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Socio-Demographic Predictors of Psoriasis; a Comparative Study Between Patients with Paediatric-Onset Psoriasis and Adult-Onset Psoriasis in Pakistan

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ABSTRACT

Objective: To compare pediatric-onset psoriasis and adult-onset psoriasis in terms of frequency of gender involved, family history, trigger factors, and sites involved at onset.
Study Design: Comparative cross-sectional study.
Place and Duration of Study: Department of Dermatology, Pak Emirates Military Hospital, Rawalpindi Pakistan from Apr to Oct 2021.
Methodology: A total of 175 patients with psoriasis, aged 1 to 60 years, of either gender were included. Patients were divided into pediatric and adult Groups. In all patients, gender involved, family history, trigger factors, and sites involved at onset were noted.
Results: Our study reported that the majority of the respondents in the Adult Onset Psoriasis Patients Group and the Pediatric Onset Psoriasis patients (Adult Onset Psoriasis Patients) Group were males, and their percentages were 63.85% and 60.0%, respectively. In the POPPs Group, the scalp (48.89%), elbows (35.56%), and knees (11.11%) were most commonly involved at onset, similar to the AOPPs Group, where also the scalp (48.46%), elbows (22.31%) and the knees (18.46%) were the top three sites involved at the onset. In the POPP Group, 55.56% of patients had a history of psoriasis in their family compared to 58.46% of the AOPP Group. In the POPP Group, 28.89% had some trigger factor compared to 26.92% of the AOPP Group.
Conclusion: This study identifies key differences between pediatric-onset and adult-onset psoriasis, with scalp and elbows as common sites and knees more frequently involved in adults. Pediatric cases showed a slightly higher prevalence of trigger factors, such as infections, highlighting the need for early recognition and targeted interventions.

Keywords: Age of onset, Comorbidities, Children, Depression, Gender, Genetic predisposition, Mental health, Psoriasis, Prevalence.

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INTRODUCTION

Psoriasis is a common chronic inflammatory skin condition characterized by diverse presentations.[1] The hallmark of psoriasis is the presence of red, raised, scaly, and sharply demarcated plaques that may vary in extent, ranging from localized lesions to widespread involvement.[2] Lesions can occur due to the Koebner phenomenon, where trauma to the skin triggers psoriatic plaques.[3] It is a multifactorial disease, having both genetic susceptibilities as well as association with systemic or environmental factors, such as infections, stress, some specific medications, smoking, obesity, and alcohol consumption, all being recognized as well-established triggers for flare-ups, often followed by periods of remission.[4]

Psoriasis is not only a skin condition but a systemic inflammatory disease linked to significant associations, including an elevated risk of cardiovascular disease, metabolic syndrome, psychiatric illnesses including depression and mood disorders, and immune-mediated comorbidities.[5] These systemic effects highlight the far-reaching impact of psoriasis beyond visible plaques. The underlying mechanism of the association of psoriasis with these cardiovascular risk factors is not yet known. Nevertheless, common inflammatory pathways, cellular mediators, and genetic susceptibility may contribute to these findings.[6]

The substantial medical, social, financial, and psychological cost of pediatric-onset psoriasis has garnered increased attention in recent times.[7] Although some psoriatic patients may not be diagnosed until they are adults, one-third of all cases begin in childhood.[8]

This study aims to explore the frequency of gender involved, family history, trigger factors, and initial sites of involvement in psoriasis patients while

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comparing these aspects between pediatric-onset and adult-onset psoriasis. By identifying distinct patterns and triggers across age Groups, this research will contribute to the development of targeted therapeutic strategies and improve disease management and patient outcomes.

METHODOLOGY

The comparative cross-sectional study was conducted at the Department of Dermatology, Pak Emirates Military Hospital, Rawalpindi Pakistan from April to October 2021 after approval by the Ethical Review Committee (A/28/ECI/164/2020). The sample size was calculated using the WHO calculator by proportion formula, taking population proportion at 7.9%.[6] The non-probability technique of consecutive sampling was employed.

Inclusion Criteria: Patients with clinically diagnosed psoriasis by a consultant dermatologist of >2 weeks duration, aged 1-60 years, and of either gender were inlcuded. Patients with psoriasis that first emerged before the age of 16 were referred to as Pediatric Onset Psoriasis Patients (POPPs). In contrast, patients with onset of psoriasis after the age of 16 were referred to as Adult Onset Psoriasis Patients (AOPPs).

Exclusion Criteria: Patients with any diagnosed coexistent skin disorder, i.e., chronic eczema, chronic idiopathic urticaria, etc., patients with chronic liver or renal failure, and those with diagnosed psychiatric illnesses like depression were excluded.

Data was collected from the Outdoor Patient Department (OPD) and Indoor Patient Department (IPD). Patients were selected according to the inclusion and exclusion criteria after a detailed history by a dermatologist. Informed consent was obtained from all the patients regarding their participation in the study. For pediatric participants, informed consent was signed by their guardians. A total of 175 patients were included in this study. Patients were divided into pediatric and adult Groups. In all patients, gender involved, family history, trigger factors, and sites involved at onset were noted. The exclusion criteria were strictly followed to control confounders and bias in the study.

The collected data was analyzed using Statistical Package for the Social Sciences (SPSS) version 26.0. Categorical variables like gender involved, place of living (rural/urban), monthly income (<20000/20000-40000/>40000), family history (yes/no), trigger factors (any infection, medication, smoking, trauma, or stress) (yes/no) and sites involved at onset (elbow/knee/scalp/trunk) were presented as frequencies and percentages. Quantitative variables like age and PASI score were expressed as Mean±SD (standard deviation). Comparison of outcome variables between pediatric and adult-onset psoriasis was done by Chi-square test, and p-value ≤0.05 was taken as significant.

RESULTS

A total of 150 patients were included in this study. The age range in this study was from 1 to 60 years, with a mean age of 28.06±11.91 years. The mean age of the pediatric and adult Groups was 11.59±2.51 and 33.93±5.67 years, respectively. The majority of the patients, i.e., 130(74.29%), were between 17 to 60 years of age. The mean PASI score was 11.57±7.99 (Table-I). In our study, male gender was found in 110(62.86%), family history in 101(57.71%) patients, triggering factors in 48(27.43%) patients, scalp involvement in 85(48.57%), elbows in 45(25.72%), knees in 29(10.86%), trunk in 04(2.29%), axilla in 06(3.43%) and genital skin in 06(3.43%) patients (Table-II).

Table-I: Socio-demographic Parameters of the Study Participants (n=175)

Study Parameters	Values
Age (Mean±SD)	28.06±11.91 years
Age (in years)	
≤16	45(25.71)
17-60	130 (74.29)
PASI score (Mean±SD)	11.57±7.99
PASI score	
≤10	102(58.29)
>10	73(41.71)
Place of living	
Rural	64(36.57)
Urban	111(63.43)
Monthly income	
<20000 PKR	39(22.29)
20000-40000 PKR	67(38.29)

Our study reported that the majority of the respondents in the adult-onset psoriasis patients (AOPPs) Group and the pediatric-onset psoriasis patients (POPPs) Group were males, and their percentages were 63.85% and 60.0%, respectively (Figure-I). In the POPP Group, 55.56% of patients had a history of psoriasis in their family compared to 58.46% of the AOPP Group. In the POPP Group, 28.89% had some triggering factor compared to 26.92% of the AOPP Group (Table-III). In the POPPs Group, the scalp (48.89%), elbows (35.56%), and knees (11.11%) were most commonly involved at onset,

similar to the AOPPs Group, where also the scalp (48.46%), elbows (22.31%) and the knees (18.46%) were the top three sites involved at the onset (Figure-II).

Table-II: Frequency of Gender, Family History, Trigger Factors and Sites involved at onset in Patients with Psoriasis (n=175)

Study Parameters		Frequency (%age)
Gender	Male	110(62.86)
	Female	65(37.14)
Family history	Yes	101(57.71)
	No	74(42.29)
Triggering factors	Yes	48(27.43)
	No	127(72.57)
Sites involved	Scalp	85(48.57)
	Trunk	04(2.29)
	Elbows	45(25.72)
	Knees	29(10.86)
	Axillae	06(3.43)
	Genital skin	06(3.43)

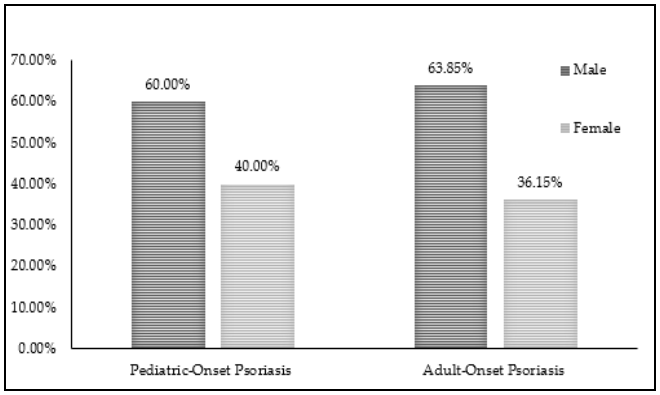

Figure-I: Gender distribution among Pediatric-Onset Psoriasis Patients (POPPs) and Adult-Onset Psoriasis (AOPPs) Patients

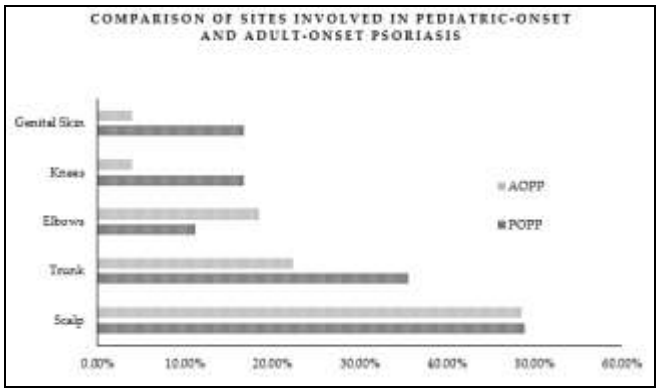

Figure-II: Horizontal bar chart showing comparison of the percentage of body sites affected by psoriasis in Pediatric-Onset Psoriasis Patients (POPPs) and Adult-Onset PsoriasisPatients (AOPPs) Groups

Table-III: Comparison of the Pediatric-Onset Psoriasis Patients and Adult-Onset Psoriasis Patients (n=175)

Study Parameters		Pediatric-Onset Psoriasis (n=45)	Adult-Onset Psoriasis (n=130)	*p*-value
Gender	Male	27(60.0%)	83(63.85%)	0.645
	Female	18 (40.0%)	47(36.15%)	
Family History	Yes	25(55.56%)	76(58.46%)	0.734
	No	20 (44.44%)	54(41.54%)	
Triggering factors	Yes	13 (28.89%)	35(26.92%)	0.799
	No	32 (71.11%)	95(73.08%)	
Site Involved	Scalp	22 (48.89%)	63(48.46%)	0.384
	Trunk	00 (0.0%)	04(3.08%)	
	Elbows	16(35.56%)	29(22.31%)	
	Knees	05(11.11%)	24(18.46%)	
	Axillae	01(16.67%)	05(3.85%)	
	Genital skin	01(16.67%)	05(3.85%)	

DISCUSSION

We have conducted this study to compare pediatric-onset psoriasis and adult-onset psoriasis in terms of frequency of gender involved, family history, trigger factors, and sites involved at onset. Psoriasis is a relatively common disorder affecting both children and adults globally, with prevalence varying across populations.[4] A comprehensive global review reported that psoriasis affects 0.5 to 11.4 percent of adults and 0 to 1.4 percent of children.[9] A total of 63.85% of the participants in the adult-onset psoriasis patients (AOPPs) Group and 60.0% of the participants in the pediatric-onset psoriasis patients (POPPs) Group were male, according to our study. The higher prevalence of male involvement in both POPPs (60%) and AOPPs (63.85%) aligns with recent epidemiological trends in South Asian populations but contrasts with findings from Western cohorts that often report a female predominance in pediatric cases.[10-12] Such regional differences may reflect genetic, cultural, and healthcare-seeking variations.

In our study, in the POPPs Group, the scalp was the most common location at onset (48.89%), followed by the elbows (35.56%) and the knees (11.11%). Similarly, in the AOPPs Group, the scalp (48.46%) and elbows (22.31%) were the commonest sites involved, followed by knees (18.46%), which were more frequently involved at disease onset than the pediatric Group. The high prevalence of scalp involvement (48.89% in POPPs, 48.46% in AOPPs) observed in this study emphasizes the physical and cosmetic burden of the disease. Similarly, the involvement of extensor

surfaces like the elbows and knees further emphasizes the physical impact of the disease.

Risk factors for the development of psoriasis include genetic, environmental, and behavioral factors, with genetic factors being the largest contributor.[13,14] This study identified family history of psoriasis in 58.46% of AOPP patients and 55.56% of POPP patients, underscoring the strong genetic predisposition linked to the disease. Recent studies highlight the pivotal role of genetic markers such as HLA-Cw6, aligning with the notable prevalence of family history observed in our findings.[1,15] In addition to genetic predisposition, infections, and systemic inflammation are well-recognized contributors to disease exacerbation and its systemic associations. Metabolic syndrome and obesity are increasingly being reported in both pediatric and adult psoriasis, likely driven by shared inflammatory pathways involving cytokines such as TNF-Alpha and Interleukin.[16,17]

Various factors, including infections, physical trauma, stress, and specific medications, including lithium and β-adrenergic antagonists, trigger psoriasis. Streptococcal infections, particularly upper respiratory tract infections, are strongly linked to the onset of guttate psoriasis, especially in children. Additionally, physical triggers such as the Koebner phenomenon, where psoriatic lesions develop at sites of skin trauma, were commonly observed in both pediatric and adult populations.[3] Tollefson *et al.*,[15] determined that the yearly incidence of psoriasis, after adjusting for age and sex, was 40.8 [95% CI 36.6-45.1] per 100,000 people. Possible causes for this shift include an uptick in psoriasis triggers. These results were consistent with previous epidemiological investigations conducted in China, India, the United States, and Australia.[16] Using a case-control design, Ozden et al., looked at the potential environmental causes of psoriasis in children. Up to 43.4% of children had infections, mostly upper respiratory tract infections, as a possible cause. Another possible precipitating cause in 1% to 66.7% of children was found to be stress, with the majority of this stress being characterized as emotional or psychological.[17] In our study, trigger factors were reported in 28.89% of POPPs cases and 26.92% of AOPPs cases, aligning with this research highlighting role of triggers in the course of pediatric psoriasis.

Psoriasis is associated with multiple comorbidities, including cardio-metabolic diseases, psoriatic arthritis, and mental health conditions. Psoriasis significantly affects patients' quality of life due to its visible nature, leading to stigma, anxiety, depression, and social withdrawal. The psychosocial impact is particularly pronounced in pediatric patients, who may experience bullying, reduced self-esteem, and emotional distress. Emotional stress, in turn, can exacerbate psoriasis, creating a vicious cycle.[18] Studies on the patients of psoriasis patients report significant psychological distress, with a higher burden among younger patients.

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LIMITATIONS OF STUDY

The relatively small sample size and single-center design limit the generalizability of the results to broader populations. To address these limitations, future studies should consider incorporating larger, multi-centered cohorts and longitudinal designs along with exploring targeted interventions to mitigate the physical and emotional burden of psoriasis.

CONCLUSION

This study highlights key demographic and clinical features of pediatric-onset psoriasis (POPPs) and adult-onset psoriasis (AOPPs), providing important insights into the disease's presentation across age Groups. It underscores the importance of early recognition and management of psoriasis. Improving awareness of pediatric and adult-onset psoriasis presentations can enhance timely diagnosis, appropriate intervention, and better quality of life for affected individuals.

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Authors Contribution

Following authors have made substantial contributions to the manuscript as under:

MS & AA: Data acquisition, data analysis, drafting the manuscript, critical review, approval of the final version to be published.

AA & HM: Study design, data interpretation, drafting the manuscript, critical review, approval of the final version to be published.

UR & UA: Conception, data acquisition, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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