IJD ORIGINAL ARTICLE

# Scalp psoriasis: demographics, clinical features, and treatment options

Ala Ehsani, MD Student [1]
Zahra Razavi, MD [2,3]
Yasamin Maleki Gilvaei, MD [4]
Maryam Daneshpazhooh, MD [2,3]
Maryam Nasimi, MD [2,3]
Amirhoushang Ehsani, MD [2,3]
Mina Koohian Mohammadabadi, MD [5]
Soheila Sadat Afzalipour, MD [4]
Maryam Khalifeh Loo. MD [6]
Taha Shahbazi, MD [2]
Amirhossein Rahimnia, MD [2,3*]

1. Department of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran
2. Department of Dermatology, Tehran University of Medical Sciences, Tehran, Iran
3. Autoimmune Bullous Diseases Research Center, Razi Hospital, Tehran University of Medical Sciences, Tehran, Iran
4. Department of Medicine, Tehran University of Medical Sciences, Tehran, Iran
5. Department of Medicine, Iran University of Medical Sciences, Tehran, Iran
6. Department of Pathology, Tehran University of Medical Sciences, Tehran, Iran

*Corresponding author:
Amirhossein Rahimnia, MD,
Department of Dermatology, Tehran University of Medical Sciences, Tehran, Iran
Autoimmune Bullous Diseases Research Center, Razi Hospital, Tehran University of Medical Sciences, Tehran, Iran
Postal code: 1199663911
Email: rahimnia.amir@gmail.com

Received: 17 September 2024
Accepted: 19 October 2024

**Background:** Psoriasis is a common papulosquamous skin disease and immune system disorder that primarily affects the extensor surfaces of the body and the scalp. Consequently, psoriasis activity can adversely impact patients' self-esteem and social interactions. This study aims to evaluate the demographics, clinical characteristics, and treatment options of psoriasis patients with scalp involvement.

**Methods:** This cross-sectional study involved psoriasis patients with scalp involvement who were undergoing treatment and follow-up at our center. Adult patients with scalp psoriasis, without evidence of other skin or rheumatologic disorders, were enrolled. Patient characteristics, clinical findings, and treatment modalities were documented.

**Results:** Eighty patients with psoriasis involving the scalp were included in the study. The mean age of the patients was 46.49 ± 15.34 years. The average Psoriasis Area and Severity Index (PASI) score was 8.86 ± 9.71. Additionally, the mean intensity of scalp involvement, based on the PASI score, was 1.35 ± 1.30. Plaque-type psoriasis was the most common form, and small seborrheic dermatitis-like scales were the most prevalent presentation of scalp psoriasis.

**Conclusion:** Scalp involvement in psoriasis is a common presentation of the disease that can mimic seborrheic dermatitis or manifest as adherent peripheral scales or pityriasis amiantacea. We found no relationship between the severity of scalp psoriasis and smoking. However, patients with scalp psoriasis more frequently report hair loss and dissatisfaction with their hair growth, even though their hair pull test may be negative and show no evidence of frank alopecia.

**Keywords:** scalp, psoriasis, demography, therapeutics

Iran J Dermatol 2025; 28: 238-242

DOI: 10.22034/ijd.2024.479102.1905



Please cite this article as: Ehsani A, Razavi Z, Maleki gilvaei Y, Daneshpazhooh M, Nasimi M, Ehsani A, Koohian Mohammadabadi M, Afzalipour SS, Khalifeh Loo M, Shahbazi T, Rahimnia A. Scalp psoriasis: demographics, clinical features, and treatment options. Iran J Dermatol. 2025; 28(4): 238-242.

### What is already known on the subject?

- Plaque-type psoriasis is the most common form of psoriasis and often involves the scalp. It is also associated with systemic conditions such as nail changes, joint involvement, and smoking.
- Hair loss and pruritus are common symptoms of scalp psoriasis, although alopecia is rarely documented in objective assessments.

### The study's main messages:

- The findings of this study highlight the paradox between patient-reported hair loss and negative hair pull test results, emphasizing the need for personalized management of scalp psoriasis.

## INTRODUCTION

Psoriasis is a papulosquamous skin disease that was once considered a disorder of the epidermal keratinocytes but is now recognized as one of the most common immune system diseases, affecting 2-3% of the general population [1]. Approximately 70 to 80 percent of patients are presumed to have mild psoriatic skin lesions and can therefore be managed effectively with topical therapies. In other forms of psoriasis, lesions are more severe, necessitating the use of more potent therapeutic agents [2].

The Psoriasis Area and Severity Index (PASI) is a widely used instrument in psoriasis trials that grades the severity of psoriatic lesions and evaluates the patient's response to treatment. It generates a numeric score ranging from 0 to 72. Generally, a PASI score between 5 and 10 is considered moderate disease, while a score above 10 is classified as severe [2].

The most common areas of the body affected by lesions are the elbows, knees, scalp, and navel. The estimated incidence of scalp psoriasis among psoriasis patients ranges from 45% to 90% [3-5].

Scalp psoriasis presents as erythematous plaques covered with silvery-white scales that flake off. The affected skin is dry and often cracks and bleeds. Scalp lesions are typically very itchy and painful, sometimes causing a burning sensation. Patients with scalp psoriasis are particularly susceptible to Koebner's phenomenon. Scratching and removing scales can lead to secondary, temporary, non-scarring alopecia associated with psoriasis [6].

Scalp psoriasis is a complex skin disease with multiple causes. Although its exact cause is not yet known, several key factors have been identified as contributing to its development and exacerbation, including genetics, immune system disorders, environmental factors, cytokine imbalances, nervous system inflammation, microbial factors, hormonal influences, and medications [7].

The goal of scalp psoriasis treatment is to alleviate symptoms, reduce inflammation, and effectively control the condition. Various therapeutic options are available, including topical corticosteroids, coal tar products, keratolytics such as salicylic acid, calcineurin inhibitors like tacrolimus and pimecrolimus, and phototherapy. Systemic medications, such as oral corticosteroids, retinoids, and immunomodulators, as well as lifestyle modifications, may also be prescribed [8,9].

Scalp involvement in patients with psoriasis significantly negatively impacts their quality of life. Patients often feel ashamed or embarrassed by their scalp lesions and may feel compelled to wear hats or grow their hair to conceal the affected areas [10]. This study aims to describe the demographics, clinical presentations, and treatment modalities of psoriasis patients with scalp involvement.

## METHODS

In this cross-sectional study, the population consisted of individuals referred to the dermatology department of Razi Hospital between March 2023 and February 2024.

### Inclusion criteria

Eligible patients met the following criteria:

**Age:** 18 years or older.

**Diagnosis:** Confirmed clinical diagnosis of scalp psoriasis, supplemented by dermoscopy or histopathology when necessary.

**Disease duration:** Included both newly diagnosed and chronic cases with active scalp involvement.

**Treatment:** Patients receiving any form of treatment for scalp psoriasis, including topical, systemic, or biologic therapies.

### Exclusion criteria

**Other skin conditions:** Patients with inflammatory, autoimmune, or infectious skin diseases that mimic psoriasis (e.g., dermatomyositis, atopic dermatitis, seborrheic dermatitis).

**Systemic autoimmune disorders**: Individuals

with systemic lupus erythematosus, rheumatoid arthritis, or other similar conditions not associated with psoriasis.

**Psoriatic arthritis:** Cases of predominant psoriatic arthritis without active scalp involvement.

**Infections:** Active bacterial, viral, or fungal infections of the scalp.

**Pregnancy and lactation:** Women who are pregnant or breastfeeding.

**Treatment contraindications:** Patients who have contraindications to standard psoriasis therapies.

To collect the necessary data, a structured checklist was developed. This checklist included demographic information and clinical variables such as age, sex, psoriasis subtype (pustular, plaque, erythrodermic, guttate), resistant forms of scalp psoriasis (diffuse crusting resembling seborrheic dermatitis, pityriasis amiantacea, and well-demarcated plaques at the scalp margins), PASI score, severity of scalp involvement, nail and joint involvement, treatment regimens (topical and systemic), body mass index (BMI), smoking status, pruritus, pain complaints, and the results of the hair pull test. The checklist was completed through direct interviews conducted by a physician for each participant.

### Statistical analysis

Statistical analysis was performed using IBM SPSS Statistics, Version 28.0 (Chicago, IL, USA). Quantitative variables are presented as means ± standard deviations (SD), while categorical variables are presented as frequencies and percentages. A significance level of $P < 0.05$ was applied for all statistical tests.

### Ethical considerations

Prior to the commencement of the study, ethical approval was obtained from the Research Ethics Committee of Tehran University of Medical Sciences (IR.TUMS.MEDICINE.REC.1400.1259). All participants signed informed consent forms after receiving a thorough explanation of the study objectives. The collected data were anonymized and kept confidential. The study adhered to the ethical principles outlined in the Declaration of Helsinki.

## RESULTS

In this cross-sectional study, 80 patients with psoriasis involving the scalp, who were receiving treatment at Razi Hospital, were evaluated.

### Patient demographics

The mean age of the study population was 46.49 ± 15.34 years. Of the total participants, 53 (66.2%) were men and 27 (33.8%) were women, indicating a higher prevalence of scalp psoriasis among men. The mean BMI was 28.1 ± 15.65 kg/m², reflecting a slightly overweight population on average. Additionally, 43.8% of the patients reported being current smokers, highlighting a substantial prevalence of smoking within this study.

### Clinical presentations

Patients presented with four distinct types of psoriasis: guttate, pustular, erythrodermic, and plaque-type. Plaque-type psoriasis was the most common, accounting for 79.9% of cases, followed by erythrodermic (11.2%), pustular (6.3%), and guttate psoriasis (2.6%). The mean PASI score for the study population was 8.86 ± 9.71, with the average PASI score for scalp involvement specifically being 1.35 ± 1.30.

Scalp involvement presented in various clinical forms. Resistant plaques located at the scalp periphery were observed in 27 patients (33.8%), while nine patients (11.2%) exhibited widely distributed adherent plaques resembling seborrheic dermatitis. Pityriasis amiantacea was present in two patients (2.5%). Concurrent resistant peripheral plaques and seborrheic dermatitis-like scales were noted in seven patients (8.8%), and one patient (1.2%) displayed all three clinical features. The majority of patients (42.5%) had mild, non-adherent plaques and scales.

### Symptomatology

Among the patients, 35% reported experiencing scalp pain, while pruritus at the lesion sites was reported by 81.2% of participants. Hair loss was a common complaint, with 52.5% of patients reporting a history of hair thinning or shedding. However, only 20% of these individuals had a positive hair pull test, indicating active hair shedding.

Nail involvement was also prevalent, affecting 65 patients. The most common nail changes included pitting (31.2%), onycholysis (18.8%), oil drop (15%), dystrophy (8.8%), and hyperkeratosis (7.5%). Joint involvement was documented in 43.8% of

the participants, suggesting a significant burden of psoriatic arthritis in this study.

### Treatment modalities

Topical treatments were widely used among the patients, with clobetasol lotion being the most frequently prescribed medication (77.5%). Other topical agents included betamethasone lotion (5%), triamcinolone ointment (1.2%), and tacrolimus ointment (1.2%). A notable 15% of patients were not receiving any form of topical therapy at the time of the study.

For systemic treatments, 51.2% of patients were taking oral methotrexate, while other oral agents included cyclosporine (3.8%), sulfasalazine (1.2%), and tofacitinib (1.2%). Interestingly, 41.2% of the study participants did not use any oral medications for their scalp psoriasis.

Regarding injectable treatments, 68.8% of patients were receiving biologic or systemic therapies. The most commonly used biologics were adalimumab (36.2%) and infliximab (23.8%), while 7.5% of patients were on injectable methotrexate, and 1.2% were receiving etanercept.

### Clinical correlations

Chi-square analysis revealed a significant correlation between the scalp PASI score and patients' complaints of hair loss ($P = 0.034$), although no association was found with the hair pull test ($P = 0.282$). Furthermore, there was no significant correlation between the PASI score and the severity of joint involvement ($P = 0.647$). However, a significant relationship was found between the PASI score and smoking status ($P = 0.031$), while no correlation was observed between the severity of scalp psoriasis and smoking ($P = 0.422$).

## DISCUSSION

According to our study, among psoriasis patients with scalp involvement, the plaque-type was the most prevalent clinical sub-type, occurring in 79.9% of cases. The frequencies of erythrodermic, pustular, and guttate types were 11.2%, 6.2%, and 2,5%, respectively. Similarly, a study conducted at the same hospital in 1992 reported plaque-type psoriasis as the most common, with a prevalence of 62%, followed by erythrodermic type at 21%, pustular type at 13%, and unstable type at 4% [11].

The other clinical manifestations examined in this research include nail changes, with a prevalence of 51.2%, and joint involvement, with a prevalence of 43.8%. In a study conducted by Canal-García E. and colleagues, nail involvement in psoriatic patients was reported to be common, occurring in approximately 80% of cases [12].

In our study, a significant relationship was observed between the scalp PASI score and complaints of hair loss ($P = 0.034$); however, no significant relationship was found with the pull test. According to a study by Takahiro Suzuki examining hair follicle changes in psoriasis, the disease affects hair loss and negatively impacts hair growth but rarely causes alopecia in patients [13]. This phenomenon likely explains why patients in our study reported hair shedding and dissatisfaction with hair growth despite negative results on the objective pull test.

In our study, the average PASI score was 8.86, which is similar to the findings of Salihbegovic, EM., *et al.*, who reported an average PASI score of 9.85 [14].

In this study, a significant relationship was found between the severity of psoriasis and smoking ($P = 0.031$), consistent with previous research. Smoking was significantly related with disease severity as measured by the PASI score; however, no significant relationship was observed between disease severity and alcohol consumption [14]. In another study by Wolfgang Kopp, smoking was identified as a key factor in the development of non-communicable diseases, including psoriasis [15]. Interestingly, in our survey, the severity of scalp psoriasis, unlike the total PASI score, was not significantly correlated with smoking habits. This suggests that other genetic or environmental factors may play a more significant role in exacerbating scalp psoriasis.

It is worth mentioning that our study found the most common presentation of scalp psoriasis to be small, non-adherent scales, whereas the less common manifestation was pityriasis amiantacea.

In this study, no significant relationship was found between the PASI score and the level of joint involvement ($P = 0.674$). However, a study conducted by Muhammad Haroon in 2013 reported a significant correlation between psoriatic arthritis and the disease severity index ($P = 0.064$) [16]. Additionally, a study by Hong Liang Tey found that psoriatic arthritis has a significant relationship with a family history

of psoriatic arthritis ($P < 0.001$) and the maximum involved body surface area ($P = 0.05$) [17]. The absence of a significant relationship between the PASI score and joint involvement in our study may be due to some patients receiving systemic medications that potentially treat joint involvement.

Some limitations should be addressed in this study, including a small sample size with diverse presentations and severity, as well as the cross-sectional evaluation of patients with psoriasis.

## CONCLUSION

Scalp involvement in psoriasis is a common presentation of the disease and can resemble seborrheic dermatitis or manifest as adherent peripheral scales or pityriasis amiantacea. We found no relationship between the severity of scalp psoriasis and smoking. However, patients with scalp psoriasis more frequently report hair loss and dissatisfaction with their hair growth, even though their hair pull test may be negative and show no evidence of frank alopecia.

### Acknowledgment

None.

### Authors' contributions

A.R., A.E., Z.R., M.D., M.N., and A.H.E. contributed to the conceptualization and overall design of the study. Methodology was developed by A.R., A.E., Z.R., M.D., A.H.E., and M.K.M. Data curation was performed by Z.R., Y.M.G., S.S.A., M.K.L., and T.S. Investigation was conducted by A.E., Z.R., Y.M.G., M.K.M., and T.S. Validation was carried out by M.D., M.N., A.H.E., A.R., and M.K.M. Formal analysis was performed by A.R., Z.R., and M.N. Supervision was provided by M.D., M.N., and A.H.E. Project administration was handled by A.R. and M.D. The original draft was written by A.E., Z.R., Y.M.G., and A.R. Manuscript review and editing were performed by M.D., M.N., A.H.E., M.K.M., and A.R. All authors reviewed and approved the final manuscript for submission.

### Funding source

The authors received no financial support for the research, authorship, or publication of this article.

**Conflict of interest:** None declared.

## REFERENCES

1. Goff K, Karimkhani C, Boyers L, et al. The global burden of psoriatic skin disease. Br J Dermatol. 2015;172(6):1665-8.
2. Clinical Review Report: Guselkumab (Tremfya): (Janssen Inc.): Indication: For the treatment of adult patients with moderate-to-severe plaque psoriasis who are candidates for systemic therapy or phototherapy [Internet]. Ottawa (ON): Canadian Agency for Drugs and Technologies in Health; 2018.
3. Merola JF, Li T, Li WQ, et al. Prevalence of psoriasis phenotypes among men and women in the USA. Clin Exp Dermatol. 2016;41(5):486-9.
4. Aldredge LM, Higham RC. Manifestations and management of difficult-to-treat psoriasis. J Dermatol Nurses Assoc. 2018;10(4):189-97.
5. Frez MLF, Asawanonda P, Gunasekara C, et al. Recommendations for a patient-centered approach to the assessment and treatment of scalp psoriasis: a consensus statement from the Asia Scalp Psoriasis Study Group. J Dermatolog Treat. 2014;25(1):38-45.
6. Dopytalska K, Sobolewski P, Błaszczak A, et al. Psoriasis in special localizations. Reumatologia. 2018;56(6):392-8.
7. Marek-Jozefowicz L, Czajkowski R, Borkowska A, et al. The brain–skin axis in psoriasis—psychological, psychiatric, hormonal, and dermatological aspects. Int J Mol Sci. 2022;23(2):669.
8. Mosca M, Hong J, Hadeler E, et al. Scalp psoriasis: a literature review of effective therapies and updated recommendations for practical management. Dermatol Ther (Heidelb). 2021;11(3):769-97.
9. Pinter A, Tsianakas A, Eichner A, et al. Efficacy and safety of topical tacrolimus microemulsion applied twice daily in patients with mild to moderate scalp psoriasis. Dermatol Ther (Heidelb). 2024;14(2):521-32.
10. De Korte J, Mombers FM, Bos JD, et al, editors. Quality of life in patients with psoriasis: a systematic literature review. J Investig Dermatol Symp Proc. 2004;9(2):140-7..
11. Farnaghi F, Moin A. One year survey of hospitalized psoriatic patients and their treatment in Razi Hospital. Tehran Uni Med J. 1998;56(2):83-8.
12. Canal-García E, Bosch-Amate X, Belinchón I, et al. Nail Psoriasis. Actas Dermosifiliogr. 2022;113(5):481-90.
13. Suzuki T, Ito T, Gilhar A, et al. The hair follicle-psoriasis axis: Shared regulatory mechanisms and therapeutic targets. Exp Dermatol. 2022;31(3):266-79.
14. Salihbegovic EM, Kurtalic N, Omerkic E. Smoking cigarettes and consuming alcohol in patients with psoriasis. Mater Sociomed. 2021;33(1):30-3.
15. Kopp W. Pathogenesis of (smoking-related) non-communicable diseases-Evidence for a common underlying pathophysiological pattern. Front Physiol. 2022;13:1037750.
16. Haroon M, Kirby B, FitzGerald O. High prevalence of psoriatic arthritis in patients with severe psoriasis with suboptimal performance of screening questionnaires. Ann Rheum Dis. 2013;72(5):736-40.
17. Tey HL, Ee HL, Tan AS, et al. Risk factors associated with having psoriatic arthritis in patients with cutaneous psoriasis. J Dermatol. 2010;37(5):426-30.