attending the dermatology outpatient clinic. The criteria for those in the control group were that they should not have seen their general practitioner in the previous 3 months, they should have had no skin problems or any other systemic medical diseases over this same time period, and they should have no apparent disabilities.

To measure the relative clinical severity of a patient's skin condition, each patient was also asked a global question about the overall severity of his or her skin condition. In addition, after examination, a physician recorded the clinical severity of the skin disease. Response categories were negligible, mild, moderate, severe, and extremely severe. Responses were scored from 1 (negligible) to 5 (extremely severe). Among patients with similar diagnoses, correlations between scores on the instrument and physicians' judgments of skin disease severity were determined by Pearson's correlation coefficient.

For factor analyses, answers to missing items were imputed to equal the average of each patient's responses to other items in the corresponding scale. All responses were transferred to a database and statistical analyses were performed by using SPSS for Windows Version 11.0.

Validity and reliability

At least two important properties are necessary for empiric measurements: validity and reliability. In a general sense, an index is valid if it does what it is intended to do, while an index is reliable if it yields the same results on repeated trials.[7]

Construct validity was assessed clinically and psychometrically. We performed a principal component factor analysis using varimax rotation on whether the hypothesized number of scales described the data well, using a total of 327 subjects (278 patients and 49 healthy controls). We determined the number of meaningful factors by retaining only those factors with an eigen value greater than 1 after factor rotation and by the application of a scree test. We examined the relationship between the factors retained in these analyses and the six scales of the instrument. For this examination, we identified items that loaded on each factor in the rotated factor pattern with standardized regression coefficients of greater than or equal to 0.40. Factors were labeled according to the predominant aspect of life domains reflected by the items. We compared the factors and the scales both qualitatively (by determining whether they appeared to identify similar aspects of a patient's experiences) and quantitatively (by calculating the correlations between the estimated factor scores and the scale scores using Pearson's correlation coefficient).

Next, we examined differences in scale scores in groups differing in type of skin condition, as well as healthy and patient's groups.

We performed psychometric evaluations of the TQL in two groups of patients: the main patient sample, in which the internal-consistency reliability and construct validity of the instrument were tested; and a smaller sample, in which the reproducibility of the instrument was tested.

The reliability of the scale was assessed in terms of the internal consistency of the items and by test–retest reliability. The internal-consistency reliability of the scales was determined using Cronbach's alpha coefficient. Reproducibility of the six scales was evaluated by using intraclass correlation coefficient (ICC). Forty-eight patients with a variety of skin diseases were recruited from the outpatient clinic. Following an interval of 7–10 days, this group of patients, consisting of 23 (47.9%) male and 25 (52.1%) female patients aged 14–44 years (median 21.5), re-attended the outpatient clinic to again complete the TQL questionnaire.

Results

The validity assessment of the TQL instrument was based on data gathered from 278 patients with skin disease; 51.8% were female, the mean age was 26.84 years (from 14 to 57),

Table 1 Relationship between factors extracted in factor analyses and hypothesized scales from the conceptual framework for the effects of skin disease on quality of life

Factor number	% of common variance explained	Number of items (questions)	For Items factor load value	Factor label	Range of correlations with other scales, *r*
I	45.9	2 (5, 7)	5 (0.79) 7 (0.80)	Social life	0.32–0.61
II	8.3	3 (1, 2, 4)	1 (0.53) 2 (0.52) 4 (0.76)	Emotional	0.28–0.61
III	7.7	2 (3, 11)	3 (0.82) 11 (0.68)	Daily activity	0.30–0.60
IV	7.0	1 (6)	6 (0.76)	Symptom	0.32–0.52
V	6.6	2 (9, 10)	9 (0.73) 10 (0.75)	Cognitive	0.26–0.59
VI	5.7	1 (8)	8 (0.93)	Sexual life	0.25–0.52

Table 2 Validity of the scales with clinically assessed disease status categories and patient and normal groups

	Disease status categories			Patient and normal groups		
Scales	Not severe (mean) *N* = 85	Severe (mean) *N* = 194	*P*-value*	Patient (mean) *N* = 278	Normal (mean) *N* = 49	*P*-value
Social life	0.7	1.9	0.001	1.6	0.3	0.001
Emotional	4.1	6.1	0.001	5.5	1.5	0.001
Daily activity	1.6	3.0	0.001	2.6	0.7	0.001
Symptom	0.9	1.8	0.001	1.5	0.45	0.001
Cognitive	2.2	3.4	0.001	3.1	0.9	0.001
Sexual life	0.3	0.8	0.001	0.7	0.1	0.001
Total	9.9	16.9	0.001	14.7	4.1	0.001

*Two-tailed *t*-test for independent samples (Table 3).

and 51.8% were married at the time. In the healthy control group, 53.1% were female, the mean age was 29.06 years (from 15 to 51), and 59.2% were married at the time.

Two hundred and fifty (90%) patients correctly completed all 11 questions. The remaining 28 did not complete the questionnaire fully. Questions 3 (daily activities), 8 (sexual life), 10 (cognitive) and 11(daily activities) had 5, 13, 5 and 5 missing responses, respectively.

We performed a principal components analysis using a varimax rotation with Kaiser normalization. The rotation revealed a six-factor structure that explained 81.3% of variance. All the items were loaded greater than 0.52 (from 0.52 to 0.93) on their respective factor. The correlations between the scales were significantly higher (Table 1).

There was a significant correlation between the physician's judgments of the clinical severity of skin disease and the six-scale scores of the QOL instrument ($r = 0.25–0.38$; $P = 0.001$). The validity of the scales was assessed on the ability of the scale to discriminate patient groups defined clinically as severe or not severe based on a dermatologist's determination of whether the patient experienced bothersome or intolerable symptoms, the duration of disease, and also whether the individual was in the control or patient group. The comparison of scale scores by severity grouping and normal/patient grouping was conducted by means of a two-tailed *t*-test of means for independent samples at $P < 0.05$. All the mean scores of the severe group were significantly higher than the mean scores of the not-severe group. The mean scores of patients were significantly higher than those of the healthy controls (Table 2). The overall mean TQL score for the patients was 14.69 (± 10.28) and for the controls was 4.1 (± 7.16).

Primary diagnosis determined acne vulgaris, eczema and fungal infections in 48% of patients. The remaining patients had other skin conditions such as psoriasis, verruca, benign skin tumors and vitiligo (Table 3). Dermatologists rated the severity of most skin disease conditions as moderate (43.2%), while patients rated the severity of their skin disease conditions as moderate (40.3%). Dermatologists and patients scores were significantly correlated ($r = 0.45$, $P = 0.001$).

Each scale of the TQL instrument showed a high degree of internal consistency reliability (Table 4); Cronbach's alpha coefficients of the instrument was 0.82 of the six scales ranging from 0.77 to 0.84. Intraclass correlation coefficients for the six scales ranged from 0.63 to 0.88.

Table 3 Dermatological diagnosis and Turkish quality of life scores of 278 patients and 49 controls

Diagnosis	No. of patients (%)	Male/female	Mean ages (min/max)	Mean TQL scores (SD)
Acne vulgaris	58 (20.9)	22/36	19.1 (14/35)	17.66 (± 9.89)
Contact dermatitis	40 (14.4)	21/19	30.2 (17/48)	14.45 (± 10.11)
Tinea	37 (13.3)	22/15	29.3 (15/50)	13.49 (± 9.39)
Psoriasis	15 (5.4)	8/7	30.5 (18/42)	18.67 (± 13.58)
Verruca	15 (5.4)	10/5	22.5 (14/38)	7.20 (± 7.16)
Benign skin tumor	13 (4.7)	3/10	31.8 (16/41)	8.77 (± 7.29)
Vitiligo	13 (4.7)	6/7	25.3 (14/57)	20.69 (± 11.00)
Norodermatitis	11 (4.0)	5/6	29.7 (15/43)	11.18 (± 9.36)
Hyperpigmentations	11 (4.0)	2/9	24.7 (16/35)	15.09 (± 9.80)
Bacterial infections	10 (3.6)	5/5	28.2 (17/47)	15.50 (± 14.99)
Alopecia	8 (2.9)	4/4	26.9 (15/48)	11.38 (± 6.50)
Acute Urticaria	7 (2.5)	5/2	24.9 (15/35)	18.71 (± 10.69)
Hirsutismus	6 (2.2)	0/6	23.3 (19/29)	18.50 (± 4.46)
Photo. dermatitis	5 (1.8)	1/4	32.6 (16/53)	17.60 (± 9.81)
Skin cancer	3 (1.1)	2/1	34.3 (24/40)	26.33 (± 12.34)
Scabies	3 (1.1)	3/0	27.7 (21/40)	9.00 (± 11.36)
Drug eruption	2 (0.7)	2/0	29.0 (22/36)	11.50 (± 0.71)
Lichen ruber planus	2 (0.7)	2/0	31 (27/35)	16.00 (± 5.66)
Morbus Behçet	2 (0.7)	1/1	27.5 (17/38)	21.00 (± 7.07)
Others*	17 (6.1)	10/7	28.8 (15/49)	8.53 (± 7.41)
Total patients	278 (100)	134/144	26.48 (14/57)	14.69 (± 10.28)
Controls	49 (100)	23/26	29.06 (15/51)	4.10 (± 7.16)

*Pemphigus vulgaris, leishmaniasis cutis, sunburn, erythema multiforme and discoid lupus erythematosus, etc.
TQL = Turkish quality of life.

Table 4 Reliability of the scale

Scales	Internal consistency reliability	Test–retest reliability (ICC)
Social life	0.77	0.88
Emotional	0.78	0.84
Daily activities	0.78	0.86
Cognitive	0.79	0.83
Symptom	0.80	0.63
Sexual life	0.84	0.71
Total	0.82	0.88

ICC = intraclass correlation coefficient.

Table 5 Quality of life scale scores according to the gender

Scales	Total	Men	Female	*P*-value*
Social life	1.6 (± 2.2)	1.6 (± 2.1)	1.5 (± 2.3)	0.879
Emotional	5.5 (± 3.6)	4.9 (± 3.7)	6.1 (± 3.4)	0.010
Daily activity	2.6 (± 2.5)	2.2 (± 2.5)	2.9 (± 2.6)	0.026
Symptom	1.5 (± 1.4)	1.5 (± 1.4)	1.6 (± 1.5)	0.573
Cognitive	3.0 (± 2.4)	2.7 (± 2.4)	3.3 (± 2.4)	0.051
Sexual life	0.49 (± 1.0)	0.48 (± 1.0)	0.51 (± 1.0)	0.810
Total	14.7 (± 10.3)	13.4 (± 9.9)	15.9 (± 10.5)	0.048

*Two-tailed *t*-test for independent samples.

The mean scores of the patients with vitiligo, acne vulgaris, urticaria, hirsutismus and psoriasis were higher ($P < 0.001$) than the mean scores of those with isolated skin lesions such as benign skin tumors and verruca. The total score was higher for vitiligo, psoriasis and urticaria than for acne vulgaris, lichen and contact dermatitis, although the difference did not achieve statistical significance. Significant differences between diagnostic groups were observed in higher scores for patients with psoriasis, urticaria and acne than those in the eczema group in the emotional life domains ($P < 0.05$). However, in the sexual life domain, the eczema group had higher scores than patients with psoriasis, urticaria or acne ($P < 0.01$).

When the patients were analyzed according to gender groups, the mean total score on the TQL was 13.4 (± 9.9) for men and 15.9 (± 10.5) for women. Significant gender differences were found on the total score, emotional life and daily activities subscales; this showed that women had more problems than men ($P < 0.05$) (Table 5).

There was a significant relationship between age and the emotional life scale. Youth was also significantly associated with a higher emotional score ($r = -0.176$; $P = 0.03$), but there was no significant relationship between age and total score. Younger patients obtained significantly higher mean scores than older patients.

Discussion

The assessment of QOL has become increasingly important in the process of monitoring quality of care and improving services for people with skin diseases. Quality of life in dermatology is measured for clinical, research, auditing, political and financial purposes.[8] The concept of QOL was developed from an array of information about physical, social and psychological well-being; it was fostered by the World Health Organization's broad view of health as not merely the absence of disease or infirmity, but the ability of a person to lead a productive and enjoyable life. During the past decade, many QOL measures have been organized into a system of measurement from which the complex effects of health intervention or treatment can be evaluated or compared.[1,9]

Skin disease has been recognized as having a detrimental effect on the QOL of patients. This psychosocial aspect of skin disease has important implications for the optimal management of patients. Although dermatologists and other clinicians have long recognized the impact of skin disease on a patient's life, it is only recently that QOL measures have been used as assessment parameters in the management of chronic skin disease and the evaluation of new treatments.[4,10] Many dermatology patients have chronic, incurable diseases which may substantially diminish their QOL. Patients typically see these diseases as more troubling than do their physicians.[11] When the skin is disfigured by disease, it has an impact on the afflicted person.[12] The impact of psoriasis,[6,13–19] acne,[3,20–22] and eczema[4,6,13,23] on patients' lives is well described. In addition, the effects of specific skin conditions on QOL have been studied and reported from leg ulcers,[24,25] onychomycosis,[26–28] atopic dermatitis,[23,29,30] chronic urticaria,[31,32] alopecia[33–35] and vitiligo.[36]

Efforts to measure QOL have included indicators of both perceptions of life satisfaction individually evaluated (subjective QOL) and objectively assessable characteristics of an individual's situation (objective QOL). This study focused on subjective assessments of QOL taken directly from individuals with skin diseases. Quality of life questionnaires are often created in one center, but instruments appropriate in one cultural setting or language may not necessarily be valid in another. Revalidation may be necessary in a new environment. Any translation must be validated by an independent back translation, subsequent amendments and a further back translation.[8,37,38] We decided to create a new, original dermatology QOL instrument in Turkish, as there is a need for a simple, uniform measure applicable to patients with any skin disease for use as an assessment tool in routine daily clinical practice.

Some life styles and activities may vary in different societies and cultures. Our TQL questions contain aspects of life different from those in previously published QOL instruments. When the TQL questionnaire was developed, sporting activities were not included as a category. The TQL consisted of three questions on the emotional domain and one question on the social domain. In fact, social domain mean scores were lower than emotional domain mean scores.

Patients' and physicians' judgments of disease severity scores consistently correlate with TQL scores. Interestingly, skin cancer patients had the highest mean score. Our study served both to establish the reliability, validity and reproducibility of the TQL and to determine a QOL measurement for a Turkish-speaking population of patients with skin diseases.

References

1 Anderson RT, Rajagopalan R. Development and validation of a quality of life instrument for cutaneous diseases. *J Am Acad Dermatol* 1997; **37**: 41–50.
2 Finlay AY, Ryan TJ. Disability and handicap in dermatology. *Int J Dermatol* 1996; **35**: 305–311.
3 Morgan M, McCreedy R, Simpson J, *et al.* Dermatology quality of life scales – a measure of the impact of skin diseases. *Br J Dermatol* 1997; **136**: 202–206.
4 Finlay AY, Khan GK. Dermatology Life Quality Index (DLQI) – a simple practical measure for routine clinical use. *Clin Exp Dermatol* 1994; **19**: 210–216.
5 Chren MM, Lasek RJ, Quinn LM, *et al.* Skindex, a quality-of-life measure for patients with skin disease: reliability, validity, and responsiveness. *J Invest Dermatol* 1996; **107**: 707–713.
6 Chren MM, Lasek RJ, Flocke SA, *et al.* Improved discriminative and evaluative capability of a refined version of Skindex, a quality-of-life instrument for patients with skin diseases. *Arch Dermatol* 1997; **133**: 1433–1440.
7 Carmines E, Zeller R. *Reliability and Validity Assessment*. Newbury: Sage Publication, Inc., 1979.
8 Finlay AY. Quality of life measurement in dermatology: a practical guide. *Br J Dermatol* 1997; **136**: 305–314.
9 Gill TM, Feinstein AR. A critical appraisal of the quality of quality-of-life measurements. *Jama* 1994; **272**: 619–626.
10 Jayaprakasam A, Darvay A, Osborne G, *et al.* Comparison of assessments of severity and quality of life in cutaneous disease. *Clin Exp Dermatol* 2002; **27**: 306–308.
11 Lamberg L. Dermatologic disorders diminish quality of life. *JAMA* 1997; **277**: 1663.
12 Ginsburg IH. The psychosocial impact of skin disease. An overview. *Dermatol Clin* 1996; **14**: 473–484.
13 Badia X, Mascaro JM, Lozano R. Measuring health-related quality of life in patients with mild to moderate eczema and psoriasis: clinical validity, reliability and sensitivity to change of the DLQI. The Cavide Research Group. *Br J Dermatol* 1999; **141**: 698–702.
14 Devrimci-Ozguven H, Kundakci TN, Kumbasar H, *et al.* The depression, anxiety, life satisfaction and affective expression levels in psoriasis patients. *J Eur Acad Dermatol Venereol* 2000; **14**: 267–271.

15 Finlay AY, Khan GK, Luscombe DK, *et al.* Validation of sickness impact profile and psoriasis disability index in psoriasis. *Br J Dermatol* 1990; **123**: 751–756.
16 Gupta MA, Gupta AK. Quality of life of psoriasis patients. *J Eur Acad Dermatol Venereol* 2000; **14**: 241–242.
17 Kirby B, Richards HL, Woo P, *et al.* Physical and psychologic measures are necessary to assess overall psoriasis severity. *J Am Acad Dermatol* 2001; **45**: 72–76.
18 Krueger G, Koo J, Lebwohl M, *et al.* The impact of psoriasis on quality of life: results of a 1998 National Psoriasis Foundation patient-membership survey. *Arch Dermatol* 2001; **137**: 280–284.
19 McKenna KE, Stern RS. The impact of psoriasis on the quality of life of patients from the 16-center PUVA follow-up cohort. *J Am Acad Dermatol* 1997; **36**: 388–394.
20 Mallon E, Newton JN, Klassen A, *et al.* The quality of life in acne: a comparison with general medical conditions using generic questionnaires. *Br J Dermatol* 1999; **140**: 672–676.
21 Lasek RJ, Chren MM. Acne vulgaris and the quality of life of adult dermatology patients. *Arch Dermatol* 1998; **134**: 454–458.
22 Aktan S, Ozmen E, Sanli B. Anxiety, depression, and nature of acne vulgaris in adolescents. *Int J Dermatol* 2000; **39**: 354–357.
23 Mohla G, Horvath N, Stevens S. Quality of life improvement in a patient with severe atopic dermatitis treated with photopheresis. *J Am Acad Dermatol* 1999; **40**: 780–782.
24 Lindholm C, Bjellerup M, Christensen OB, *et al.* Quality of life in chronic leg ulcer patients. An assessment according to the Nottingham Health Profile. *Acta Derm Venereol* 1993; **73**: 440–443.
25 Phillips T, Stanton B, Provan A, *et al.* A study of the impact of leg ulcers on quality of life: financial, social, and psychologic implications. *J Am Acad Dermatol* 1994; **31**: 49–53.
26 Lubeck DP. Measuring health-related quality of life in onychomycosis. *J Am Acad Dermatol* 1998; **38**: S64–S68.
27 Millikan LE, Powell DW, Drake LA. Quality of life for patients with onychomycosis. *Int J Dermatol* 1999; **38**: 13–16.
28 Drake LA, Patrick DL, Fleckman P, *et al.* The impact of onychomycosis on quality of life: development of an international onychomycosis-specific questionnaire to measure patient quality of life. *J Am Acad Dermatol* 1999; **41**: 189–196.
29 Herd RM, Tidman MJ, Ruta DA, *et al.* Measurement of quality of life in atopic dermatitis: correlation and validation of two different methods. *Br J Dermatol* 1997; **136**: 502–507.
30 Finlay AY. Quality of life in atopic dermatitis. *J Am Acad Dermatol* 2001; **45**: S64–S66.
31 Poon E, Seed PT, Greaves MW, *et al.* The extent and nature of disability in different urticarial conditions. *Br J Dermatol* 1999; **140**: 667–671.
32 O'Donnell BF, Lawlor F, Simpson J, *et al.* The impact of chronic urticaria on the quality of life. *Br J Dermatol* 1997; **136**: 197–201.
33 Williamson D, Gonzalez M, Finlay AY. The effect of hair loss on quality of life. *J Eur Acad Dermatol Venereol* 2000; **15**: 137–139.
34 Schmidt S, Fischer TW, Chren MM, *et al.* Strategies of coping and quality of life in women with alopecia. *Br J Dermatol* 2001; **144**: 1038–1043.
35 Dolte KS, Girman CJ, Hartmaier S, *et al.* Development of a health-related quality of life questionnaire for women with androgenetic alopecia. *Clin Exp Dermatol* 2000; **25**: 637–642.
36 Kent G, Al'Abadie M. Psychologic effects of vitiligo: a critical incident analysis. *J Am Acad Dermatol* 1996; **35**: 895–898.
37 Schafer T, Staudt A, Ring J. Development of the german scale for assessing quality of life in skin diseases. *Hautarzt* 2001; **52**: 492–498.
38 Jones-Caballero M, Penas PF, Garcia-Diez A, *et al.* The Spanish version of Skindex-29. *Int J Dermatol* 2000; **39**: 907–912.

