Int. J Med. Pharm. Res. (P-ISSN: 2958-3675 | E-ISSN: 2958-3683)
Available on: https://ijmpr.in/
DOI:

International Journal
of Medical and
Pharmaceutical Research

ORIGINAL ARTICLE OPEN ACCESS

Assessment Of Clinical Patterns And Epidemiologal Features Of Psoriasis At A Tertiary Care Centre

Dr. Sunayana Kushwah[1*]; Dr. Kailash Bhatia[2]; Dr. Chaitanya Namdeo[3]; Dr. Vishakha Malviya

[1] MBBS MD DVL Senior Resident Netaji Subhash Chandra Bose Medical College, Jabalpur, MP
[2] MBBS MD DVL Professor, HOD Sri Aurobindo Medical College and PG Institute, Indore, MP
[3] MBBD MD DVL Professor, Sri Aurobindo Medical College and PG Institute, Indore, MP
[4] MBBS MD DVL

OPEN ACCESS

Corresponding Author
Dr. Sunayana Kushwah
MBBS MD DVL Senior Resident Netaji Subhash Chandra Bose Medical College, Jabalpur, MP.

Received: 02-05-2024
Accepted: 20-05-2024
Available online: 05-06-2024

ABSTRACT

Background: Psoriasis has a wide range of clinical presentations, unresolved etiology, association with distress, and no definitive treatment. It is very important to have a greater familiarity with the signs and symptoms of the disease so that appropriate treatment can be provided at its earliest. Therefore, this study aimed at understanding the clinical patterns & epidemiological profile of psoriasis.

Materials & methods: This observational, cross-sectional study was conducted over a duration of 18 months in the Department of Dermatology of a tertiary care hospital. The study included all the patients visiting the department who were diagnosed with psoriasis. A clinical examination and biopsy (if needed) were performed. Body mass index (BMI), age of onset, duration, patterns of skin lesions, percentage body surface area (BSA) of involvement, presence of nail psoriasis, and presence of Psoriatic arthropathy, and psoriasis area severity index (PASI)were assessed.

Results: The study included 152 subjects; most of the subjects were 21-60 years old (81.5%). Men are more likely to be affected than women. Most commonly patients present with the complaint of itching (82.4%).The mean±standard deviation of the age of onset was 33.90±14.27 years and the PASI score was 7.6475±5.88. Psoriasis vulgaris, which accounts for 69.38% of cases, is determined to be the most prevalent form of the disease, followed by palmoplantar psoriasis, which accounts for 16.25% of cases.

Conclusion: The epidemiological characteristics of psoriasis observed in this study are comparable to those observed in other parts of the world.

Key Words: *psoriasis; epidemiology; Co-morbidities; severity scoring; Diagnosis.*

INTRODUCTION

Psoriasis is an immune-mediated, polygenic, chronic inflammatory disease of skin.[1,2]The global prevalence of psoriasis has been estimated to be 2% to 3%, which ranges from 0.9% to 11.4%.[3,4] In India, the prevalence is estimated to range between 0.44 to 2.8%.[3,4]

Psoriasis is a proliferative disease that mostly affects the skin, nails, and joints.[5]Skin lesions can be localized or generalized. In most cases, the skin lesions are symmetrical and sharply demarcated, with red papules and plaques, which are usually covered with white or silver scales. Lesions are associated with pain, itching, and stinging sensation.[4] This painful, disfiguring, and disabling disease persists lifelong and presents in multiple forms such as plaque, pustular, flexural, guttate, or erythrodermic.[4]

The exact etiopathogenesis of psoriasis is yet to be determined however, according to present understanding it is a T-cell-mediated disorder, genetically determined, and influenced by environmental factors.[6,7]Apart from being painful, it is also associated with other comorbidities including psoriatic arthropathy, and psychological, cardiovascular, and hepatic diseases.[7,8]Overall, it has a negative impact on the quality of life of the sufferer leading to alteration in daily life.[9]

In 2014, the World Health Organizationrecognized psoriasis as a serious non-communicable disease and stressedthe distress related to misdiagnosis, inappropriate treatment, and stigma related to this disease. [8]

Considering the wide range of clinical presentations of psoriasis, its unresolved etiopathogenesis, the distress associated with it, and no definitive treatment it becomes very important to have a greater familiarity with the signs and symptoms of the disease so that appropriate treatment can be provided at its earliest. Therefore, in the present study, an effort has been made to study the clinical features of psoriasis.

AIM

To study the clinical patterns &epidemiological profile of psoriasis.

PATIENTS & METHODS

Study design, sample size, sampling technique, study population

This observational, cross-sectional study was conducted over a duration of 18 months in the Department of Dermatology, Venereology and Leprosy of Sri Aurobindo Institute of Medical Sciences, Indore, India. The study included all the patients diagnosed with psoriasis attending the outpatient department (OPD) and/or inpatient department (IPD)of the hospital. A sample of 152 patients was decided based on the number of psoriasis patients visiting the hospital and the duration of the study. A conveniencesampling technique was employed for the enrolment of subjects into the study.

Data collection

The study was initiated after getting approval from the institutional ethics committee. Only those patients who were willing to participate were included in the study.

Demographic details of the patients including age, gender, educational status, and occupation were recorded. Clinical diagnosis of psoriasis was made by detailed history and clinical examination. A biopsy was performed if needed. Information collected includedbody mass index(BMI), age of onset, duration, patterns of skin lesions, percentage body surface area (BSA) of involvement, presence of nail psoriasis, and presence of Psoriatic arthropathy was collected in a proforma. An assessment of thepsoriasis area severity index (PASI)[10] was also done. The hematological examination included assessment of hemoglobin,red blood cell (RBC) count, white blood cell (WBC) count, platelet, random blood sugar, Thyroid-stimulating hormone (TSH), Serum Glutamic Oxaloacetic Transaminase (SGOT), Serum Glutamic Pyruvic Transaminase (SGPT), creatinine, urea, total cholesterol, Low-density lipoprotein (LDL), High-density lipoprotein (HDL),and triglycerides.

Statistical analysis

Data was analyzed using SPSS (Statistical Package for Social Sciences) 25.0 version, IBM, Chicago. Data was analyzed for probability distribution using the Shapiro-Wilk test and was found to be normally distributed. Continuous variables were described as mean±standard deviation and categorical variables were described as numbers and percentages. Correlation between the continuous variables was assessed using Pearson's correlation coefficient. P-value<.05 was considered statistically significant.

RESULTS

Demographic and Clinical findings

The study included 152 subjects; most of the subjects were 21-60 years old (81.5%). [Figure 1]A male preponderance was observed among the study subjects [96 (63.2%) males vs. 56 (36.8%) females]. Out of 152 psoriasis patients, 32 (21.1%) were overweight, 6 (3.9%) were obese and 10 (6.6%) were underweight. The majority of the psoriasis patients were illiterate (30.3%), followed by those having secondary education (26.3%) followed by 16.4% of patients who were graduates, 12.5% had education till the 10^{th} class, and another 8.6% were educated till the 12^{th} class. The majority of the patients with psoriasis were home makers (25%) followed by students (17.1%) and farmers (10.5%).

Most of the subjects did not have any coexisting comorbid condition [97 (63.8%)], whereas few patients had hypertension [26 (17.1%)], diabetes mellitus [22 (14.5%)], alcohol consumption [9 (5.9%)], hypotension [5 (3.3%)], Cushing's disease & smoking [2 (1.3%) each], clubbing, cerebrovascular accidents, dyslipidemia, Polycystic ovary syndrome, renal stones and anemia [1 (0.7%) each].

Most commonly patients present with the complaint of itching. The presenting complaints in decreasing order of occurrence were itching [128 (84.2%)] > white scaly plaques [110 (72.4%)] > scaly scalp [104 (68.4%)] > red raised lesion [99 (65.1%)] > thickened skin [51 (33.6%)] and > fissures [41 (27.0%)].In patients with psoriasis lower extremity was affected in 63.8% and upper extremity was also affected in 63.8%. Trunk was affected in 59.9%, palm/soles in 36.2%, face in 17.1%, scalp in 69.7% and genitals in 30.3% patients.

The mean ± standard deviation of the age of onset was 33.90±14.27 years [Table 1] and the majority of the patients reported age to be 21-40 years (47.7%) [Table 2].

The various subtypes of psoriasis identified were as follows (in decreasing order of frequency of occurrence):Psoriasis Vulgaris [96 (63.1%)] >Palmoplantar Psoriasis [36 (23.7%)] > Scalp Psoriasis [8 (5.3%)]

>Erythroderma [4 (2.6%)] > Pustular psoriasis [3 (2.0%)] >Sebopsoriasis [2 (1.3%)] > Guttate Psoriasis [2 (1.3%)] > Inverse Psoriasis [1 (0.7%)].

Erythroderma was seen in 7 (4.6%) subjects. Psoriatic arthritis was present in 11 (5.9%) patients; 2 (1.3%) had asymmetrical oligoarthritis, 1 (0.7%) had DIP arthritis, and 6 (3.9%) had symmetrical polyarthritis. Nail changes were present in 38.2% of patients. [Figure 2] The coexisting skin conditions were present in 38 (25.0%) patients. The associated skin conditions have been presented in Table 3.

Out of 152 patients diagnosed with psoriasis, CASPAR (Classification criteria for psoriatic arthritis) criteria[11]were applied, and 9 patients met the criteria. Six of these patients (3.9% of the total) reported symmetrical polyarthritis, two of these patients (1.3%) reported asymmetrical oligoarthritis and one of these patients (0.7%) had distal interphalangealjoint arthritis.

The PASI score was found to have a weak correlation with the age of onset of disease [r= .183, p-value= .066] and duration of disease [r= .257, p-value= .009]. PASI had a statistically non-significant moderate correlation with BMI [r= .70, p-value= .073]. There was a statistically non-significant positive moderate correlation between PASI and SGOT and SGPT [r= .783, p-value= .493].

Skin biopsy

Skin biopsy was performed for 103 patients. On biopsy, a maximum of 93 (61.2%) subjects confirmed the presence of Psoriasis vulgaris. Palmoplantar psoriasis, pustular psoriasis, sebopsoriasis, and inverse psoriasis were confirmed in 4 (2.6%), 3 (2.0%), 2 (1.3%), and 1 (0.7%) patient respectively.

Urine analysis

Urinalysis revealed the presence of protein and sugar in 12 (7.9%) and 2 (1.3%) patients respectively.

Serological examination

Serological examination revealed the presence of HbsAg in 1 (0.7%) and HIV in 1 (0.7%) patients.

History of Methotrexate use

Out of 152 patients with psoriasis, 49 (32.2%) had history of Methotrexate intake.

DISCUSSION

Psoriasis is a chronic immune-mediated inflammatory disease that persists throughout life in most of the patients. Psoriasis affects multiple organs and has a negative impact on the mental and emotional health of the patient.[12]The high prevalence (up to 11.4%) is mainly due to the chronic nature of the disease and the absence of a definitive treatment.[13]The wide range of clinical presentations and variation in epidemiological profile of psoriasis with the variation in geographic region[14]mandates better understanding of signs and symptoms of the disease so that appropriate treatment can be provided at its earliest.

A systematic review of global epidemiology reported that the occurrence of psoriasis varied according to age such that adults reported higher estimates of psoriasis compared with those involving all age groups.[14]The prevalence of psoriasis among children has been reported to be very low (point prevalence 0.0002%).[15] Our findings also supported the above-mentioned fact. In our study,the mean age of the patients was 38.43 ± 14.877 years with the majority of the

subjects belonging to the age range of 21-60 years (81.5%). In this study, only a small proportion of the sample comprised of children [3 (1.97%)].We found male preponderance among the patients with psoriasis male-to-female ratio = 1.7:1. Previous research also provided evidence of male preponderance among psoriasis patients. [16,17,18,19,20,21]

This study found that majority of patients with psoriasis were illiterate (30.3%). **Renzi et al.,** found knowledge gaps about therapies for psoriasis and psoriatic arthritis.[22] The same pattern has been documented in other studies.[23] We think that educating patients about their illness is very important, and as new information is discovered regarding psoriasis, the specifics of the information that patients need to know must be reviewed and improved. Literacy can help in imparting knowledge about the disease.

Previous studies reported the age of onset of psoriasis to be 30-40 years (3rd& 4th decade of life).[16,17,18] In agreement with this, we found a mean age of onset to be 33.90 ± 14.27 years. However, in the study done by **Mikrani JA et al.**, the mean age of patients at the time of onset of disease was 26.4 ± 14.3 years. Although the variation was slight, it indicated geographic variation and thus emphasized the need to study the epidemiology of psoriasis in different parts of the world.[19]

We found that most of the patients had psoriasis for a duration of 1-5 years (70.4%) and only 3.3% had disease for less than 1 year. This could be due to many factors including lack of awareness about psoriasis and thus, delay in visit to the hospital, or inadequate treatment of psoriasis resulting in long duration of disease. It is to be noted that the majority of the patients included in the study were illiterate (30.3%), which also justified the lack of awareness about psoriasis among them. In this study, the duration of the disease was found to have a statistically significant but weak correlation with the PASI score.

In this study, most of the patients presented with the complaint of itching [128 (84.2%)]. **El-Komy MHM *et al.***also reported itching to be the most common complaint among patients with psoriasis.[24] We found that psoriasis affected trunk in 59.9%, palm/soles in 36.2%, face in 17.1%, scalp in 69.7% and genitals in 30.3% patients. In the study done by **El-Komy et al.**, the most commonly affected areas of the body were lower extremities (75.8%) and the upper extremities (70%), whereas the least commonly affected area were the neck (17%) and the soles (16.9%).[24] Similarly, according to **Narkhede et al.** the most commonly affected sites were the upper extremities (83.125%), lower extremities (75%), scalp (70%), trunk (64.37%), and nails (61.25%). They observed involvement of genitalia in 17.5% of patients.[21]

In this study, the mean body surface area involved was 12.71% ± 5.82% and the mean PASI score was 7.6475 ± 5.88. Similar to our study, **El-Komy MHM *et al.***found a median BSA of 10.0 and a median PASI of 8.7 among psoriasis patients in an Egyptian medical center.[24]

Among the various types of psoriasis, chronic plaque type is the most common affecting 80-90% of patients.[25] In our study, most of the patients presented with white scaly plaques [110 (72.4%)]. We found the highest prevalence of Psoriasis Vulgaris [96 (63.1%)] followed by Palmoplantar Psoriasis [36 (23.7%)] and Scalp Psoriasis [8 (5.3%)]. These findings were in agreement with the findings of **Narkhede et al.**[21] They found that the most prevalent type of psoriasis is psoriasis vulgaris (69.38%), followed by Palmoplantar psoriasis (16.25%), and scalp psoriasis (8.13%).[21] Literature reported a 4% -78% prevalence of psoriatic arthritis among subjects with plaque-type psoriasis.[26] Our study population was comprised of the majority of subjects with plaque-type psoriasis and we have found a 5.9% prevalence of psoriatic arthritis. Out of the various subtypes observed in this study, the most frequently observed was Psoriasis Vulgaris [96 (63.1%)]. **Mikrani JA *et al***. in their study also found Psoriasis Vulgaris to be the most commonly occurring subtype of psoriasis.[19]

Out of 152 patients included in the study, we found that 9 patients met the CASPAR criteria. Six of these patients (3.9% of the total) reported symmetrical polyarthritis, two of these patients (1.3%) reported asymmetrical oligoarthritis and one of these patients (0.7%) had distal interphalangeal joint arthritis. A slightly different finding had been reported earlier according to which peripheral psoriatic arthritis is the most common pattern with asymmetric knee involvement.[27] It is to be remembered thatpolyarticular involvement at the onset of the disease predicts the severity of psoriasis.[28]

Nail involvement is quite a common phenomenon among patients with psoriasis. The change can manifest commonly in the form of pitting, leuconychia, subungual hyperkeratosis, onychorrhexis, onycholysis, thinning of the nail plate to less commonly oil drop sign, splinter hemorrhage, and salmon patch.[29, 30] Studies reported that over 90% of psoriasis patients develop nail changes over a lifetime.[30] In the present study, nail changes were noticed in 38.2% of patients. **Ghosal A et al.** also reported nail changes in 36.0% of psoriasis patients.[29] In this study, the most commonly observed nail change was pitting. In relation to inflammation, the nail plate develops these superficial depressions.[29] This is also the most prevalent symptom of psoriatic arthritis. Pits in psoriasis patients are usually deeper compared to those in patients with other conditions including alopecia areata, lichen planus, and eczema. Pitting of nails correlates with the activity of psoriasis. Interestingly, the length of the pits indicates the time of the disease, while the length of the healthy nail (between pits) indicates with time free from psoriasis.[31,32]

Diabetes was the first comorbid condition that was reported in association with psoriasis.[12]In the present study, diabetes was the second most common comorbidity present in 14.5% of patients, the commonest comorbid condition was hypertension seen in 17.1% of patients. In this study, 32 (21.1%) were overweight, 6 (3.9%) were obese and 10 (6.6%) were underweight. Even while the majority of studies revealed that patients with psoriasis had significantly increased probabilities of being obese[33, 34]some studies showed that there is little evidence to support this concept.[34, 35, 36] Our study did not find any link between body mass index and severity (PASI score) (p-value- 0.466). It is believed that obesity might lessen the effectiveness of treatment, make medication therapy more difficult, worsen the severity of psoriasis,[34], and even demonstrate a causative association between a high body mass index and psoriasis[37, 38].

This study found Tineacruris/corporis (a type of fungal infection) to be the most frequently observed skin disorder in patients with psoriasis, accounting for 18.45% of cases, followed by onychomycosis, which accounted for 4.6% of cases. **Chadeganipour *et al***. reported a 15.9% prevalence of fungal infections among patients with psoriasis.[39]

In this study, no significant correlation was found between the severity of psoriasis and Liver Function Tests (SGOT & SGPT) (p values- 0.783 & 0.493 respectively). **Miele** and **colleagues** found that 59% of their patients with psoriasis had NAFLD; however, similar to our research, they were unable to discover a significant association between transaminitis and the severity of psoriasis in their patients.[40] In this study, the mean of all the biochemical parameters was found within the normal range among patients with psoriasis.

We found that only one patient out of 152 who had psoriasis tested positive for HIV and presented to us with erythroderma, and only one patient tested positive for hepatitis B. This correlated with the findings of **Edwards *et al.***which reported a very low prevalence of psoriasis among HIV positive patients.[41]

The drug methotrexate is recommended for the treatment of moderate to severe plaque psoriasis, generalized pustular psoriasis, psoriatic erythroderma, palmoplantar psoriasis, nail psoriasis, and psoriatic arthritis.[42]We found that 49 (32.2%) had a history of Methotrexate intake which indicated a low frequency of appropriate treatment among psoriasis patients in our study.

Limitation
This was a single-center study and thus lackedgeneralizability.

CONCLUSION

The epidemiological characteristics of psoriasis observed in this study are comparable to those observed in other parts of the world. Psoriasis primarily affects those in their 20s to 40s (the age range that accounts for 48% of cases), and men are more likely to be affected than women. In excess of 84.2% of our patients reported experiencing pruritus, making it the most prevalent symptom associated with psoriasis. According to our research, the scalp is the body area that is impacted by disease the most frequently (69.7% of the time). Psoriasis vulgaris, which accounts for 69.38% of cases, is determined to be the most prevalent form of the disease, followed by palmoplantar psoriasis, which accounts for 16.25% of cases. More epidemiological studies will be required in the not-too-distant future because these kinds of investigations make a significant contribution to a more in-depth comprehension of the disease burden, the modernization of research on populations, and the development of more effective health policies.

ETHICAL CONSIDERATIONS

Ethical clearance was obtained from the Institutional Ethics Committee of Sri Aurobindo Institute of Medical Sciences, Indore (M.P.), India (Registration number- ECR/748/Inst/MP2015/18RR). Written informed consent was obtained from the subjects before enrolling in the study. Confidentiality of patient information was maintained.

CONFLICT OF INTEREST

None

REFERENCES

1. Michalek I, Loring B, John S. A systematic review of worldwide epidemiology of psoriasis. J EurAcadDermatolVenereol. 2017;31(2):205–12.
2. Mohd Affandi A, Khan I, NgahSaaya N. Epidemiology and clinical features of adult patients with psoriasis in Malaysia: 10-year review from the Malaysian Psoriasis Registry (2007–2016). Dermatol Res Pract. 2018;2018.
3. Rajagopalan M, Chatterjee M, De A, et al. Systemic Management of Psoriasis Patients in Indian Scenario: An Expert Consensus. *Indian Dermatol Online J*. 2021;12(5):674-682. Published 2021 Sep 10. doi:10.4103/idoj.IDOJ_113_21
4. World Health Organization. *Global report on psoriasis*. World Health Organization, 2016. [Google Scholar] [Ref list]
5. Glickman FS. Lepra, psora, psoriasis. J Am AcadDermatol. 1986;14(5 Pt 1):863–6.

6. Kanwar AJ, Yadav S, Dogra S. Psoriasis: What is new in nonbiologic systemic therapy in the era of biologics? *Indian J DermatolVenereolLeprol.* 2010;76:622–33

7. Raharja A, Mahil SK, Barker JN. Psoriasis: a brief overview. *Clin Med (Lond).* 2021;21(3):170-173. doi:10.7861/clinmed.2021-0257

8. Armstrong AW, Read C. Pathophysiology, clinical presentation, and treatment of psoriasis: a review. Jama. 2020 May 19;323(19):1945-60.

9. Bhosle MJ, Kulkarni A, Feldman SR, Balkrishnan R. Quality of life in patients with psoriasis. Health and quality of life outcomes. 2006 Dec;4(1):1-7.

10. Kumar B, Jain R, Sandhu K, Kaur I, Handa S. Epidemiology of childhood psoriasis: a study of 419 patients from northern India. Int J Dermatol. 2004;43(9):654–8.

11. Taylor W, Gladman D, Helliwell P, et al. Classification criteria for psoriatic arthritis: development of new criteria from a large international study. *Arthritis Rheum*. 2006;54(8):2665-2673. doi:10.1002/art.21972

12. Bu J, Ding R, Zhou L, Chen X, Shen E. Epidemiology of psoriasis and comorbid diseases: a narrative review. Frontiers in immunology. 2022:2484.

13. Naldi L. Epidemiology of psoriasis. Current Drug Targets-Inflammation & Allergy. 2004 Jun 1;3(2):121-8.

14. Parisi R, Symmons DP, Griffiths CE, Ashcroft DM. Global epidemiology of psoriasis: a systematic review of incidence and prevalence. Journal of Investigative Dermatology. 2013 Feb 1;133(2):377-85.

15. Dogra S, Yadav S. Psoriasis in India: Prevalence and pattern. Indian J DermatolVenereolLeprol. 2010;76(6):595.

16. Kaur I, Handa S, Kumar B. Natural history of psoriasis: Astudy from the Indian subcontinent. *J Dermatol*. 1997;24:230–4

17. Asokan N, Prathap P, Ajithkumar K, Betsy A, Binesh VG. Pattern of psoriasis in a tertiary care teaching hospital in south India. *Indian J Dermatol.* 2011;56:118–9.

18. Bedi TR. Clinical profile of psoriasis in North India. *Indian J DermatolVenereolLeprol.* 1995;61:202–5

19. Mikrani JA, Shrestha A. Clinical and epidemiological features of psoriasis in patients visiting Lumbini Medical College. J Lumbini Med Coll. 2014;2(1):1–3.

20. Abbagani S, Kamath YS, Nayak S. A study on ocular morbidity among patients with psoriasis visiting a tertiary care hospital in Karnataka, Southern India. OculImmunolInflamm. 2019;27(4):531–4.

21. Narkhede GD, Mahajan SS. Study of clinical and epidemiological features of psoriasis at a tertiary care center. 2019 Sep;11(3):206–9.

22. Renzi C, Di Pietro C, Tabolli S. Participation, satisfaction and knowledge level of patients with cutaneous psoriasis or psoriatic arthritis. ClinExpDermatolClinDermatol. 2011;36(8):885–8.

23. Ham S, Tay Y. A questionnaire-based survey of patients' knowledge of psoriasis at the National Skin Centre. Ann Acad Med Singapore. 1995;24(3):415–20.

24. El-Komy MHM, Mashaly H, Sayed KS, et al. Clinical and epidemiologic features of psoriasis patients in an Egyptian medical center. *JAAD Int*. 2020;1(2):81-90. Published 2020 Jul 21. doi:10.1016/j.jdin.2020.06.002

25. Kim WB, Jerome D, Yeung J. Diagnosis and management of psoriasis. *Can Fam Physician*. 2017;63(4):278-285.

26. Dogra S, Mahajan R. Psoriasis: Epidemiology, clinical features, co-morbidities, and clinical scoring. *Indian Dermatol Online J*. 2016;7(6):471-480. doi:10.4103/2229-5178.193906

27. Marsal S, Armadans-Gil L, Martinez M, Gallardo D, Ribera A, Lience E. Clinical, radiographic and HLA associations as markers for different patterns of psoriatic arthritis. RheumatolOxf Engl. 1999;38(4):332–7.

28. Balding J, Kane D, Livingstone W, Mynett- Johnson L, Bresnihan B, Smith O, et al. Cytokine gene polymorphisms: association with psoriatic arthritis susceptibility and severity. Arthritis Rheum. 2003;48(5):1408–13.

29. Ghosal A, Gangopadhyay DN, Chanda M, Das NK. Study of nail changes in psoriasis. Indian Journal of Dermatology. 2004 Jan 1;49(1):18.

30. Haneke E. Nail psoriasis: clinical features, pathogenesis, differential diagnoses, and management. *Psoriasis (Auckl)*. 2017;7:51-63. Published 2017 Oct 16. doi:10.2147/PTT.S126281

31. Jiaravuthisan MM, Sasseville D, Vender RB, Murphy F, Muhn CY. Psoriasis of the nail: anatomy, pathology, clinical presentation, and a review of the literature on therapy. J Am AcadDermatol. 2007;57(1):1–27.

32. Sobolewski P, Walecka I, Dopytalska K. Nail involvement in psoriatic arthritis. *Reumatologia*. 2017;55(3):131-135. doi:10.5114/reum.2017.68912

33. Armstrong AW, Harskamp CT, Armstrong EJ. Psoriasis and metabolic syndrome: a systematic review and meta-analysis of observational studies. J Am AcadDermatol. 2013;68(4):654–62.

34. Jensen P, Skov L. Psoriasis and obesity. Dermatology. 2016;232(6):633–9.

35. Mallbris L, Granath F, Hamsten A, Ståhle M. Psoriasis is associated with lipid abnormalities at the onset of skin disease. J Am AcadDermatol. 2006;54(4):614–21.

36. Herron MD, Hinckley M, Hoffman MS, Papenfuss J, Hansen CB, Callis KP, et al. Impact of obesity and smoking on psoriasis presentation and management. Arch Dermatol. 2005;141(12):1527–34.

37. Budu-Aggrey A, Brumpton B, Tyrrell J, Watkins S, Modalsli EH, Celis-Morales C, et al. Evidence of a causal relationship between body mass index and psoriasis: A mendelian randomization study. PLoS Med. 2019;16(1):e1002739.

38. Kunz M, Simon JC, Saalbach A. Psoriasis: obesity and fatty acids. Frontiers in immunology. 2019 Jul 31;10:1807.

39. Chadeganipour M, Shadzi S, Mohammadi R. Fungal infections among psoriatic patients: etiologic agents, comorbidities, and vulnerable population. Autoimmune Dis. 2021;2021.
40. Miele L, Vallone S, Cefalo C, La Torre G, Di Stasi C, Vecchio FM, et al. Prevalence, characteristics and severity of non-alcoholic fatty liver disease in patients with chronic plaque psoriasis. J Hepatol. 2009;51(4):778–86.
41. Edwards RJ, Lavia LO, Edwards J, Boyce G. Psoriasis in Patients Attending a Large HIV Clinic in Trinidad. Med Sci. 2022;10(1):9.
42. da Silva CAP, Von Kossel K, Leszczynski M, Melnik T, Riera R. Methotrexate for psoriasis. Cochrane Database Syst Rev. 2019 Apr 9;2019(4):CD010498. doi: 10.1002/14651858.CD010498.pub2. PMCID: PMC6454986.

ABBREVIATIONS

OPD- Out-patient Department
IPD- In-patient Department
BMI- Body mass index
BSA- Body surface area
PASI- Psoriasis area severity index
RBC- Red blood cell
WBC- White blood cell
TSH- Thyroid-stimulating hormone
SGOT- Serum Glutamic Oxaloacetic Transaminase
SGPT- Serum Glutamic Pyruvic Transaminase
LDL- Low-density lipoprotein
HDL- High-density lipoprotein
SPSS- Statistical Package for Social Sciences
CASPAR- Classification criteria for psoriatic arthritis

FIGURES

Figure1. Age-wise distribution of study subjects (n=152)

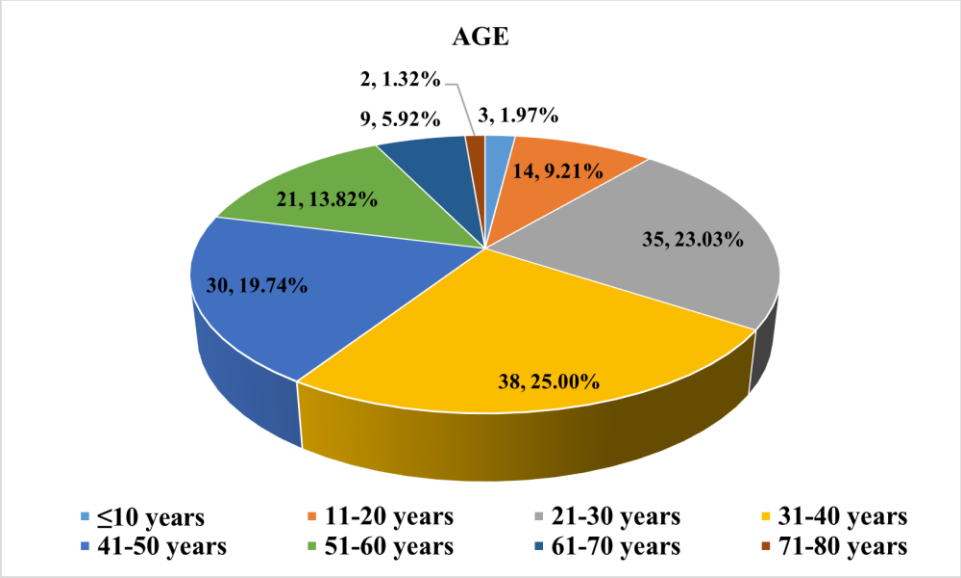
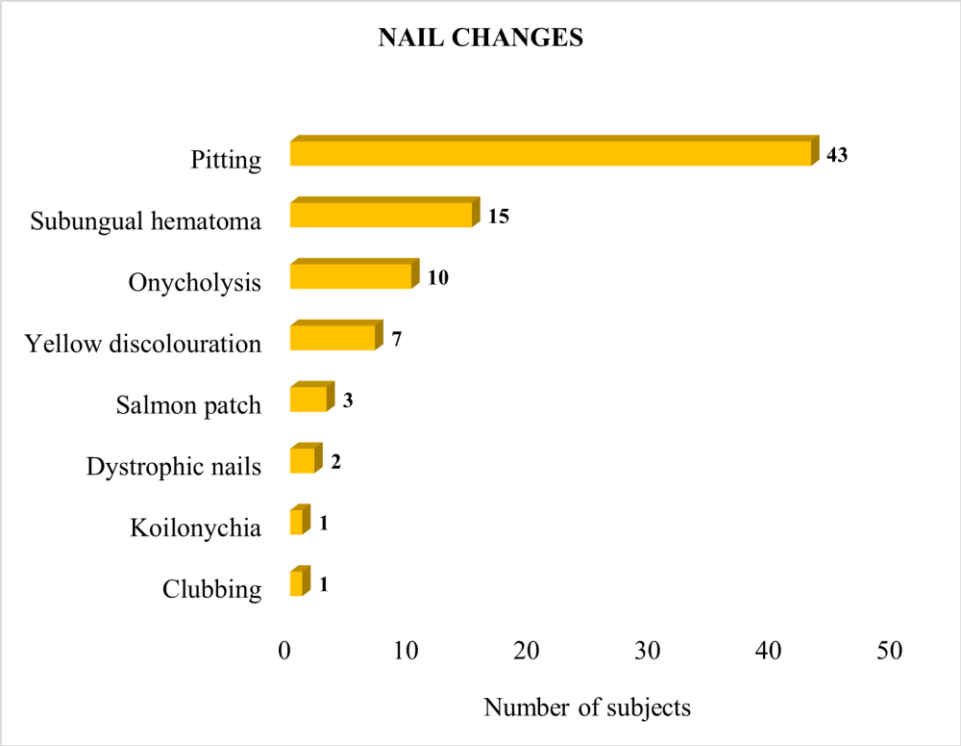


Figure 2. Nail changes among study subjects.



TABLES

Table 1. Description of various continuous variables included in the study.

Parameter	Mean	Standard deviation
Age (years)	38.43	14.87
Body mass index (Kg/m^2)	22.9007	3.31
Age of onset (years)	33.90	14.27
Durationof disease (years)	4.918	5.541
Psoriasis area and severity index	7.6475	5.880
Body surface area(%)	12.71	5.82
Hemoglobin (gm%)	13.2095	1.97
Red blood cell count (mcL)	4.2199	0.95
White blood cell count (per microliters)	8429.32	2418.97
Platelet (x10^5 per mL)	3.0644	1.08
Random Blood Sugar (mg/dL)	102.703	25.59
Thyroid Stimulating Hormone (mU/l)	4.0657	2.59
Serum Glutamic Oxaloacetic Transaminase (U/L)	29.27	6.61
Serum Glutamic pyruvic Transaminase (U/L)	26.92	7.35
Creatinine (mg/dL)	0.80604	0.289
Urea (mg/dL)	17.2696	4.43
Total Cholesterol (mg/dL)	173.246	28.22
Low Density Lipid(mg/dL)	100.7414	25.47
High Density Lipid (mg/dL)	49.74	16.146
Triglycerides (mg/dL)	144.550	49.89

Table 2. Distribution of study subjects based on age of onset and duration of disease.

Parameter		Number of subjects (%)
Age of onset	≤10 years	12 (7.9%)
	11-20 years	16 (10.5%)
	21-30 years	39 (25.7%)
	31-40 years	33 (21.7%)
	41-50 years	32 (21.1%)
	51-60 years	20 (13.2%)
Duration of disease	<1 year	5 (3.3%)
	1-5 years	107 (70.4%)
	6-10 years	29 (19.1%)

	>10 years	11 (7.2%)
Site involved	Upper limb	97 (63.8%)
	Lower limb	104 (68.4%)
	Trunk	91 (59.9%)
	Palm/soles	55 (36.2%)
	Face	26 (17.1%)
	Scalp	106 (69.7%)
	Genitals	46 (30.3%)

Table 3. Associated skin conditions.

Skin condition	**Number of subjects (%)**
Tineacruris	21 (13.8%)
Onychomycosis	7 (4.6%)
Tineacorporis	6 (3.9%)
Acne vulgaris	2 (1.3%)
Pityriasis versicolor	2 (1.3%)
Acanthosisnigricans	1 (0.7%)
Pityriasis rubrapilaris	1 (0.7%)
Atopic dermatitis	1 (0.7%)
Herpes zoster	1 (0.7%)
Irritant contact dermatitis	1 (0.7%)
Mallesezia folliculitis	1 (0.7%)
Pityriasis rosea	1 (0.7%)
Post-inflammatory depigmentation scalp	1 (0.7%)
Topical steroid-damaged face	1 (0.7%)
Molluscumcontagisosum	1 (0.7%)