

Original Article

Palmoplantar psoriasis: A clinico-epidemiological study with special reference to its impact on quality of life

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Abstract

Background Palmoplantar psoriasis (PPP) is a variety of psoriasis constituting 3-4% of psoriatic and mainly affects the skin of the palms and soles. It is often a disfiguring disease and exerts a considerable negative impact on the quality of life (QoL) of the involved. Only few studies have evaluated QoL in PPP, especially in eastern India.

Objective We aimed to study the demographic profile of patients with PPP, clinical characteristics and quantify the impact of the disease on the QoL of patients.

Methods Eligible patients were evaluated with history, clinical examination and quality of life assessment by two separate instruments, namely QoL assessment introduced by Farley *et al.* and Dermatology Life Quality Index by Finley. The findings of each patient were noted on separate case record sheets.

Results One hundred patients were studied. Age of the patients ranged from 14-65 years. Most patients (51%) had psoriatic involvement of other body areas in addition to palms and soles. 5% patients had family history of psoriasis. This study supports the impression that even with limited body surface involvement; patients with PPP suffer from a significant impact as measured on both instruments. There was significant correlation between the measures of quality of life between the two instruments and inverse correlation with involved surface area of body involvement.

Conclusion Palmoplantar psoriasis (PPP) affects both genders almost equally, affecting our population almost a decade earlier than our western counterparts. PPP causes significant decrease in overall Quality of Life other than causing social embarrassment.

Key words

Palmoplantar psoriasis; Quality of life; Eastern India.

Introduction

Psoriasis is a common, chronic inflammatory, disfiguring and disabling disease. It is a disorder with polygenic predisposition often triggered by environmental factors such as trauma, infection and medication. Available studies indicate that the prevalence of psoriasis in India ranges from

0.44 to 2.8% which constitutes 2.6% of all skin outpatient attendance.¹

Psoriasis involves the skin and joints, and is associated with a number of comorbidities, notably the metabolic syndrome. Till date, there is no permanent cure for psoriasis and it exerts a substantial negative impact on the patients' quality of life (QoL).^{2,3}

Palmoplantar psoriasis (PPP) is a regional variant of psoriasis that mainly affects the skin of the palms and soles. Reportedly affecting

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about 3-4% of all patients with psoriasis,⁴ PPP is characterized by hyperkeratotic, pustular, and mixed morphologies. PPP is a chronic, disabling, difficult-to-treat disease with significant impairment in quality of life.⁵ Palms and soles being readily visible areas of the body, PPP frequently causes social embarrassment.

The epidemiology of PPP is poorly defined and only a few studies have evaluated its impact on quality of life. This paucity of studies specially looking at this particular variant of psoriasis, especially from eastern India has prompted us to undertake the present work.

Hereby this study aimed to examine and describe the demographic profiles of patients with palmoplantar psoriasis, clinical characteristics of the patients and the impact of palmoplantar psoriasis on the quality of life of the sufferers.

Method

This study was carried out at the dermatology outpatients' department of a tertiary level institution.

The diagnosis of PPP was clinical and consisted of the presence of sharply demarcated and symmetrically distributed erythematous plaques, silvery scales on the palms and soles with involvement of the thenar and hypothenar eminences and knuckles of hands and insteps of feet, with or without nail pitting in absence of nail fold lesions. This was to be associated with any one or more of the following: (a) lesions suggestive of psoriasis in any other part of the body (b) nail changes characteristic of psoriasis or (c) some form of joint involvement.

Inclusion criterion was clinically diagnosed palmoplantar psoriasis patients of all ages and sexes.

After obtaining permission from the institutional ethics committee (MC/KOL/IEC/NON-SPON/219/01-2019), the study was commenced. The study conforms to the principles contained in the declaration of Helsinki for research involving human subjects. All consecutive patients presenting with palmoplantar psoriasis fulfilling the inclusion criteria for the study were considered for recruitment. Patients were assessed for eligibility and informed consent was obtained from those found eligible (n=100). The patients were evaluated by demography (age, sex, occupation etc.), history of the disease evolution and other pertinent data. The impact of palmoplantar psoriasis on the quality of life was assessed using the instrument introduced by Farley *et al.*⁶ Herein, the palmoplantar quality of life (PP-QoL) ranged from 'no difficulty' to 'totally unable' for both hands and feet. The disease severity, using the instrument, ranged from mild to severe both for PPP and 'extra-palmoplantar' involvement. The tool of Dermatology Life Quality Index was administered using a simple practical questionnaire developed by Finlay.⁷ This questionnaire contains 10 closed questions with answers ranging from 'not at all' to 'very much'.

The findings from each patient were recorded on semi-structured pre-tested case record forms. The forms were tabulated for statistical studies using Excel (Microsoft Office for Windows 2016) and MedCalc for Windows Version 17. Statistical analysis for continuous variables was done using the t-test for significance while correlation between ordinal variables was analysed using Pearson's rho. The level of significance was fixed at 0.05.

Results

We studied one hundred patients (n=100) with palmoplantar psoriasis who fulfilled the inclusion criteria and expressed informed

consent for participating in the study. The results obtained in the study are briefly discussed below.

The age of the patients ranged from 14-65 years with a mean of 42.7 ± 12.08 years. The most common decade affected was 41 to 50 years for both the sexes; accounting for 36 cases (36%). This was followed by the 6th decade contributing 21 cases (21%) while the least populated age group was 61 to 70 years contributing 4 cases (4%).

Forty-eight (48%) patients were found to be male and 52 (52%) female yielding to sex ratio of 1:1.08 (M: F)

Sixty-nine cases (69%) came from urban areas, while 31 cases (31%) were residents of suburbs and rural areas.

The study group mostly consisted of housewives (39 cases, 39%), followed by businessmen (17 cases, 17%), office goers (13 cases, 13%), mechanics and students 8 cases each and farmers (6 cases, 6%).

The most common presenting complaint of patients in the study was a combination of presence of skin lesions, itching and pain in 79 cases (79%). This was followed by both skin lesion and pain in 4 cases (4%), skin lesion and itching in 13 cases (13%) and only skin lesion in 4 cases, 4%.

The duration of disease before presentation ranged from 1 month to 9 years (mean 38.7 yrs.). The number of cases with duration of disease <1 year were 53 (53%), 1 to 2 years (16 cases, 16%), 2 to 3 years (10 cases, 10%), 3 to 4 years (4 cases, 4%), 4 to 5 years (1 case, 1%) and >5 years (16 cases, 16%)

In the study population, number of cases having only palmoplantar involvement was 49 (49%),

51 cases 51% had additional involvement as well (**Table 1**).

Involvement as percentage of rest of the body surface area: as mentioned previously, many patients had involvement of other body areas (“extra-palmoplantar”). Out of 100 cases 59 cases (59%) had 0 to 10% body area with “extra-palmoplantar” psoriatic involvement, 25 cases (25%) had 11 to 20 % BSA involvement, 12 cases (12%) had 20-30% involvement and 4 cases (4%) had >30 % BSA involvement. Thus majority of PPP cases had mild ‘extra-palmoplantar’ involvement. This is represented in **Table 1**.

Aggravating factors: 36 cases (36%) reported aggravation during winter, 13 cases (13%) attributed aggravation to detergent contact and 8 cases (reported both of these aggravators. Other factors included 7 cases (7%) who believed sewing, dust and chemical exposure to cause exaggeration. No aggravating factors were found in 36 (36%) patients.

Five cases (5%) had a positive family history of psoriasis.

Table 1 Involvement of body area in patients.

<i>Involvement of other body areas as % body surface area</i>	<i>Number of cases (%)</i>
0-10%	59 (59%)
11-20%	25 (25%)
20-30%	12 (12%)
More than 30%	4 (4%)
Hypothenar eminence	46 (46%)
Thenar eminence	55 (55%)
Centre of palm	41 (41%)
Fingers	54 (54%)
Dorsum of hand	49 (49%)
Whole palm	22 (22%)
Heel	45 (45%)
Centre of sole	53 (53%)
Forefoot	54 (54%)
Toes	49 (49%)
Web spaces	36 (36%)
Medial border	50 (50%)
Lateral border	30 (30%)
Dorsum of feet	52 (52%)

Eighteen cases (18%) had addiction to various substances: smoking 10 cases (10%), drinking 5 cases (5%), and tobacco chewing 3 cases (3%).

12 cases (12%) had hypertension, 11 cases (11%) had diabetes mellitus, and 3 cases (3%) had hypothyroidism. Most patients (74%) were free from co-morbidities.

The morphology of the lesions in most patients (87%) consisted of a combination of plaque, scale, and fissure; 10 cases (10%) had plaques and scale combination, while 3 cases (3%) had plaques with fissures.

54 cases (54%) had both palmar and plantar involvement, 27 cases (27%) had only soles involved, and 19 cases (19%) had only palmar involvement.

This study specifically looked for various areas of the hands and feet in order to explore if pressure played a role in the distribution of lesions possibly by means of Koebnerization. The results are tabulated in **Table 1**.

Of all the cases, 3 (3%) had joint involvement of hands/ feet. Other joints were not involved.

66 cases (66%) had nail involvement. The changes included pitting in 44 cases (44%), horizontal ridging in 38 cases (38%), subungual hyperkeratosis in 15 cases (15%), and onycholysis in 12 cases (12%).

Assessment of patients with palmoplantar quality of life instrument (PP-QoL instrument)⁶

When the study patients were evaluated with PP-QOL instrument grading (Farley), 5 cases (5%) were found to be 'not affected', 28 cases (28%) as 'mildly affected', 39 cases (39%) to be 'moderately affected', 24 cases (24%) as 'severely affected' and 4 cases (4%) to be 'totally unable' to perform daily activities

(Table 2).

We tested the PP-QoL with surface area of affection and found a significant negative correlation [Spearman's coefficient of rank correlation (rho) was -0.240].

The results of the answers obtained from the PP-QoL Finlay DLQI questionnaire⁷ are presented in **Table 2**. Fifty cases (50%) had a very large effect and 6 cases (6%) had extremely large effect on DLQI. While, 1 case (1%) had 'no effect', 12 cases (12%) had 'small effect' and 31 cases (31%) had 'moderate effect' (**Table 2**).

There was significant correlation between the two variables (Spearman's coefficient of rank correlation (rho) = 0.8 and $p < 0.0001$) (**Figure 1**).

According to PP-QOL instrument: PPP patients may be particularly susceptible to social embarrassment. We found that 43 cases (43%) strongly agreed that their disease caused social embarrassment. From the figures we can safely conclude that PPP causes significant social embarrassment.

Discussion

This was an institution-based, descriptive, cross sectional study in which 100 patients presenting with palmoplantar psoriasis, fulfilling the inclusion criteria and expressing informed consent for participating were recruited. The

Table 2 Results of PP-QoL and DLQI assessment in current study.

Results of PP-QoL assessment in current study		DLQI assessment	
Grades	n (%)	Grades	n (%)
None	5 (5%)	No effect	1 (1%)
Mild	28 (28%)	Small effect	12 (12%)
Moderate	39 (39%)	Moderate effect	31 (31%)
Severe	24 (24%)	Very large effect	50 (50%)
Totally unable	4 (4%)	Extremely large effect	6 (6%)

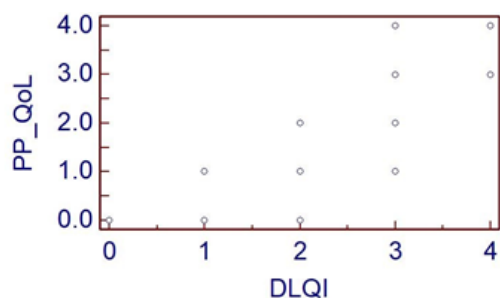


Figure 1 Scatter diagram representing correlation between PP-QoL and DLQI (n=100).

findings of this study are compared and contrasted our findings with those of the previous studies.

The mean age of this study's population was 42.7 ± 12.08 years. This is a decade earlier than what was seen in previous studies.^{8,9} The total number of cases falling in age group of 21 to 50 years were 68 (68%) in this study, this finding agreed with a previous study 10 (66.8%). The most common age group to be affected was from 41 to 50 years with 36 cases (36%). It must be remembered in this context that dysmetabolic diseases also occur a decade earlier in Indians. This is also the age group of peak professional productivity.

Female patients 52 (52%) and males (48%) were almost equally affected in this study. The finding is in agreement with Kumar (2002),⁴ Chopra (1997)¹¹ and Chung(2014).⁸ Although this finding differed from that of Khandpur *et al.*¹⁰ who reported male patients (72%) to outnumber female patients (28%) and Chung *et al.*⁸ who found females to predominate in number (75.8%). This inconsistency may be due to geographical and lifestyle differences.

The most common profession in this study was homemaker (housewife). This correlates with the gender equality and age group of afflictions. Reported prevalence of smoking habits in this patients was much less (10%) in comparison to the findings of Chung (24%). While Chung's

data almost precisely reflects the general smoking rates in the US, this data is much less than the national average (about 27%).¹² Again, while 40% of Chung's patients were moderate alcohol drinkers, only 5% of this study's sample were moderate drinkers. This can be ascribed to socio-cultural differences.

Simultaneous involvement of other body areas is variable in previous studies. Indian studies reported such involvement in 30.3%⁴ and 21.4%¹⁰ while Farley *et al.*⁶ found as high as 82% 'extra-palmoplantar' involvement. In the current study there were 51% cases with 'extra-palmoplantar' involvement. In a previous study 30.3% had such involvement.⁴ This difference may again be ascribed to population and geographical difference.

The areas over the hand and feet were divided into regions to see if the lesions were distributed more over pressure areas. It was found that pressure bearing areas of the palm like thenar and hypothenar eminences were involved in 55% and 46% respectively while fingers were involved in 54% cases (**Table 1**). Khandpur *et al.* noted corresponding involvement to be 11%, 15% and 44% of the cases, respectively. This difference may be ascribed to working patterns.

In the feet, heels, lateral borders, toes were involved in 45%, 30% and 49% cases. Khandpur *et al.*¹⁰ too, found the soles, instep, sides of feet, and heel to be commonly involved (**Table 3**).

Kumar *et al.*⁴ also reported greater involvement of the pressure sites over the palms, while on the soles randomly distributed discrete plaques were seen. Involvement of web spaces was observed in 36% of patients in the current study, 28.6% in the study by Khandpur and 8% cases by Kumar *et al.* The explanation that may be offered is the high prevalence of maceration in a tropical country like ours, the design of Indian footwear and subsequent Koebnerization.

Table 3 Specific hand and feet area involvement in current versus a previous study.[10]

	Current study (%)	Khandpur et al. study (%)
<i>Specific areas of hands involved</i>		
Hypothenar eminence	46%	14.9%
Thenar eminence	55%	11%
Centre of palm	41%	23.4%
Fingers	54%	44.2%
Dorsum of hand	49%	-
Whole palm	22%	27.9%
<i>Specific areas of feet involved</i>		
Heel	45%	24.7%
Centre of sole	53%	7.8%
Forefoot	54%	5.8%
Toes	49%	16.8%
Web spaces	36%	28.6%
Medial border	50%	3.2%
Lateral border	30%	3.2%
Dorsum of feet	52%	-

Farley *et al.* (2009) in their study found maximum number of patients (48%) to be moderately unable in the discharge of their duties. This was followed by those severely unable (34%) and those mildly unable (18%). Notably, there were no patients with no inability and those totally unable.⁶ The findings of the current study seemed to roughly agree with the former.

Chung *et al.*⁸ observed that palmoplantar psoriasis is associated with substantial impairment of quality of life. They also observed that compared to moderate-to-severe plaque psoriasis, palmoplantar psoriasis was independently associated with a greater impact on skin-related quality of life. Similar were the findings of Pettey *et al.*⁹ The current study's findings were in agreement with those of both of these authors as there was significant diminution of quality of life as measured by two independent instruments. It may also be recapitulated that there was significant correlation between the two gradations obtained in doing so.

This study also paid special attention to social

embarrassment caused by PPP. Significantly, most patients were found to be very embarrassed by this disease.

Apart from the usual limitations of a hospital based cross sectional study, a relatively new palmoplantar quality of life tool has been used which needs validation from multicentre studies.

Conclusion

Palmoplantar psoriasis (PPP) affects both genders almost equally, affecting our population almost a decade earlier than our western counterparts. It is highest amongst those involved in housework and winter is the commonest aggravating factor. PPP causes significant decrease in overall Quality of Life other than causing much social embarrassment. This study supports the impression that even with limited body surface involvement, patients with PPP suffer from a significant impact as measured on both instruments, namely Palmo Plantar Quality of Life (PP-QoL) and Daily Life Quality Index (DLQI). There was significant correlation between the measures of quality of life between the two instruments and inverse correlation with involved surface area of body involvement.

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