

ALOPECIA AREATA'S IMPACT ON QOL: DEMOGRAPHIC & CLINICAL LINKS

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Abstract

Alopecia areata, a non-scarring form of hair loss, can considerably impact quality of life. This study explores how demographic and clinical factors influence the quality of life for individuals living with this condition. **Method:** We conducted a cross-sectional study at Ziauddin Hospital, Karachi, Pakistan, to investigate the influence of demographic and clinical features on quality of life (QoL) in alopecia areata patients (n=150). We collected demographic and clinical data, assessed disease severity using the Severity of Alopecia Tool (SALT) score, and evaluated QoL with the Dermatology Life Quality Index (DLQI) for adults and the Child (CDLQI) for children. Multivariate logistic regression then analyzed the relationships between patient characteristics and QoL. **Result:** Among the 150 participants, the average SALT score indicated moderate alopecia areata severity (5.78 ± 0.95). The mean DLQI scores for mild and moderate cases of AA were 7.9 and 10.1 respectively and the difference was insignificant. AA had mostly moderate and small effects on the QoL of adult and pediatric patients 46.6% and 35.6% respectively. Interestingly, gender emerged as a significant factor, with females reporting higher QoL impairment (higher DLQI scores) compared to males ($p < 0.05$). Furthermore, patients with no family history of AA experienced significantly lower QoL than those with a positive family history ($p = 0.033$). **Conclusion:** Our findings suggest that, beyond disease severity, the psychological burden of alopecia areata manifests differently based on gender and family history. This underscores the importance of considering these factors when designing treatment approaches and support systems to optimize quality of life for individuals with this condition.

Keywords: Alopecia Areata, Quality of Life, Demography.

INTRODUCTION

Alopecia areata (AA) is a prevalent chronic autoimmune disease characterized by the abrupt onset of circumscribed, non-scarring hair loss. "Alopecia" denotes baldness or hair loss, while "areata" signifies a patchy distribution (Darwin E et al., 2018; Alkhalifah, A et al., 2010). This condition impacts the pilosebaceous unit in both genders and across all racial demographics. While typically affecting the scalp, AA can involve any hair-bearing area. Clinical presentation varies, ranging from a solitary patch of hair loss to multifocal involvement or complete loss of scalp hair (alopecia totalis) or body hair (alopecia universalis). The affected skin typically appears normal and smooth, although subtle erythema may occasionally be present (Finner, A et al., 2011). Among anxiety disorders in AA patients, generalized anxiety disorder (GAD) emerges as a prominent concern, afflicting nearly 40% of individuals with the condition. Patients with GAD often experience persistent feelings of nervousness, apprehension, muscle tension, palpitations, and dizziness. Additionally, anxieties surrounding the disease itself and its potential recurrence are frequently reported (Han, SH et al., 2012). Given the integral role of hair in body image, alopecia-related hair loss can lead to profound negative consequences for patient well-being. The altered appearance, particularly conspicuous bald patches, can trigger diminished self-esteem and feelings of disfigurement. Furthermore, the chronicity of the disease can impact social interactions, self-perception, and emotional stability. Extensive alopecia, in particular, carries a significant risk of mental health challenges, often exacerbated by social isolation and difficulties accepting one's altered appearance (Rocha, de HT et al., 2014). Individuals with alopecia areata (AA) frequently experience social ostracization and rejection, often grappling with self-denial of their condition and enduring the persistent discomfort associated with a chronic dermatological condition (Kuty-Pachecka, M et al., 2015). Personal and social difficulties abound among AA patients, potentially attributed to the chronic nature of the disease and its ongoing exposure to stress. Patients often report an exacerbation of AA symptoms following stressful life events, suggesting a potential link between emotional stress and disease progression. Furthermore, emotional stress stands as a recognized risk factor for AA, potentially via its association with both actual and symbolic hair loss. (Ghanizadeh, A et al., 2014).

Despite alopecia's prevalence as a chronic dermatological condition, its etiology remains obscure, and currently available medical treatments exhibit limited efficacy. This inherent unpredictability, coupled with alopecia's prominent manifestation, fosters significant psychological distress in affected individuals. As hair serves as a crucial element of personal identity and self-image, even partial hair loss can trigger a plethora of psychological perturbations and negatively impact quality of life (QoL) (Abedini, R et al., 2018; Hunt, N et al., 2005). Loss of self-confidence, diminished self-esteem, and heightened self-consciousness are frequent sequelae, particularly in females. Moreover, individuals with alopecia demonstrate a higher prevalence of depression and anxiety (Putterman, E et al., 2019; Williamson, D et al., 2001). The societal emphasis on female appearance likely contributes to observed gender differences in psychosocial responses to alopecia. Women with alopecia report experiencing greater psychosocial distress and

stress compared to their male counterparts. Studies, such as one by Camacho and García-Hernández, suggest that while depression is more prevalent in women with androgenetic alopecia, anxiety and aggressiveness are more common in men. The profound impact of alopecia on self-image and confidence can extend beyond the individual, affecting social relationships. In one study, 40% of women with alopecia reported marital difficulties, and 63% cited career-related challenges (Lee, H *et al.*, 2020; Camacho, F *et al.*, 2002). While the psychosocial consequences of alopecia are well-documented, research in this area has predominantly employed a medical lens, neglecting the psychological perspective. The psychological impact of alopecia arises from a complex interplay of factors, including: disease-related characteristics (e.g., hair loss visibility), demographic attributes (e.g., gender), individual cognitive appraisal of the illness (illness beliefs), and coping behaviors. A recent clinical review emphasizes the vital need for further research exploring these influencing factors, specifically focusing on illness beliefs and coping strategies, to optimize patient outcomes and adjustment. Studies of other chronic conditions highlight the crucial role of illness beliefs and coping mechanisms in shaping psychological well-being, supporting the necessity of expanding research in this direction for alopecia as well (Hunt, N *et al.*, 2004).

The self-regulation model offers a valuable framework for understanding how individuals adapt to chronic illnesses like alopecia. This model posits that people actively construct a mental representation of their condition, encompassing various cognitive and emotional elements, which then guides their coping behaviors and health-related decisions. Five key components of illness perceptions are identified in this model: Identity: How individuals perceive themselves in relation to the illness (e.g., "I am a strong person coping with alopecia"). Symptoms and disease label: Beliefs about the nature of hair loss and its classification ("My hair loss is unpredictable and makes me feel self-conscious"). Cause: Attributing the condition to specific factors (e.g., stress, genetics). Timeline: Expectations about the disease course and potential for remission ("I hope my hair will eventually grow back"). Consequences: Anticipated long-term effects of alopecia on various aspects of life ("Hair loss might affect my relationships and career opportunities"). Cure/control: Beliefs about treatment options and personal influence over the disease ("There's no cure for alopecia, but I can manage it with healthy habits").

METHOD

Exclusion criteria covered patients with other skin or systemic diseases affecting QoL. Firstly, demographic features of patients (age, sex, marital status, residential place, and educational and economic levels) were obtained. Then, clinical data (site, duration, age of onset, family history of AA, history of autoimmune disease, and history of previous treatments) were collected. The severity of alopecia was evaluated based on the severity of alopecia tool (SALT) score. Furthermore, the QoL of the patients was assessed by the dermatology life quality index (DLQI) for adults aged 16 or older and the child dermatology life quality index (CDLQI) for children aged 4 to 16 years old. And the validity and reliability of questionnaire were confirmed previously (Cronbach's alpha 0.88 for DLQI and 0.87 for CDLQI). These questionnaires include ten questions about the effect of disease on

different items, including feelings and symptoms, daily activities, leisure and sports activities, work and school, personal relationship, and treatment for one week ago. Each question is scored from 0 to 3, and the final score is calculated by summing of scores of the ten questions. The total score is between 0 and 30; the highest score represents the greatest effect of disease on QoL. Finally, the impacts of demographic and clinical features of AA on patients' QoL were evaluated. The level of effects on the QoL of the patients was classified into five grades (G), including G1 (no effect, score 0-1), G2 (small effect, score 2-5), G3 (moderate effect, score 6-10), G4 (very large effect, score 11-20) and G5 (extremely large effect, score 21-30) (Mohammadi, S *et al.*, 2020; Olsen, E *et al.*, 2004)

Ethical Considerations

This cross-sectional study was performed on AA patients at Ziauddin Hospital Karachi. Informed consent was obtained from all participants and parents of patients younger than 12.

Table 1: Demographic and Clinical features of alopecia areata patients

Variable	Number	Percentage
Gender		
Male	80	55.9
Female	70	44.1
Age of onset		
<30 Years	90	80.5
> 30 Years	60	19.5
Education level		
Under diploma	85	70.2
> Diploma	66	21.8
Marital Status		
Married	61	30.6
Unmarried	89	69.4
Site		
Scalp	100	69.8
Eyebrows	15	10.1
Beard	35	20.1
Living site		
City	91	55.9
Rural	59	44.1
Positive family history of AA		
Yes	20	12
No	130	88
History of other associated diseases		
Yes	50	31.2
No	100	68.2
History of recurrence		
Yes	65	39.4
No	85	60.4
Previous treatment		
Yes	83	64.5

No	67	35.5
Disease duration		
< 12 months	81	50.9
≥ 12 months	69	49.1
Effect on QoL in adults		
No effect	3	3.6
Small effect	30	35.4
Moderate effect	42	40.6
Very severe effect	25	20.4
Extremely large	0	0
Effect on QoL in pediatric		
No effect	24	50.8
Small effect	16	39.1
Moderate effect	10	10.1
Very severe effect	0	0
Extremely large	0	0

Statistical Analysis

Data were analyzed by SPSS16 (software IBM, Armonk, NY, USA). Mean and standard deviation are reported for quantitative data; frequency and percentage are provided to describe qualitative data. Multivariate logistic regression was used to evaluate the correlation of clinical and demographic data with QoL items.

RESULTS

One fifty patients with AA (105 adults and 45 pediatrics) were enrolled in the study. Just over half the patients were males (55.9%). The mean age of the patients was 23.15 ± 9.92 (range 4-45) years. The mean SALT score was (5.78 ± 0.95) . The mean DLQI and CDLQI scores 6.44 ± 0.31 vs 11.83 ± 5.5 ; 5.78 ± 0.95 respectively. The mean DLQI scores for mild and moderate cases of AA were 7.9 and 10.1 respectively; the difference was insignificant. AA had mostly moderate and small effects on the QoL of adult and pediatric patients (46.6% and 35.6%), respectively. Table 1 demonstrates the demographic and clinical data of AA patients. Females had significantly higher DLQI scores than males (7.91 ± 0.55 vs 5.75 ± 0.33 P value =0.003). However, patients with a negative family history had significantly higher DLQI scores than patients with a positive family history (4.95 ± 0.6 vs 6.7 ± 0.31 , P= 0.033) (Table 2). Other demographic or clinical features not correlate with DLQI or CDLQI scores (Tables 2 and 3).

Table 2: Association between DLQI scores and adults alopecia areata patients' characteristics

Variable	Symptom and feelings	Daily activities	Leisure	Work and school	Personal relationship	Treatment	Total Score
Severity (SALT score)							
Mild < 25	1.77 ± 0.12	1.33 ± 0.22	0.92 ± 0.04	1.1 ± 0.05	0.88 ± 0.08	0.44 ± 0.07	6.44 ± 0.31
Moderate (25-75)	3.1 ± 1.5	2.3 ± 2	1.9 ± 1.5	2.1 ± 0.5	1.1 ± 0	1.33 ± 1	11.83 ± 5.5
P-value	0.075	0.1	0.473	0.699	0.004	0.09	0.512
Gender							
Female	2.11 ± 0.17	1.99 ± 0.19	1.22 ± 0.16	1.26 ± 0.09	1 ± 0.11	0.33 ± 0.11	7.91 ± 0.55
Male	0.54 ± 0.17	0.7 ± 0.11	1.68 ± 0.11	1.34 ± 0.07	0.9 ± 0.73	0.59 ± 0.09	5.75 ± 0.33
P value	0.005	0.031	0.001	0.003	0.001	0.004	0.003
Age of onset							
<30 Years	1.93 ± 0.18	1.33 ± 0.15	1.84 ± 0.13	1.11 ± 0.07	0.53 ± 0.1	0.62 ± 0.1	6.79 ± 0.59
≥ 30 Years	1.9 ± 0.18	1.03 ± 0.16	0.84 ± 0.14	2.34 ± 0.08	0.93 ± 0.14	0.75 ± 0.1	7.79 ± 0.54
P value	0.933	0.877	0.623	0.524	0.034	0.444	0.699
Face Involvement							
YES	0.25 ± 0.47	0.5 ± 0.28	0.5 ± 0.95	0.5 ± 0.28	0.10 ± 0.28	0.30 ± 0.28	2.15 ± 0.55
NO	1.6 ± 0.17	0.91 ± 0.14	0.46 ± 0.12	0.43 ± 0.07	0.15 ± 0.07	0.48 ± 0.1	3.5 ± 0.05
P value	0.009	0.003	0.361	0.798	0.224	0.976	0.295
Education level							
Under diploma	1.34 ± 0.17	1.05 ± 0.16	1.07 ± 0.16	1.33 ± 0.07	1.44 ± 0.12	1.33 ± 0.1	8.77 ± 0.6
> Diploma	1.33 ± 0.19	1.04 ± 0.22	0.44 ± 0.12	2.11 ± 0.08	0.44 ± 0.12	0.71 ± 0.11	5.99 ± 0.58
P-Value	0.002	0.002	0.039	0.010	0.039	0.679	0.061
Marital Status							
Married	1.02 ± 0.23	0.19 ± 0.21	1.97 ± 0.18	1.36 ± 0.08	1.36 ± 0.09	1.75 ± 0.12	6.33 ± 0.8
Unmarried	1.87 ± 0.16	0.81 ± 0.12	0.75 ± 0.11	1.26 ± 0.08	1.02 ± 0.11	0.44 ± 0.09	4.33 ± 0.44
P-Value	0.546	0.244	0.578	0.418	0.001	0.848	0.799
Living site							
City	1.05 ± 0.18	1.10 ± 0.15	0.5 ± 0.12	1.29 ± 0.07	0.76 ± 0.11	0.76 ± 0.1	6.43 ± 0.42
Rural	1.22 ± 0.16	0.9 ± 0.16	0.9 ± 0.16	1.33 ± 0.08	0.7 ± 0.12	0.67 ± 0.11	7.99 ± 0.44
P-Value	0.104	0.394	0.984	0.729	0.766	0.592	0.699
Positive family history of AA							
Yes	1.09 ± 0.34	0.27 ± 0.14	0.45 ± 0.15	1.1 ± 0.23	0.99 ± 0.29	1.1 ± 0.15	4.95 ± 0.6
No	1.05 ± 0.14	1.14 ± 0.12	0.97 ± 0.11	1.35 ± 0.05	1.33 ± 0.08	0.86 ± 0.08	6.7 ± 0.31
P-Value	0.003	0.021	0.066	0.051	0.845	0.152	0.033

History of recurrence							
Yes	1.08 ± 0.19	1.19 ± 0.16	1.89 ± 0.15	1.22 ± 0.08	1.22 ± 0.1	0.88 ± 0.1	6.55 ± 0.44
No	1.73 ± 0.18	1.77 ± 0.15	1.92 ± 0.12	1.99 ± 0.08	1.68 ± 0.14	1.47 ± 0.09	7.05 ± 0.33
P-Value	0.113	0.445	0.854	0.441	0.33	0.001	0.331
Disease duration							
< 12 months	1 ± 0.19	1.33 ± 0.17	1.11 ± 0.15	1.41 ± 0.08	0.81 ± 0.14	1.59 ± 0.11	6.99 ± 0.33
≥12 months	1.33 ± 0.18	1 ± 0.99	1.33 ± 0.13	1.32 ± 0.07	1.49 ± 0.1	1.33 ± 0.09	7.11 ± 0.44
P-Value	0.659	0.732	0.731	0.102	0.505	0.118	0.521

Table 3: Association between CDLQI scores and adults alopecia areata patients' characteristics

Variable	Symptom and feelings(Q1,2)	Daily activities (Q3,4)	Leisure (Q5,6)	Work and school (Q7)	Personal relationship (Q8,9)	Treatment (Q10)	Total Score
Severity SALT score)							
Mild < 25	1.81 ± 0.19	1.05 ± 0.16	0.77 ± 0.18	1.99 ± 0.09	0.16 ± 0.08	0.76 ± 0.3	5.78 ± 0.95
Gender							
Male	1.99 ± 0.19	1.01 ± 0.4	0.82 ± 0.13	2.9 ± 0.03	0.21 ± 0.13	0.59 ± 0.18	6.54 ± 0.72
Female	1.89 ± 0.17	1.02 ± 0.11	0.51 ± 0.33	2.11 ± 0.2	0.3 ± 0.03	0.19 ± 0.13	6.02 ± 0.81
P value	0.301	0.716	0.532	0.414	0.216	0.09	0.255
Face Involvement							
YES	1.25 ± 0.31	1.1 ± 0.28	1.5 ± 0.95	2.5 ± 0.28	0.50 ± 0.28	0.50 ± 0.28	1.7 ± 0.38
NO	1.3 ± 0.17	0.11 ± 0.14	0.11 ± 0.01	1.01 ± 0.02	0.12 ± 0.01	0.31 ± 0.2	1.18 ± 0.03
P value	0.001	0.004	0.252	0.54	0.22	0.11	0.39
Living site							
City	1.45 ± 0.18	1.22 ± 0.15	0.5 ± 0.12	2.99 ± 0.07	0.16 ± 0.33	0.88 ± 0.21	8.43 ± 0.31
Rural	2.22 ± 0.16	0.9 ± 0.16	0.9 ± 0.16	2.33 ± 0.08	0.7 ± 0.12	0.67 ± 0.11	8.11 ± 0.41
P-Value	0.104	0.394	0.984	0.729	0.766	0.592	0.405
Positive family history of AA							
Yes	2 ± 0.63	1.2 ± 0.48	0.6 ± 0.24	2.8 ± 0.2	0 ± 0	1 ± 0	8.2 ± 1.3
No	1.7 ± 0.18	1.02 ± 0.16	0.54 ± 0.15	2.39 ± 0.07	0.20 ± 0.08	0.43 ± 0.1	7.54 ± 0.52
P-Value	0.618	0.727	0.910	0.088	0.411	0.09	0.421
History of recurrence							
Yes	2 ± 0.15	1.32 ± 0.47	0.5 ± 0.39	2.7 ± 0.8	0 ± 0	1.2 ± 0	8.4 ± 0.3
No	1.22 ± 0.16	0.6 ± 0.17	0.9 ± 0.16	2.4 ± 0.33	0.16 ± 0.12	0.67 ± 0.11	7.21 ± 0.41
P-Value	0.104	0.394	0.984	0.729	0.766	0.592	0.81
Disease duration							
< 12 months	1.45 ± 0.18	1.33 ± 0.15	0.56 ± 0.12	2.88 ± 0.07	0.16 ± 0.33	0.88 ± 0.21	8.43 ± 0.31
≥12 months	1.22 ± 0.16	0.9 ± 0.16	0.11 ± 0.16	2.33 ± 0.08	0.3 ± 0.12	0.67 ± 0.11	8.11 ± 0.41
P-Value	0.104	0.78	0.05	0.16	0.92	0.77	0.19

DISCUSSION

Quality of life (QoL) is a multi-faceted concept that goes beyond just physical health. It considers how a disease or impairment affects all aspects of someone's life: physically, mentally, socially, and emotionally. By understanding the individual's subjective perception of these impacts, we can better gauge the burden of illness and assess the success of treatments in helping patients lead fulfilling lives. QoL indicators are invaluable tools in dermatology for several reasons. They directly capture the extent to which skin conditions affect patients' social lives, daily activities, and mental health, information often missed by physical assessments alone. Additionally, QoL scores provide valuable insights into treatment effectiveness, going beyond just physical improvements. Furthermore, in today's resource-constrained healthcare landscape, QoL data helps prioritize resource allocation. For expensive treatments or demanding management strategies, demonstrating a significant QoL impact through objective measures strengthens the case for their use in dermatology (Jong, C et al., 2008).

The study revealed a striking gender disparity, with women experiencing significantly more negative impacts on their quality of life (QoL) due to alopecia areata (AA) compared to men. Hair's significance in shaping female attractiveness and femininity likely drives this discrepancy. Notably, feelings, daily routines, leisure activities, and personal relationships were the key areas affected by AA in both genders, but the emotional toll was notably worse for women (Janković, S et al., 2016). Similar findings were reported by Abedini *et al.* in Iran, where female patients also exhibited a poorer QoL. Our study identified feelings and leisure activities as the domains most affected by alopecia areata, impacting patients' quality of life (QoL) (Abedini, R et al., 2018). However, prior research on gender and disease duration differences in QoL has been inconsistent. While we found no significant disparities between genders or QoL and disease duration, other studies have reported opposite or mixed results. Similarly, education level seems to not influence QoL, consistent with a majority of prior findings. These diverse findings highlight the need for further research to clarify the complex relationship between alopecia areata and QoL across various demographic factors (Al-Mutairi, N et al., 2011; Zhang, M et al., 2017). Education level and marital status both played a role in how AA affected QoL. Those with lower education levels experienced a greater impact on emotional well-being, likely due to increased anxiety or uncertainty about the condition. Meanwhile, married couples reported a more pronounced strain on their personal relationships compared to unmarried patients. These findings echo similar observations in other studies, highlighting the complex interplay between various factors and QoL in those with AA. Contrary to some studies like (Masmoudi, J et al., 2013) positive family history emerged as a strong protective factor in our study, significantly improving QoL for patients, especially in regards to emotions, daily activities, and work. This positive association could be attributed to witnessing spontaneous hair regrowth in family members, offering hope and emotional support. However, treatments posed a bigger challenge for patients with recurrent AA, leading to a greater negative impact on their QoL (Qi, S et al., 2015). This might be due to decreased acceptance of treatments due to the cyclical nature of the disease. In current study regarding age of onset and facial involvement mirrored Abedini

et al. shown no significant influence on QoL. However, discrepancies exist in other studies, with some suggesting a poorer QoL in younger patients, highlighting the need for further research to clarify these relationships. While the presence of a supportive partner might seem beneficial, a previous study surprisingly found that married individuals with alopecia areata (AA) reported a significantly poorer quality of life (QoL) compared to unmarried individuals. This counterintuitive finding could be explained by the increased social pressures and responsibilities inherent to marriage, potentially leading to greater anxiety and emotional strain in coping with AA (Maan, M. *et al.*, 2021).

CONCLUSION

This study demonstrated no link between AA severity (based on the SALT score) and DLQI score. In addition, females and patients with a negative family history of AA experienced a significantly greater negative impact of AA on the DLQI score than males and patients with a positive family history. However, other demographic or clinical features not correlate with QoL.

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Conflict of interest

None declared.

Reference

- 1) Abedini, R., Hallaji, Z., Lajevardi, V., Nasimi, M., Khaledi, M. K., & Tohidinik, H. R. (2018). Quality of life in mild and severe alopecia areata patients. *International Journal of Women's Dermatology*, 4(2), 91-94.
- 2) Akhyani, M., Seirafi, H., Hallaji, Z., Kiani, P., Sabouri Rad, S., & Ahrar Mohammad, H. (2011). Correlation between the severity of alopecia areata and its risk factors. *Iranian Journal of Dermatology*, 14(1), 6-11.
- 3) Alkhalifah A, Alsantali A, Wang E, McElwee KJ, Shapiro J. Alopecia areata update: Part 1-clinical picture, histopathology and pathogenesis. *J Am Acad Dermatol*. 2010;62(2): 178-88.
- 4) Al-Mutairi, N., & Eldin, O. N. (2011). Clinical profile and impact on quality of life: Seven years experience with patients of alopecia areata. *Indian Journal of Dermatology, Venereology and Leprology*, 77, 489.
- 5) Camacho, F. M., & García-Hernández, M. J. (2002). Psychological features of androgenetic alopecia 1. *Journal of the European Academy of Dermatology and Venereology*, 16(5), 476-480.
- 6) Darwin, E., Hirt, P. A., Fertig, R., Doliner, B., Delcanto, G., & Jimenez, J. J. (2018). Alopecia areata: review of epidemiology, clinical features, pathogenesis, and new treatment options. *International journal of trichology*, 10(2), 51.
- 7) Finner, A. M. (2011). Alopecia areata: clinical presentation, diagnosis, and unusual cases. *Dermatologic therapy*, 24(3), 348-354.

- 8) Han, S. H., Byun, J. W., Lee, W. S., Kang, H., Kye, Y. C., Kim, K. H., ... & Choi, G. S. (2012). Quality of life assessment in male patients with androgenetic alopecia: result of a prospective, multicenter study. *Annals of dermatology*, 24(3), 311-318. Rocha de HT, Sodré CT, Brasil MA, Silva MR. Quality of life in alopecia areata: A case control study. *Int J Trichology*. 2014;6(1): 8-12.
- 9) Hunt, N., & McHale, S. (2005). The psychological impact of alopecia. *Bmj*, 331(7522), 951-953.
- 10) Hunt, N., & McHALE, S. U. E. (2004). Reported experiences of persons with alopecia areata. *Journal of loss and trauma*, 10(1), 33-50.
- 11) Olsen, E. A., Hordinsky, M. K., Price, V. H., Roberts, J. L., Shapiro, J., Canfield, D., ... & Norris, D. (2004). Alopecia areata investigational assessment guidelines—Part II. *Journal of the American Academy of Dermatology*, 51(3), 440-447.
- 12) Mohammadi, S., Khalili, M., Farajzadeh, S., Safizadeh, H., Amiri, R., Aflatoonian, M., & Shahabi, S. (2020). Evaluation of Reliability and Validity of Persian Version of Children's Dermatology Life Quality Index (CDLQI) Questionnaire and Practical Use. *Journal of Skin and Stem Cell*, 7(4).
- 13) Masmoudi, J., Sellami, R., Ouali, U., Mnif, L., Feki, I., Amouri, M., ... & Jaoua, A. (2013). Quality of life in alopecia areata: a sample of tunisian patients. *Dermatology Research and Practice*, 2013.
- 14) Janković, S., Perić, J., Maksimović, N., Ćirković, A., Marinković, J., Janković, J., ... & Medenica, L. (2016). Quality of life in patients with alopecia areata: a hospital-based cross-sectional study. *Journal of the European Academy of Dermatology and Venereology*, 30(5), 840-846.
- 15) Jong, C. T., Finlay, A. Y., Pearse, A. D., Kerr, A. C., Ferguson, J., Benton, E. C., ... & Anstey, A. V. (2008). The quality of life of 790 patients with photodermatoses. *British Journal of Dermatology*, 159(1), 192-197.
- 16) Kutyl-Pachecka, M. (2015). Psychological and psychopathological factors in alopecia areata. *Psychiatr Pol*, 49(5), 955-64. Ghanizadeh A, Ayoobzadehshirazi A. A review of psychiatric disorders comorbidities in patients with alopecia areata. *Int J Trichology*. 2014;6(1): 2-4.
- 17) Lee, H. H., Gwillim, E., Patel, K. R., Hua, T., Rastogi, S., Ibler, E., & Silverberg, J. I. (2020). Epidemiology of alopecia areata, ophiasis, totalis, and universalis: A systematic review and meta-analysis. *Journal of the American Academy of Dermatology*, 82(3), 675-682.
- 18) Maan, M. A., Hussain, F., Abrar, A., Zahoor, H., & Akhtar, S. J. (2021). Knowledge, beliefs and perceptions among alopecia areata patients: A cross-sectional study in Faisalabad. *Journal of Pakistan Association of Dermatologists*, 31(1), 51-57.
- 19) Putterman, E., Patel, D. P., Andrade, G., Harfmann, K. L., Hogeling, M., Cheng, C. E., ... & Castelo-Soccio, L. (2019). Severity of disease and quality of life in parents of children with alopecia areata, totalis, and universalis: a prospective, cross-sectional study. *Journal of the American Academy of Dermatology*, 80(5), 1389-1394.
- 20) Qi, S., Xu, F., Sheng, Y., & Yang, Q. (2015). Assessing quality of life in alopecia areata patients in China. *Psychology, health & medicine*, 20(1), 97-102.
- 21) Williamson, D., Gonzalez, M., & Finlay, A. Y. (2001). The effect of hair loss on quality of life. *Journal of the European Academy of Dermatology and Venereology*, 15(2), 137-139.
- 22) Zhang, M., & Zhang, N. (2017). Quality of life assessment in patients with alopecia areata and androgenetic alopecia in the People's Republic of China. *Patient preference and adherence*, 151-155.