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ABSTRACT

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Background: The Psoriasis Disability Index (PDI) questionnaire is a widely used instrument to measure psychological morbidity in plaque-type psoriasis patients. **Aims:** This study aimed to validate the Persian version of the PDI and to evaluate the impact of psoriasis on quality of life (QOL). **Methods:** The English language version of the PDI was translated into Persian (Iranian official language) and was used in this study. The questionnaire was administered to a consecutive sample of 125 chronic plaque-type psoriasis patients and statistical analysis was performed to evaluate the impact of psoriasis on QOL. The other health-related QOL assessment tool included the Persian version of the Dermatology Life Quality Index (DLQI). **Results:** Overall, 125 patients who had received the PDI and DLQI completed all the questions. Reliability analysis showed a satisfactory result (Cronbach's α coefficient = 0.92 and 0.79 for PDI and DLQI, respectively). There was a strong statistical correlation between mean PDI and DLQI scores, with mean Psoriasis Area and Severity Index (PASI) ($P = 0.005$ and 0.02). Also, a significant correlation coefficient existed between DLQI and PDI ($r = 0.94$). The higher the PASI index, the higher the PDI and DLQI scores, which indicated greater impact on QOL. In the patients with lesions on visible exposed skin areas, the correlation was statistically significant ($P = 0.002$ and 0.01). **Conclusion:** The Persian PDI is an acceptable, reliable and valid measure of psychological distress, with more suitable content validity than DLQI for assessment of impact of psoriasis on QOL among psoriasis patients. Data provided may improve the physicians' awareness of the importance of the patients' QOL.

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INTRODUCTION

The World Health Organization^[1] gives the following three definitions:

Impairment: In the context of health experience, an impairment is any loss or abnormality of psychological, physiological or anatomical structure or function.

Disability: In the context of health experience, a disability is any restriction or lack (resulting from an impairment) of ability to perform an activity in the manner or within the range considered normal for a human being.

Handicap: In the context of health experience, a handicap is a disadvantage for a given individual resulting from an impairment or a disability that limits

or prevents the fulfillment of a role that is normal (depending on age, sex and social and cultural factors) for that individual.

Quality of life (QOL): Overall QOL is an all inclusive concept incorporating all factors that impact on an individual's life, whereas health-related quality of life (HRQOL) is more narrowly defined relating only to health aspects. Good QOL is present when "the hopes of an individual are matched by experience".^[2] The concept has been divided into several components, including psychological, social and physical domains.^[3]

The impact of psoriasis on patients' physical, social and psychological functioning and HRQOL has been well documented.^[4-7] Many patients report moderate to extreme feelings of anxiety, anger and

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depression.^[8] Increasing severity of psoriasis appears to correlate closely with increased severity of depression and, in turn, with higher frequency of suicidal ideation.^[9,10] However, disease severity, as measured by instruments such as the Psoriasis Area and Severity Index (PASI), is not the sole factor determining the burden of illness because relatively minor psoriasis located on visible parts of the body may also have a detrimental effect on HRQOL.^[11]

QOL in dermatology is measured for clinical, research, audit and for political and financial purposes. All clinicians use an intuitive view of how much the skin disease is affecting their patients when taking management decisions, but patients may assess QOL differently from their doctors.^[12] When there are data to interpret the score, more accurate measurement of QOL might be helpful in guiding management decisions, e.g. where expensive or hazardous therapy is being started. The use of simple QOL measures is usually welcomed by patients who wish to express their concerns. Methods of measuring extent and severity of psoriasis^[13] are based on assessment of signs and symptoms. This information does not necessarily correlate with QOL measures: a treatment for psoriasis might halve the sign score, but if the same visible area were still affected, the QOL score might be unchanged. QOL scores therefore provide an additional view of the overall effectiveness of therapy.

The Dermatology Life Quality Index (DLQI) is a reliable, validated 10-item questionnaire covering six dimensions (symptoms and feelings, daily activities, leisure, work and school, personal relationships and treatment) that assess the overall impact of skin disorders and current treatments on the patient's functioning and well being.^[9-14] Each question has four possible responses, with lower scores representing a better QOL. The reliability and validity of the Persian version of DLQI has been confirmed previously in patients with vitiligo.^[10-15]

The Psoriasis Disability Index (PDI) questionnaire was designed for use in adults, i.e. patients over the age of 16 with psoriasis. It is self-explanatory and can be handed over to the patient who is asked to fill it in without the need for a detailed explanation. It is usually completed in 3 or 4 min. The PDI is calculated by adding the score of each of the 15 questions, resulting in a maximum of 45 and a minimum of zero. The higher the score, the more the QOL is impaired.

The PDI can be analyzed under five headings, as shown in Table 1.

The aims of this study were to translate the PDI to Persian (Iranian official language), validate and use the questionnaire in studies of QOL in psoriasis patients in Iran. Currently there is no such questionnaire available in Iran. Moreover, we evaluated the impact of psoriasis on QOL in a group of patients with psoriasis in Iran.

METHODS

Using a standard "forward-backward" translation procedure, the original version of the PDI questionnaire was translated into Persian. Two independent bilinguals translated the items and two others translated the response categories and a provisional version was provided. Subsequently, it was back translated into English and following a careful cultural adaptation, the final version was provided. There were some problematic terms such as "partner," "changing facilities" and "drinking alcohol," which were culturally adapted and after a consensus by all authors, the final version of the PDI was developed. Then, a sample of plaque-type psoriasis patients with ≥ 18 years of age attending the Department of Dermatology, Jahrom Medical School and Moradi Skin Laser Clinic, Shiraz, Iran, completed the PDI and DLQI.

Construct validity was examined studying the correlation coefficients between the PDI and DLQI dimensions. To test reliability, the internal consistency was studied calculating the Cronbach's alpha. This coefficient is acceptable when it is above 0.7, following Nunnally's criteria.^[16] Test-retest reliability was assessed by means of the Intraclass Correlation Coefficient (ICC). Furthermore, the factor structure of the PDI questionnaire was extracted by performing principal component analysis using varimax rotation solution.

The study used the PASI scoring method. This gives

Table 1: Scales of the PDI including each question

Scale	Questions	Tick-box
DA	1, 2, 3, 4 and 5	15
WS	6, 7 and 8	9
PR	9 and 10	6
L	11, 12, 13 and 14	12
T	15	3

scores ranging from zero (no psoriasis) to 96 (covered head-to-toe, with complete itching, redness, scaling and thickness).^[17] A patient's PASI is a measure of overall psoriasis severity and coverage. It is a commonly-used measure in clinical trials for psoriasis treatments.^[18] All the variables collected were entered in a database for the statistical analysis carried out with the SPSS 11.0 statistical package SPSS Inc. Chicago, Illinois.

RESULTS

Overall, 125 patients (18–64 years old, 90 men, 35 women) who had received the Persian version of PDI and DLQI completed all the questions. The mean age of the respondents was 34 (SD = 13.4) years. Scores of the PDI, DLQI and PASI ranged from 6 to 42 (mean \pm SD, 28 \pm 10.66), 5 to 30 (mean \pm SD, 10.3 \pm 5.2) and 2.3 to 23 (mean \pm SD, 11.35 \pm 6), respectively. Higher PDI and DLQI scores indicate greater impact on QOL [Table 2]. Test–retest reliability assessing by means of the ICC are shown in Table 3 and, as can be seen, all but one of the ICC values was above 0.80. These findings suggest that the Persian PDI has a high test–retest reliability in stable patients. Reliability analysis showed a satisfactory result (Cronbach's α coefficient, 0.92 and 0.79 for PDI and DLQI, respectively). Cronbach's alpha coefficient for men and women was 0.94, 0.84 (PDI) and 0.82, 0.78 (DLQI), respectively. Also, reliability coefficient in unmarried patients was higher (0.90) vs. married cases, with 0.87 in the PDI. There was a strong statistical correlation between mean PDI and DLQI scores, with mean PASI ($P =$

0.005 and 0.02). The correlation coefficients between the PDI and DLQI were significant ($r = 0.94$) and PDI had a high correlation with the psoriasis, more than DLQI. The descriptive statistics suggest that the PDI scale has a better discriminatory power than DLQI [Table 4]. The higher the PASI index, the higher the PDI and DLQI scores, which indicates a greater impact on QOL. Also, significant correlation was seen between the mean PDI score and all the scales in males and females ($P < 0.05$), except for the mean PDI and the Work and School (WS) scale in females ($P = 0.3$).

With regard to spreading of the skin lesions, there was no correlation between the mean PDI and the DLQI score with the mean PASI in the patients with skin lesions on covered skin areas by cloths ($P = 0.11$ and 0.27, respectively). In the patients with lesions on visible exposed skin areas (such as face and distal extremities), the correlation was statistically significant ($P = 0.002$ and 0.01).

The correlation coefficients among the subscales of the PDI, which evaluate the construct validity, are shown in Table 2. As can be observed, the coefficients ranged between the minimum of 0.42 obtained for "WS" and "Personal Relationships (PR)" and the maximum of 0.80 for "PR" and "Treatment (T)", being, in most of the cases, acceptable. Reliability was studied using the Cronbach's α and the Intraclass Correlation Coefficients, which appear in Table 3. Cronbach's alpha coefficients were over 0.7 for all the scales except for the WS and PR scale (0.68 and 0.69, respectively). The principal component analysis using varimax rotation solution was performed and a three-factor structure was loaded, producing the factors of "physical," "social" and "sexual" dysfunction [Table 5].

DISCUSSION

The first version of the PDI was made by interviewing patients with psoriasis about the ways that their lives were affected.^[18] A 15-question version of the

Table 2: Validity: Correlation coefficients among the PDI scales

Scale	DA	WS	PR	L	T
Daily Activity (DA)	1				
Work and School (WS)	0.76	1			
Personal Relationships (PR)	0.6	0.42	1		
Leisure (L)	0.77	0.6	0.64	1	
Treatment (T)	0.73	0.46	0.8	0.71	1

Table 3: Reliability: Cronbach's alpha coefficient and intraclass correlation coefficient (ICC) (n = 125)

Scale	Cronbach's alpha	ICC (95% confidence interval)
DA	0.86 (0.70–0.89)	0.82
WS	0.68 (0.54–0.84)	0.72
PR	0.67 (0.61–0.90)	0.83
L	0.80 (0.68–0.89)	0.8
T	0.76 (0.66–0.87)	1.00

Table 4: Number of items on the PDI and DLQI that are relevant to patient with psoriasis by QOL domain

QoL domain	PDI	DLQI
Physical	7	2
Social	7	7
Sexual	1	1
Total	15	10

Table 5: Rotated Component Matrix

Question	Component		
	Physical	Social	Sexual
Q1	0.671	0.369	-0.008
Q2	0.655	0.333	0.197
Q3	0.834	0.353	-0.048
Q4	0.624	0.661	-0.107
Q5	0.601	0.361	-0.487
Q6	0.115	0.934	0.052
Q7	0.153	0.919	0.158
Q8	0.019	0.823	-0.008
Q9	0.419	0.382	0.56
Q10	0.874	-0.025	0.074
Q11	0.34	0.774	0.091
Q12	0.266	0.688	-0.233
Q13	0.526	0.574	-0.181
Q14	0.499	-0.154	-0.396
Q15	0.91	0.094	0.111

PDI^[19] has been validated against two general health measures, the UK Sickness Impact Profile^[20,21] and the General Health Questionnaire.^[22] The questions, which relate to the last 4 weeks, are answered either by a four tick-box system^[19] or by a 0–6 visual analogue scale. The substructure and specificity of the PDI have been examined, and factor analysis indicates that the original version of the PDI contains two subscales, one concerning most aspects of everyday activities and the other concerning specific public situations.^[23] The present study showed that the Persian version of the PDI contains three subscales (factors), including physical, social and sexual dysfunction.

The PDI has been used to measure change after in-patient treatment,^[18] to assess cyclosporine,^[21] in an audit of UVB therapy^[24] and to assess a clinical psychology liaison service.^[25] Over 25% of the patients attending dermatological outpatients demonstrate psychiatric morbidity. This is perhaps further confirmation that a significant part of skin disease management is about more than treating cutaneous pathology.^[26-28]

Psoriasis has a tremendous impact on patient's lives, affecting them physically, psychologically and socially.^[29] A study showed that the impact of psoriasis on HRQOL is similar to that of other major medical disease such as cancer, arthritis, hypertension, heart disease, diabetes and depression. When asked, patients who have more than one of the major medical problems almost always preferred to have their psoriasis cured

over other major medical problems.^[7]

In this study, Cronbach's alpha coefficients were over 0.7 for all the scales except for the WS and PR scales (0.68 and 0.69, respectively). The explanation may be that all the female patients were housekeepers and not at regular work. Also, some of our patients had a few problems with question 9 and 10 due to cultural differences and shame of talking about sexual relationships in an eastern religious country such as Iran.

Cronbach's alpha coefficients confer the instrument evaluated a suitable reliability even for their use in the individualized follow-up of the psoriasis patients, also, the ICC calculated for the Persian version of the PDI were very good.

Our study showed that physicians may need to improve relations with their patients and should re-evaluate their management of psoriasis. Better sympathy and communication between the psoriasis patients and their physicians may help to improve clinical outcomes in psoriasis. This research may serve as a stimulus to better understand this communication and to use more aggressive treatment options. Moreover, the findings from this study indicate that the Persian version of the PDI is a reliable and valid measure of QOL in psoriasis patients.

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