



## Original Research

# Quality of life and mental health status in patients with lichen planopilaris based on Dermatology Life Quality Index and General Health Questionnaire-28 questionnaires



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## ABSTRACT

**Background:** Lichen planopilaris (LPP) is a relatively uncommon inflammatory skin condition that causes permanent hair loss. Irreversible hair loss can have a significant psychosocial and psychological impact on patients' lives. Limited studies have assessed the psychological status of patients suffering from LPP, and to our knowledge, none have evaluated patients with LPP as a separate group in this regard.

**Objective:** This study aimed to assess the quality of life (QoL) and general health of patients with LPP using the Dermatology Life Quality Index (DLQI) questionnaire and General Health Questionnaire-28 (GHQ-28), respectively.

**Methods:** Our study employed a cross-sectional design. In total, 41 patients with LPP attending the follow-up skin clinic at the Razi Hospital in Tehran, Iran were asked to complete the DLQI and GHQ-28. Furthermore, selected demographic information was obtained from patients to evaluate their association with general health and QoL.

**Results:** Forty-one patients (14 men and 27 women) with a mean age of  $44.02 \pm 10.8$  years completed both questionnaires. QoL was affected moderately to extremely in 70.7% of patients. Also, 26 patients (63.4%) were at risk for psychological disorders. Lower QoL was reported by patients age  $<45$  years ( $p < .05$ ). Both QoL and general health had a negative relation with the disease activity index ( $p < .05$ ), but were not affected by sex, marital status, education level, treatment type, presence of mucous lesions, and disease duration.

**Conclusion:** LPP significantly affects patients' QoL and general health. Dermatologists should address these issues in patients with LPP alongside treating physical symptoms.

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## Introduction

Lichen planopilaris (LPP) is the most common type of primary cicatricial alopecia (PCA), which encompasses a group of rare but important cutaneous disorders that cause permanent hair loss through an inflammatory process (Assouly and Reygagne, 2009). The cause and pathogenesis of the disease are poorly understood but like other PCAs, the most widely accepted theory is that LPP is a hair-specific autoimmune disorder in which T lymphocytes destruct follicular germ cells by targeting follicular antigens (Lyakhovitsky et al., 2015).

LPP is more common in Caucasian and Indian populations with a lower incidence in the Asian population (Weston and Payette, 2015). LPP is characterized by pruritic or painful patches of alopecia on the scalp with perifollicular erythema and scaling (Cevasco et al., 2007; Soares et al., 2015). To prevent further hair loss, a timely diagnosis based on both a clinical assessment and histopathological findings is required (Cevasco et al., 2007).

Owing to a paucity of guidelines and randomized control trials, most of the current therapeutic regimens are empirical, aiming to slow or halt hair loss progression and control symptoms (Assouly and Reygagne, 2009; Errichetti et al., 2018). Unfortunately, because the inflammatory process cannot be fully terminated, hair regrowth should not be expected (Harries et al., 2008). Treatment options include topical and intralesional corticosteroid agents, hydroxychloroquine, oral corticosteroid drugs, and immunosuppressant treatments (Errichetti et al., 2018).

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The role of hair in esthetics is undeniable, and although hair loss is regarded as a benign condition by physicians, most patients consider hair loss a much more serious problem than their clinicians (Reid et al., 2012). Permanent hair loss is a source of significant stress and concern among individuals with LPP because the hair loss interferes with social interactions and daily activities. Alopecia has been documented to have a detrimental effect on self-esteem, self-confidence, and self-consciousness (Hadshiew et al., 2004; Williamson et al., 2001). The relationship between a patient's mental health status and skin diseases is bidirectional; thus, ascertaining the extent of psychological effects on a patient's quality of life (QoL) is crucial (Schultz, 2009).

Scarring alopecias are more aggressive in nature, but most of the earlier studies evaluating patient mental health have been on nonscarring alopecias, such as alopecia areata (AA; Aghaei et al., 2014; Aktan et al., 1998; Hadshiew et al., 2004; Han et al., 2012; Zhang and Zhang, 2017). Moreover, there is no published information evaluating the effect of PCAs on QoL among Iranian patients. In this study, we sought to fill this gap by evaluating QoL and general health of Iranian patients diagnosed with LPP using two valid questionnaires and determine their relationship with demographic and clinical variables.

## Methods

### Patients and procedures

This cross-sectional study was conducted over a 12-month period from February 2017 to February 2018. A total of 41 patients diagnosed with LPP age >18 years were enrolled in our survey in the order they visited the dermatology outpatient clinic at Razi Hospital in Tehran, Iran. The study protocol was approved by the ethics committee of the Tehran University of Medical Sciences. Informed consent forms were completed by all patients, after which they were asked to complete the Persian versions of the General Health Questionnaire-28 (GHQ-28), Dermatology Life Quality Index (DLQI) questionnaire, and demographic data sheets in a private room according to their feelings and opinions. The disease severity section of the data sheets was completed by a dermatologist blinded to the GHQ-28 and DLQI scores after each visit.

The inclusion criteria consisted of a diagnosis of LPP based on pathologic test results, age >18 years, and literacy. The exclusion criteria included suffering from any other dermatologic diseases, Alzheimer's disease or intellectual disability, and any physical disability that could affect the patient's QoL.

### Measurements

#### Dermatology Life Quality Index

DLQI is a widely used questionnaire, developed in 1994 by Finlay and Khan to specifically assess the QoL in patients with dermatologic disorders (Finlay and Khan, 1994). DLQI consists of 10 questions regarding six domains of aspects of life: Symptoms and feelings, daily activities, leisure, work/school, personal relationships, and treatment. Each question is scored based on a four-point Likert score. Scores are added to yield a total DLQI score of 0 to 30. The higher the score, the more the patient's QoL is impaired: grade 1 (score 0–1) means no effect at all, grade 2 (score 2–5) means a small effect, grade 3 (score 6–10) means moderate effect, grade 4 (score 11–20) means very large effect, and grade 5 (score 21–30) means extremely large effect on a patient's life. Patients with LPP were asked to complete the questionnaire based on their experiences and feelings over the last 7 days (Finlay and Khan, 1994). Furthermore, the reliability and validity of the Persian

version of the DLQI questionnaire has been confirmed by Aghaei et al. (2004).

#### GHQ-28

Designed by Goldberg in 1978, the GHQ-28 is a highly popular self-administered questionnaire used as a screening tool to detect individuals at risk for psychiatric disorders (Goldberg and Hillier, 1979). A brief review of the studies on GHQ-28 validation in different populations indicates its high reliability and validity. The validity and reliability of GHQ-28 were approved in many independent studies conducted in Iran (Malakouti et al., 2007; Molavi, 2002; Noorbala and Mohammad, 2009).

This 28-item questionnaire assesses mental health over the last month on four components, each of which contain seven items: somatic symptoms (items 1–7), anxiety/insomnia (items 8–14), social dysfunction (items 15–21), and severe depression (items 22–28).

Scoring is based on the Likert scoring method (0, 1, 2, 3) with the total score ranging from 0 to 84. The lower the score, the better the patient's mental status is. The cutoff score for screening differs between 22 and 24 in different populations. In this study, the cutoff point based on similar studies in Iran was a score of 24, and a score 14 was defined as the cutoff point in each of the subscales. Therefore, scores of >23 indicated patients with probable mental disorders.

#### Lichen Planopilaris Activity Index

Disease activity is measured using the Lichen Planopilaris Activity Index (LPPAI), which was first developed in 2010 by Chiang et al. (2010) as a tool to quantify LPP activity for statistical comparison. This index is calculated based on symptoms, signs, and hair loss progression with the following formula: (itch + pain + burn)/3 + (scalp erythema + perifollicular erythema + perifollicular scale)/3 + 2.5 (pull test) + 1.5 (spreading/2).

Each item is assigned a numeric value to yield a total score ranging from 0 to 10, with higher scores reflecting higher disease activity. Symptoms and signs are measured on a four-point scale (0 = absent; 1 = mild; 2 = moderate; and 3 = severe), with the anagen pull test (0 = no anagen hair; and 1 = presence of anagen hairs), and based on the spreading of the condition (0 = no spreading; 1 = indeterminate; and 2 = spreading).

#### Statistical analysis

The statistical analysis was performed using SPSS, version 24 for Windows (IBM Corp.; Armonk, NY). Numeric variables were reported with frequency and percentage, and categorical variables were illustrated by the mean and standard deviation.

A  $\chi^2$  test was held for the qualitative comparisons between both questionnaire results and demographic/clinical factors, including sex, age, marital status, education level, presence of mucosal/cutaneous lesions, disease duration, and type of treatment. A  $p < .05$  was interpreted as statistically significant. To investigate the relationship between GHQ-28 and DLQI scores and the LPPAI, a Pearson correlation test was employed. The normality equality of the distributions of these data was first assessed by Shapiro-Wilk's tests.

## Results

A total of 41 patients with LPP (14 men, 27 women) with a mean age of  $44.02 \pm 10.8$  years (range, 25–67 years) were recruited into the study. The LPPAI score in our study was  $3.172 \pm 05$  with a minimum of 0.8 and a maximum of 8.30. Other demographic and clinical characteristics of the patients are presented in Table 1.

**Table 1**  
Demographic and clinical characteristics of patients with LPP and correlation with DLQI and GHQ-28 score.

Clinical characteristics	No. of patients (%)	DLQI p value	GHQ-28 p value
Sex		.461	.548
Male	27 (65.9)		
Female	14 (34.1)		
Age (years)		<b>.024</b>	.275
45>	21 (51.2)		
45≤	20 (48.7)		
Marital status		.112	.819
Married	32 (78)		
Single	9 (22)		
Education level		.610	.238
Elementary or middle school	12 (29.3)		
High school	17 (41.5)		
Bachelor or Master's degree	10 (24.4)		
PhD or higher	2 (4.9)		
Duration of hair loss (months)		.834	.677
<1 month	1 (2.4)		
1 month–1 year	11 (26.8)		
1 year–5 years	24 (58.5)		
5 year–10 year	3 (7.3)		
>10 year	2 (4.9)		
Type of treatment		.145	.687
Clobetasol	16 (39)		
Cyclosporine	11 (26.8)		
Clobetasol and CellCept	1 (2.4)		
Clobetasol and methotrexate	9 (22)		
Minoxidil and finasteride	2 (4.9)		
Hydroxychloroquine and prednisolone	2 (4.9)		
Presence of mucosal/cutaneous lesion		.135	.179
Yes	7 (17.1)		
No	34 (82.9)		
LPPAI score	3.172 ± 05	<b>.001</b>	<b>.027</b>

DLQI, Dermatology Life Quality Index; GHQ-28, General Health Questionnaire-28; LPP, lichen planopilaris; LPPAI, Lichen Planopilaris Activity Index.

**Dermatology Life Quality Index**

The DLQI scores for the 41 patients with LPP ranged from 1 to 24, with a mean score of 8.85 ± 5.2. As shown in Table 2, QoL was affected from moderately to extremely in 70.7% of patients. Topics in questions 2 (embarrassment), 1 (symptoms), and 8 (relationships) had the most impact on patients, and the lowest impacts were noted on questions 9 (sexual difficulties), 4 (clothes), and 6 (sports). Table 3 depicts the results for each domain of the DLQI. There was no significant correlation between QoL and sex, marital status, education level, the presence of mucosal/cutaneous lesion, disease duration, and type of treatment. However, age <45 years (p = .024) and disease activity (r = .501; p = .001) were positively associated with higher DLQI scores and lower QoL.

**General Health Questionnaire-28**

The mean score for GHQ-28 was 29.02 ± 12.8, with a maximum and minimum of 55 and 11, respectively. Considering 24 as our threshold score, 26 patients (63.4%) were at risk for psychological

**Table 2**  
Banding of DLQI score for patients with LPP (n = 41).

Patients with LPP, n (%)	Range of score	QoL effect
2 (4.9)	0–1, grade 1	None
10 (24.4)	2–5, grade 2	Small
15 (36.6)	6–10, grade 3	Moderate
13 (31.7)	11–20, grade 4	Very large
1 (2.4)	21–30, grade 5	Extremely large

DLQI, Dermatology Life Quality Index; LPP, Lichen Planopilaris; QoL, quality of life.

**Table 3**  
Scores for DLQI and its subscales.

	Mean ± SD	Minimum	Maximum
Symptoms and feelings	2.71 ± 1.4	0	6
Daily activities	1.49 ± 1.5	0	6
Leisure	1.56 ± 1.3	0	6
Work and school	0.85 ± 1.1	0	3
Personal relationships	1.46 ± 1.4	0	4
Treatment	0.78 ± 0.8	0	3
DLQI total score	8.85 ± 5.2	1	24

DLQI, Dermatology Life Quality Index; SD, standard deviation.

morbidities, whereas 15 patients (36.6%) were not at risk. The results for each of the subscales separately are illustrated in Table 4. The GHQ-28 results were not affected by sex, age, marital status, education level, the presence of mucosal/cutaneous lesion, disease duration, and type of treatment. Disease activity score (i.e., LPPAI) was the only feature with a significant impact on general health (r = .345; p = .027).

**Discussion**

Despite the substantial psychosocial burden of scarring alopecias on patients, only a limited number of studies address QoL and general health in this group of dermatologic diseases. To our knowledge, only a limited number of studies have ever investigated the psychological status of patients suffering from LPP. Forty-one patients were enrolled in our study, including 14 men and 27 women, with a mean age of 44.02 ± 10.8 years. Our demographic findings are in line with those of previous researches (Cevasco et al., 2007; Chierigato et al., 2003; Lyakhovitsky et al., 2015; Soares et al., 2015) Both the DLQI and GHQ-28 scores had a significant correlation with LPPAI, and of the other clinical and demographic variables, only age had a positive relationship with QoL. The mean DLQI score in our study was 8.85 ± 5.2. Approximately 71% of patients were affected moderately to extremely, depicting the significant impact of LPP on patients' QoL.

Most studies have investigated the psychological impact of non-scarring alopecias, such as AA and androgenic alopecia. According to the study by Abedini et al. (2018) in Iran, the total mean DLQI score in 200 patients with a definite diagnosis of mild and severe AA was 7.9 ± 7.6, which is lower than our finding. In a study comparing QoL between 25 women with scarring and 19 women with non-scarring alopecias, the DLQI score was 12.3 ± 3.369 and 9.4 ± 3.452, respectively, suggesting lower QoL among patients with PCAs (Katoulis et al., 2015). This probably results from the poorer prognosis of PCAs, their irreversible outcomes, and less effective treatments compared with non-scarring alopecias, such as AA. In another study by Pradhan et al. (2011), among 30 cases with cicatricial alopecia using a modified version of the Women's Androgenetic Alopecia QoL Questionnaire, the QoL of 73.9% of patients was moderately to extremely affected, which is similar to our findings. In a publication by Chiang et al. (2015) in 92 patients with PCAs in Manchester, United Kingdom, the mean DLQI score was 6.66 and 38% of patients were affected moderately to extremely.

These limited studies investigated patients with PCAs as a group and none studied patients with LPP separately, which can explain the differences with our findings. In a study on QoL in 82 women suffering from frontal fibrosing alopecia (FFA), 17% of patients were moderately to severely affected (Saceda-Corralo et al., 2018). Although many authors consider FFA to be a clinical variant of LPP, some authors regard FFA as an independent entity with different characteristics (Harries et al., 2018). FFA most commonly affects postmenopausal women age >50 years who are more often on hormonal therapy (Lyakhovitsky et al., 2015).

**Table 4**  
Scores for GHQ-28 and its subscales.

General health	Mean $\pm$ SD	Minimum	Maximum	Above cutoff point
Somatic symptoms	6.76 $\pm$ 3.71	1	18	3 (7.3%)
Anxiety/insomnia	8.41 $\pm$ 3.72	1	17	3 (7.3%)
Social dysfunction	8.17 $\pm$ 3.36	2	17	1 (2.4%)
Severe depression	5.68 $\pm$ 4.84	0	18	2 (4.9%)
GHQ-28 total score	29.02 $\pm$ 12.8	11	55	26 (63.4%)

GHQ-28, General Health Questionnaire-28; SD, standard deviation.

The QoL results in our study had a positive relationship with LPPAI. Only one previous study of 53 patients with LPP/FFA assessed the disease activity relation using LPPAI with QoL. Contrary to our findings, [Chiang et al. \(2015\)](#) found no significant correlation between disease activity and QoL. The researchers also evaluated LPPAI correlation with depression and anxiety using the Hospital Anxiety and Depression Scale. Disease activity had a significant relation with depression but not anxiety. These differences can possibly be explained by cultural and socioeconomic differences between the two populations. Further studies with larger sample sizes would help understand the association between LPPAI and QoL.

Our findings confirm those of previous studies on both scarring and nonscarring alopecia conditions that DLQI results have a significant inverse correlation with age. This is understandable due to the important role of hair and general appearance in younger individuals and the notion that as patients age, they can cope better with their situation. Another possible reasoning is the cultural acceptance of hair loss with age. Hair loss is not expected in youth/young adulthood, so hair loss can be more surprising and take more of a toll on patients' QoL. Other demographic and clinical characteristics, including sex, did not seem to have any association with QoL. The study by [Chiang et al. \(2015\)](#) of 92 patients with PCAs showed higher DLQI scores in female patients. Our findings regarding the relation between DLQI and sex can be attributed to the fact that our female participants in Iran wear a scarf covering their hair, which can hide alopecia, delay referral to a dermatologist, and be used to mitigate embarrassment and stress in public and work places. However, of note, women in Iran wear scarves for outdoor activities but do not wear them in front of their families, friends, and other women. Although this may lead to a delay in diagnosis and treatment for their disease, this issue does not preclude the negative impact of hair loss on their QoL. Although wearing scarves may probably reduce the negative impact of hair loss on QoL, further studies comparing women wearing scarves with those who do not needed to clarify this issue.

Many studies have documented the high prevalence of psychiatric comorbidities in dermatological patients ([Aktan et al., 1998](#); [Hughes et al., 1983](#); [Picardi et al., 2000](#)). In a study conducted in 2016 by [Raikhy et al.](#) of 1000 patients attending a dermatology outpatient clinic, patients were administered the GHQ-60 ([Raikhy et al., 2017](#)). Approximately 40% of patients had a GHQ score of >12. When applying International Classification of Diseases (10th revision) criteria and after conducting a clinical interview with and mental status examination of patients, 34.2% were diagnosed with definite psychiatric comorbidity, with depression being the most common disease. The mean GHQ-28 score in our study was 29.02, with 63.4% of patients with LPP at risk for psychological comorbidities, which is higher than observed in previous mental health surveys among Iranians and higher than earlier studies on dermatological outpatients ([Noorbala et al., 2004](#); [Sharifi et al., 2015](#)).

Many reasons can account for the high prevalence of possible psychiatric disorders in patients with LPP. First, in previous studies, patients attending the dermatology outpatient department had

various dermatological disorders with conditions such as warts having a minimum effect on general health and conditions such as alopecia having the most effect ([Picardi et al., 2000](#)). In a cross-sectional study by [Hughes et al. \(1983\)](#), 196 dermatology outpatients and 40 admitted patients were administered the GHQ-30, and the highest GHQ scores were among patients with alopecia. Our study was conducted exclusively among patients with LPP, which is a chronic disease with irreversible hair loss without a curable treatment.

Also, corticosteroid treatments as first-line therapy in patients with LPP can cause psychiatric symptoms ([Hughes et al., 1983](#)). Although many previous studies conducted a second phase psychological assessment among patients who were identified as at risk using the GHQ, the differences between the percentages of cases before and after the interview were not substantial ([Bashir et al., 2010](#); [Raikhy et al., 2017](#)). Nevertheless, arranging a well-constructed psychological interview for patients with above-the-cutoff GHQ scores has some benefits because a more accurate prevalence rate of psychological morbidities would be yielded and determine the nature of the psychological condition for further evaluation and therapy.

There was no correlation between general health status and clinical/demographic variables in our study except for disease activity, which had a positive correlation with the GHQ score. [Chiang et al. \(2015\)](#) found a similar relation between LPPAI and depression in 92 patients with LPP/FFA. Further investigations should assess the role of disease activity in general health.

The main limitation of our study was the small sample size, which makes determining statistical correlation difficult. This reflects the low prevalence of LPP and can be overcome in future studies by extending the study period. Two questionnaires were selected to estimate the psychological burden of LPP on patients. However, because this burden can only be evaluated by patients, a subjective element is strongly present. Another drawback of our study is the cross-sectional design that does not allow for causal inferences. Further longitudinal studies are needed to clarify the direction of the associations found in our study. Nonetheless, this study represents the first effort to evaluate the psychological burden of LPP and adds to the current knowledge about this disease.

## Conclusion

We have shown that the QoL and mental health of patients with LPP are significantly impaired. In our study, QoL appears to be affected by disease activity, which suggests that dermatologists should be vigilant about possible psychological disorders in patients with LPP in addition to controlling their symptoms. This study also highlights the importance of developing earlier detection methods and better treatment strategies for LPP to help improve patients' QoL. Establishing a mutual collaboration between mental health specialists and dermatologists can benefit many patients. Future studies should be aimed at developing structures to determine which patients should be referred to a psychia-



trist or clinical psychologist and the most beneficial way for the integration of psychological support within dermatology services.

### Conflicts of Interest

None.

### Funding

None.

### Study Approval

The author(s) confirm that any aspect of the work covered in this manuscript that has involved human patients has been conducted with the ethical approval of all relevant bodies.

### References

- Abedini R, Hallaji Z, Lajevardi V, Nasimi M, Karimi Khaledi M, Tohidinik HR. Quality of life in mild and severe alopecia areata patients. *Int J Womens Dermatol* 2018;4(2):91–4.
- Aghaei S, Saki N, Daneshmand E, Kardeh B. Prevalence of psychological disorders in patients with alopecia areata in comparison with normal subjects. *ISRN Dermatol* 2014;2014 304370.
- Aghaei S, Sodaifi M, Jafari P, Mazharinia N, Finlay AY. DLQI scores in vitiligo: reliability and validity of the Persian version. *BMC Dermatol* 2004;4:8.
- Aktan S, Ozmen E, Sanli B. Psychiatric disorders in patients attending a dermatology outpatient clinic. *Dermatology* 1998;197(3):230–4.
- Assouly P, Reygagne P. Lichen planopilaris: Update on diagnosis and treatment. *Semin Cutan Med Surg* 2009;28(1):3–10.
- Bashir K, Dar NR, Rao SU. Depression in adult dermatology outpatients. *J Coll Physicians Surg Pak* 2010;20(12):811–3.
- Cevasco NC, Bergfeld WF, Remzi BK, de Knott HR. A case-series of 29 patients with lichen planopilaris: The Cleveland Clinic Foundation experience on evaluation, diagnosis, and treatment. *J Am Acad Dermatol* 2007;57(1):47–53.
- Chiang C, Sah D, Cho BK, Ochoa BE, Price VH. Hydroxychloroquine and lichen planopilaris: efficacy and introduction of Lichen Planopilaris Activity Index scoring system. *J Am Acad Dermatol* 2010;62(3):387–92.
- Chiang YZ, Bundy C, Griffiths CE, Paus R, Harries MJ. The role of beliefs: lessons from a pilot study on illness perception, psychological distress and quality of life in patients with primary cicatricial alopecia. *Br J Dermatol* 2015;172(1):130–7.
- Chierogato C, Zini A, Barba A, Magnanini M, Rosina P. Lichen planopilaris: report of 30 cases and review of the literature. *Int J Dermatol* 2003;42(5):342–5.
- Errichetti E, Figini M, Croatto M, Stinco G. Therapeutic management of classic lichen planopilaris: a systematic review. *Clin Cosmet Investig Dermatol* 2018;11:91–102.
- Finlay AY, Khan GK. Dermatology Life Quality Index (DLQI)—a simple practical measure for routine clinical use. *Clin Exp Dermatol* 1994;19(3):210–6.
- Goldberg DP, Hillier VF. A scaled version of the General Health Questionnaire. *Psychol Med* 1979;9(1):139–45.
- Hadshiew IM, Foitzik K, Arck PC, Paus R. Burden of hair loss: stress and the underestimated psychosocial impact of telogen effluvium and androgenetic alopecia. *J Invest Dermatol* 2004;123(3):455–7.
- Han SH, Byun JW, Lee WS, Kang H, Kye YC, Kim KH, et al. Quality of life assessment in male patients with androgenetic alopecia: result of a prospective, multicenter study. *Ann Dermatol* 2012;24(3):311–8.
- Harries MJ, Jimenez F, Izeta A, Hardman J, Panicker SP, Poblet E, et al. Lichen planopilaris and frontal fibrosing alopecia as model epithelial stem cell diseases. *Trends Mol Med* 2018;24(5):435–48.
- Harries MJ, Sinclair RD, Macdonald-Hull S, Whiting DA, Griffiths CE, Paus R. Management of primary cicatricial alopecias: options for treatment. *Br J Dermatol* 2008;159(1):1–22.
- Hughes JE, Barraclough BM, Hamblin LG, White JE. Psychiatric symptoms in dermatology patients. *Br J Psychiatry* 1983;143:51–4.
- Katoulis AC, Christodoulou C, Liakou AI, Kouris A, Korkoliakou P, Kaloudi E, et al. Quality of life and psychosocial impact of scarring and non-scarring alopecia in women. *J Dtsch Dermatol Ges* 2015;13(2):137–42.
- Lyakhovitsky A, Amichai B, Sizopoulou C, Barzilai A. A case series of 46 patients with lichen planopilaris: demographics, clinical evaluation, and treatment experience. *J Dermatolog Treat* 2015;26(3):275–9.
- Malakouti SK, Fatollahi P, Mirabzadeh A, Zandi T. Reliability, validity and factor structure of the GHQ-28 used among elderly Iranians. *Int Psychogeriatr* 2007;19(4):623–34.
- Molavi H. Validation, factor structure, and reliability of the Farsi version of General Health Questionnaire-28 on Irani students. *Pakistan J Psychol Res* 2002;17(3–4).
- Noorbala A, Mohammad K. The validation of general health questionnaire-28 as a psychiatric screening tool. *Hakim Res J* 2009;11(4):47–53.
- Noorbala AA, Bagheri Yazdi SA, Yasamy MT, Mohammad K. Mental health survey of the adult population in Iran. *Br J Psychiatry* 2004;184:70–3.
- Picardi A, Abeni D, Melchi CF, Puddu P, Pasquini P. Psychiatric morbidity in dermatological outpatients: an issue to be recognized. *Br J Dermatol* 2000;143(5):983–91.
- Pradhan P, D'Souza M, Bade BA, Thappa DM, Chandrashekar L. Psychosocial impact of cicatricial alopecias. *Indian J Dermatol* 2011;56(6):684–8.
- Raikhay S, Gautam S, Kanodia S. Pattern and prevalence of psychiatric disorders among patients attending dermatology OPD. *Asian J Psychiatr* 2017;29:85–8.
- Reid EE, Haley AC, Borovicka JH, Rademaker A, West DP, Colavincenzo M, et al. Clinical severity does not reliably predict quality of life in women with alopecia areata, telogen effluvium, or androgenic alopecia. *J Am Acad Dermatol* 2012;66(3):e97–e102.
- Saceda-Corralo D, Pindado-Ortega C, Moreno-Arrones OM, Fernandez-Gonzalez P, Rodrigues-Barata AR, Jaen-Olasolo P, et al. Health-related quality of life in patients with frontal fibrosing alopecia. *JAMA Dermatol* 2018;154(4):479–80.
- Schultz HY. Society for Investigative Dermatology skin disease comorbidities project launch conference proceedings. *J Invest Dermatol* 2009;129(3):525–8.
- Sharifi V, Amin-Esmaeili M, Hajebi A, Motevalian A, Radgoodarzi R, Hefazi M, et al. Twelve-month prevalence and correlates of psychiatric disorders in Iran: The Iranian Mental Health Survey, 2011. *Arch Iran Med* 2015;18(2):76–84.
- Soares VC, Mulinari-Brenner F, Souza TE. Lichen planopilaris epidemiology: a retrospective study of 80 cases. *An Bras Dermatol* 2015;90(5):666–70.
- Weston G, Payette M. Update on lichen planus and its clinical variants. *Int J Women's Dermatol* 2015;1(3):140–9.
- Williamson D, Gonzalez M, Finlay AY. The effect of hair loss on quality of life. *J Eur Acad Dermatol Venereol* 2001;15(2):137–9.
- Zhang M, Zhang N. Quality of life assessment in patients with alopecia areata and androgenetic alopecia in the People's Republic of China. *Patient Prefer Adherence* 2017;11:151–5.