

## Original Research Article

# A retrospective study on palmoplantar psoriasis and its associations in a tertiary care centre

Saradha K. Perumal, Sudha R. Gopinath\*

Department of Dermatovenereology and Leprosy, Madurai Medical College, Madurai, Tamil Nadu, India

**Received:** 08 February 2019

**Revised:** 22 February 2019

**Accepted:** 25 February 2019

**\*Correspondence:**

Dr. Sudha R. Gopinath,

E-mail: [sudhagopi6@gmail.com](mailto:sudhagopi6@gmail.com)

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### ABSTRACT

**Background:** Psoriasis is a chronic immune mediated inflammatory condition of the skin. Palmoplantar psoriasis (PPP) is a clinical variant of plaque psoriasis affecting palms and soles extending to the wrist and the margins of the soles and heels. This study was done to find out the prevalence of palmoplantar psoriasis in our setting. The aim of the study was to determine the prevalence, demographic features and other co-morbidities of the palmoplantar plaque psoriasis in a tertiary care centre.

**Methods:** We conducted retrospective study for a period of one year (January 2017 to December 2017) on palmoplantar plaque psoriasis patients attending the dermatology OPD.

**Results:** Among 552 enrolled psoriasis patients, 85 were clinically diagnosed to have palmoplantar psoriasis. The mean age of the patient was 45 years. Most of them belong to 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> decade of life. The male to female ratio was 1:2.26. The duration of the disease was more than one year in 73% of patients at the study time. Occupation of the patients included house-wives (50%), manual labourers (36%) and office goers, (13%). Hyperkeratotic plaque type psoriasis with scaling and fissures was the predominant morphological pattern recorded. Dyslipidemia (22%), overweight and obesity (56%), hypothyroidism (6%) and diabetes mellitus (12%) were the observed co-morbidities in this study.

**Conclusions:** The prevalence of palmoplantar psoriasis (0.09%) was low in our study. Palmoplantar psoriasis affected middle aged adults and had a female predominance in this study. Overweight, obesity, dyslipidemia, diabetes mellitus and hypothyroidism were the co-morbid conditions observed in this study. Being a relapsing and chronic condition the disease poses a poor quality of life than plaque type psoriasis.

**Keywords:** Palmoplantar psoriasis, Prevalence, Relapsing, Hyperkeratotic, Comorbidities

### INTRODUCTION

Psoriasis is a chronic noninfectious immune mediated inflammatory and proliferative condition of the skin with genetic and environmental influences. Associations with systemic involvement of joints, cardiovascular, metabolic and renal disease have been described.<sup>1</sup> Palmoplantar psoriasis (PPP) is a refractory, persistent and disabling

variant of psoriasis affecting nearly 5% of all psoriasis patients.<sup>1</sup>

The magnitude of prevalence of psoriasis in different populations ranges from 1.5% to 2.9%. In India it is about 2.3% of the total dermatology out patients.<sup>2</sup> In current scenario it has been published that PPP constituted 59% (403/237) in a recent study done in our

part of the country.<sup>3</sup> Hence this study was done to find the presentation of PPP in our setting.

**Aims and objectives**

- To determine the prevalence of PPP in dermatology OPD attendees.
- To detect the demographic characteristics of PPP.
- To establish the correlation between PPP and metabolic (BMI, type 2 diabetes mellitus, dyslipidemia), cardiovascular and renal factors.

**METHODS**

This retrospective cross sectional study was hospital based, done at Government Rajaji Hospital, Madurai Medical College, Madurai from January 2017 to December 2017. Patients with non pustular PPP were the inclusive criteria study group. Those with psoriasis elsewhere in the body and other acquired causes of palmoplantar keratoderma like keratoderma climactericum, pityriasis rubra pilaris, lichen planus, infections like trichophytosis, crusted scabies, secondary syphilis and viral warts, myxedema, lymphedema, malignancy and drugs were excluded. The demographic data like age, sex, duration of the disease, occupation of the patient and the morphological pattern of the lesion were studied. Body mass index was calculated using the following formula: weight in kg/height in m<sup>2</sup>.

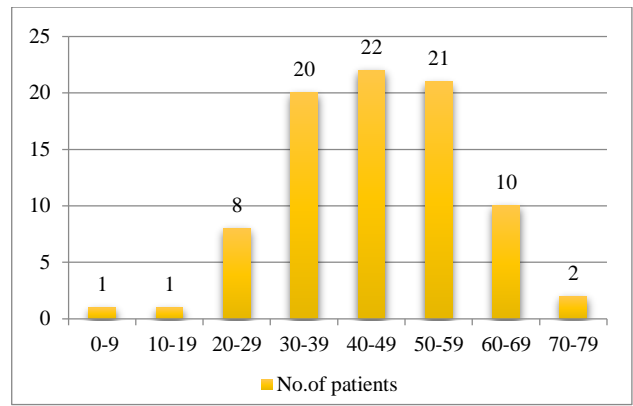
Patients were categorized in to five groups according to their BMI. 1) underweight ( $\leq 18.5$ ), 2) normal (18.5-24.99), 3) overweight ( $\geq 25$ ), 4) obese ( $\geq 30$ ), 5) morbidly obese ( $\geq 40$ ). Blood investigations were done to determine the glycemic status, serum lipid levels and renal parameters. Cardiac status was evaluated with electrocardiogram. Screening for thyroid function and complete hemogram evaluation was done for all.

**Statistical analysis**

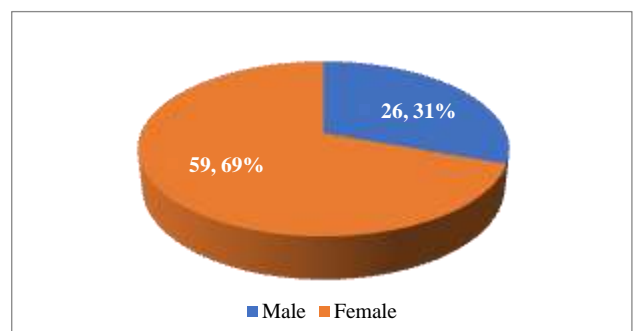
The values were presented as range, mean, median, ratio and percentage in this cross sectional study.

**RESULTS**

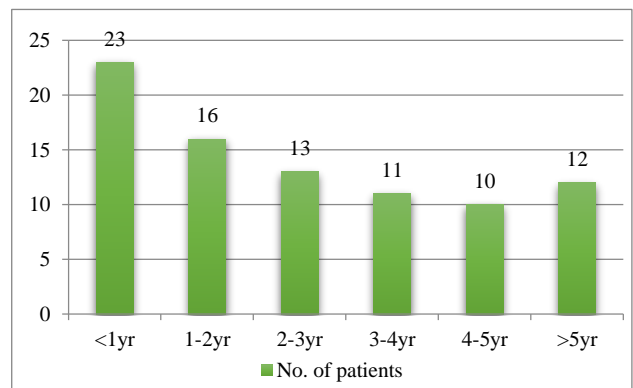
A total of 87,316 patients attended the dermatology OPD for a period of one year from January 2017 to December 2017. Patients enrolled with psoriasis were 552 and 85 patients among them had PPP. The data was collected from the psoriasis register in dermatology OPD. The prevalence of psoriasis was 0.6% and PPP was 0.09%. The age of the patient ranged from 6 years to 72 years. The mean age of the patient was 45 years. Majority of the patient belong to the age group 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> decade of life (Figure 1). Females (n=59) outnumbered males (n=26) in this study. Male to female sex ratio was 1:2.26 (Figure 2).



**Figure 1: Age group of palmoplantar psoriasis patients.**



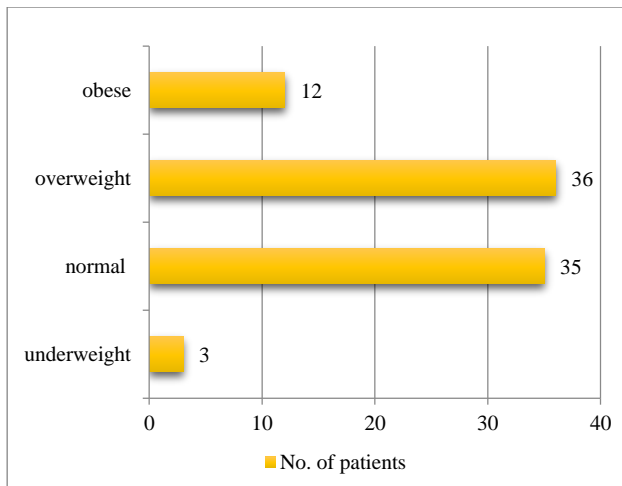
**Figure 2: Sex ratio.**



**Figure 3: Duration of palmoplantar psoriasis.**

Nearly 73% (n=62) of the PPP patients had the disease for more than 1 year at the time of study. Duration categorized as 1 to 2 yrs, 2 to 3 yrs, 3 to 4 yrs, 4 to 5 yrs, more than 5 years and was found in 14% (n=12), 10% (n=9), 10% (n=9), 7% (n=6) and 6% (n=5) respectively (Figure 3).

Regarding the occupation of the patient, 76% (n=20/26) males and 19% (n=11/59) females were agriculturists and construction workers. 73% (n=43/59) of females were home makers involved in household works. Nearly 23% (n=6/26) of males and 8% (n=5/59) of females were involved in clerical work in this study.



**Figure 4: Body mass index.**

Hyperkeratosis, scaling, fissures with well-defined borders (n=28, 33%) and some showing diffuse involvement were observed on both palms and soles (n=15, 18%). Instep involvement and extension beyond the sole in to heels was recorded in majority of the patients (n= 42, 49%). Body mass index was calculated for all in this study cohort 3% (n=3) were underweight, 41% (n=35) had normal BMI, 42% (n=36) had overweight and 14% (n=12) were obese patients in this study cohort (Figure 4). Diabetes mellitus was diagnosed in 12% (n=10) of patients out of which it was recently diagnosed in 5% (n=4). Dyslipidemia was observed in 22% (n=19/85) of the study group and 21% (n=18) out of them were females. Hypercholesterolemia, hypertriglyceridemia and elevated level of both were observed in 9% (n=8), 6% (n=5) and 7% (n=6) respectively. The age of the patient with dyslipidemia ranged from 26 to 64 years and the median age of the patient is 48 years.

Hypothyroidism was associated in 6% (n=5) of the PPP patients and all of them were found to be females. Both dyslipidemia and hypothyroidism was observed in one female patient. Iron deficiency anaemia and raised ESR was observed in each respectively. Left axis deviation was the electrocardiogram finding in two patients. Renal parameters were found to be normal in all.

**DISCUSSION**

The prevalence of psoriasis and PPP was 0.6% and 0.09% in this study. The prevalence of PPP among psoriasis was 15% (85 of 552). Other studies showed the prevalence range of psoriasis as 1.5% to 2.9%.<sup>2</sup> PPP constituted 59% in the recent study done by Venkatesan et al.<sup>3</sup> Thus the prevalence of both psoriasis and PPP was low in our study when compared with other studies. Mean age of the patient varies from 36.3 years to 52.6 years, whereas it was 45 years in our study.<sup>2,4</sup> Most of the patients were middle aged in our study, the disease thereby affecting the productive quality of life. Females were the predominant study group here (sex ratio- 1:2.26)

where as other studies showed a male predominance, 1.48:1, 2.03:1.<sup>3,5</sup> Majority of the patient had disease duration more than one year however the median disease duration was 5.8 years in the study done by Trattner et al.<sup>4</sup> Occupation varied as house wives in 50% (n=43), 36% (n=31) of study cohort were manual labourers and 13% (n=11) were engaged in clerical jobs. Since the study cohort was predominantly females, household work was found to be the major occupation in this study. In one another study it was 30%, 61% and 9% respectively.<sup>6</sup>

The morphology of the lesion in palms and soles were hyperkeratotic plaque with scaling and fissures affecting their daily routine causing discomfort, pain and difficulty in walking.

**Table 1: Comparison of body mass index (BMI).**

BMI of psoriasis patients in a study at Sudan <sup>7</sup>	BMI of palmoplantar psoriasis in our study (%)
<b>Underweight- 12.3%</b>	3
<b>Normal- 35.8%</b>	41
<b>Overweight- 33.3%</b>	42
<b>Obese- 16%</b>	14
<b>Morbidly obese- 2.5%</b>	-

Overweight and obesity constitutes 56% of the study group (Table 1, Figure 4), which was 52% in the study done at Sudan.<sup>7</sup>

Dyslipidemia was observed in 22% of study group which is lower when compared to the study done at Austria (38%).<sup>4</sup> Hypothyroidism was recorded in 6% whereas autoimmune thyroiditis was recorded in 16% in the study done by Trattner et al.<sup>4</sup> Diabetes mellitus was diagnosed in 12% and it was found to be 19% in the study done by Trattner et al.<sup>4</sup> Thus the comorbidities observed in PPP patients were obesity, dyslipidemia, diabetes mellitus and hypothyroidism.

The major limitation of our study was lack of control group and screening for other reported comorbidities of PPP like coeliac disease, autoimmune thyroiditis and *H. pylori* infection were not available in our institute.

**CONCLUSION**

The prevalence of PPP (0.09%) was low in our study. PPP affected middle aged adults and had a female predominance in this study. Overweight, obesity, dyslipidemia, diabetes mellitus and hypothyroidism were the comorbidities observed in this study. Being a relapsing and chronic condition the disease poses a poor quality of life than in plaque type psoriasis.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the institutional ethics committee*

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**Cite this article as:** Perumal SK, Gopinath SR. A retrospective study on palmoplantar psoriasis and its associations in a tertiary care centre. *Int J Res Dermatol* 2019;5:xxx-xx.