Impact of Palmoplantar Dermatoses on Quality of Life

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Abstract

Background: Palmoplantar dermatoses are commonly found in dermatological practice. Quality of life (QOL) is severely impaired if these areas are affected. Early and appropriate management of palmoplantar dermatoses help in improving patient's QOL. **Aim:** To assess the impact of palmoplantar dermatoses on QOL. **Materials and Methods:** Patients with palmoplantar dermatoses with or without other body part involvement were enrolled in the study. QOL was assessed by Dermatology Life Quality Index (DLQI) questionnaire for >16 years of age and by Children's Dermatology Life Quality Index (CDLQI) questionnaire for 5–16 years of age. **Results:** Two hundred and two patients participated, of which 108 (53.46%) were males and 94 (46.53%) were females. The commonest age group affected was 17–40 years (42.57%). Housewives 61 (30.2%) and laborers 53 (26.2%) were most common occupational group affected. The mean DLQI and CDLQI scores were 7.68 and 7.46, respectively. Fifty-seven (28.21%) patients had palmoplantar psoriasis (PPP), 35 (17.32%) had palmoplantar keratoderma (PPK), and 26 (12.87%) had hand eczema (HE) with mean DLQI scores 8.60, 8.53, 8.60, and CDLQI scores 8.40, 8.28, and 8.26, respectively. In both DLQI and CDLQI, questions on symptoms and feelings scored maximum. Gender, age, occupation, duration, progress, and type of dermatosis did not show statistically significant association with DLQI. However, chronic recalcitrant dermatoses such as PPP, PPK, and HE showed significant impairment in QOL in relation to occupation and duration of disease. **Limitation:** Severity of various palmoplantar dermatoses was not graded and therefore relation between severity of various dermatoses and QOL was not established. **Conclusion:** Majority of patients with palmoplantar dermatoses especially those having chronic course had significant impairment in their QOL.

Keywords: *Children's Dermatology Life Quality Index, Dermatology Life Quality Index, palmoplantar dermatoses, quality of life*

Introduction

Palmoplantar dermatoses are commonly found in dermatological practice causing significant distress to the patient. Involvement of palms and soles greatly reduces the individual's ability to perform his day-to-day activities. Chronic dermatoses such as palmoplantar psoriasis (PPP), palmoplantar keratoderma (PPK), and hand eczema (HE), which are recalcitrant to treatment, require regular follow-ups and expensive medication, which further impair daily leisure and work-related activities.

Palmoplantar dermatosis reflects a broad spectrum of skin disorders, including infective conditions, drug reactions, vesiculobullous disorders, pigmentary conditions, keratinizing disorders, and eczema. Many times, these dermatoses affect the quality of life (QOL), especially in housewives and laborers as their palms and soles frequently come in contact with various chemicals and are more prone to trauma.

HE is a multifactorial disease in which both exogenous factors such as several irritants and allergens as well as endogenous factors such as atopy play a role. It can present with various morphological patterns such as irritant contact dermatitis, pompholyx, and id eruption. PPP is a disabling and difficult-to-treat variant of psoriasis that has a causal relationship to factors such as manual trauma, Koebner phenomenon, irritant effects, and smoking. PPP, associated or unassociated with psoriasis elsewhere on the body, can present with many different morphological patterns ranging predominantly from pustular lesions to thick, hyperkeratotic plaques, with a spectrum of overlap.[1] PPK is a diverse entity of cutaneous disorders which are characterized by abnormal and excessive thickening of the skin over the palms and

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soles. It is classified into inherited and acquired disorders. Acquired PPK in later years of life can occur due to the cumulative insult of constant exposure to trauma, allergens, and irritants.

The present study attempted to study all dermatoses involving palms and soles and to assess their impact on QOL, especially those having chronic courses such as PPP, PPK, and HE.

Materials and Methods

The observational study was carried out from June 2014 to May 2015 in the Department of Dermatology, Venerology, and Leprology at rural-based tertiary care center after approval from Institutional Ethical Committee. All patients with palmoplantar dermatoses with or without involvement of other body areas were included in the study after informed consent.

Total 202 cases were enrolled during the period of 1 year after taking their written and informed consent in vernacular language (Gujarati). Patients of age group more than 5 years and of either sex, with palmoplantar dermatoses with or without other body part involvement were included. Patients less than 5 years of age and those who were not willing to participate or not giving their written consent were excluded from the study. A detailed history was taken, and a thorough general, physical, local, and systemic examination was carried out according to a prestructured proforma. Investigations, including potassium hydroxide (KOH) examination, wood's lamp examination, patch testing, and biopsy, were done as and when required.

Patients of more than 5 years of age were given life quality index questionnaire to be completed. For 5–16 years of age, Children's Dermatology Life Quality Index (CDLQI) was used, while for >16 years of age Dermatology Life Quality Index (DLQI) was used. It was a valid questionnaire in English as well as translated in vernacular language (Gujarati) including 10 items on patient's feelings and many aspects of the disease in the last week.[2]

The questions included in DLQI were symptoms and feelings (questions 1 and 2); daily activities (questions 3 and 4); leisure work (questions 5 and 6); work and school (questions 7); personal relationships (questions 8 and 9); treatment (question 10). The questions included in CDLQI were symptoms and feelings (questions 1 and 2); leisure activities (questions 4, 5, and 6); school or holidays (questions 7); personal relationship (questions 3 and 8); sleep (question 9); treatment (question 10). Each item was scored on a three-point scale (3 = very much, 2 = a lot, 1 = a little, 0 = not at all). Range of score was 0–30. The acquired score can be grouped into any of the five categories – 0–1: No effect on QOL; 2–5: Small effect on QOL; 6–10: Moderate effect on QOL; 11–20: Severe effect on QOL; 21–30: Very severe effect on QOL.

Statistical analysis

Assuming the proportion of people affected by palmoplantar dermatoses to be 0.5 (assuming the maximum proportion in absence of any previous data) and taking the acceptable difference of 0.07, the calculated sample size came to be 196 by the software WINPEPI.

Chi-square test has been used to find out the association between variables such as age, gender, occupation, duration, progress, etc., and DLQI/CDLQI. Finally, all the findings were analyzed by STATA (14.2).

Results

In total, 202 patients were enrolled for the study, of which 108 (53.46%) were males and 94 (46.53%) were females. Disease was progressive in 149 (73.8%) patients and nonprogressive in 53 (26.2%) patients. Other clinicoepidemiological details are shown in Figures 1-4. PPP was the most common dermatoses found in 57 (28.22%) cases [Table 1]. Among 202, 48 (23.8%) patients had taken topical, 4 (2%) had taken systemic, 13 (6.4%) had taken both topical and systemic treatment, 4 (2%) had taken nonspecific treatment, and 133 (65.8) had not taken any treatment. One hundred sixty four were >16 years of age for which DLQI was used, while 38 were ranging from 5 to 16 years of age for which CDLQI was used [Table 2]. The mean DLQI and CDLQI scores of our study population were 7.68 and 7.46, respectively,

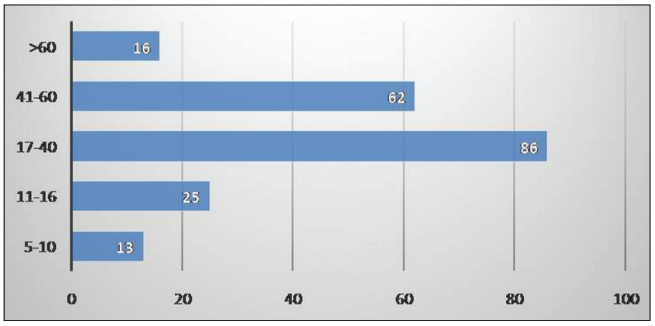

Figure 1: Age distribution

Table 1: Distribution of palmoplantar dermatoses

Diagnosis	Sex no (%)	
	Male	Female
Palmoplantar psoriasis	39 (19.31)	18 (8.91)
Keratinizing disorder (%)	24 (11.87)	30 (14.85)
Eczema (%)	14 (6.93)	13 (6.43)
Viral infection (%)	11 (5.44)	9 (4.45)
Drug reaction (%)	7 (3.46)	2 (0.99)
Fungal infection (%)	3 (1.48)	13 (6.43)
Pitted keratolysis	2	1
Hyperhidrosis	2	0
Trophic ulcer	1	1
Others (%)	5 (2.47)	7 (3.46)
Total (%)	108 (53.46)	94 (46.53)

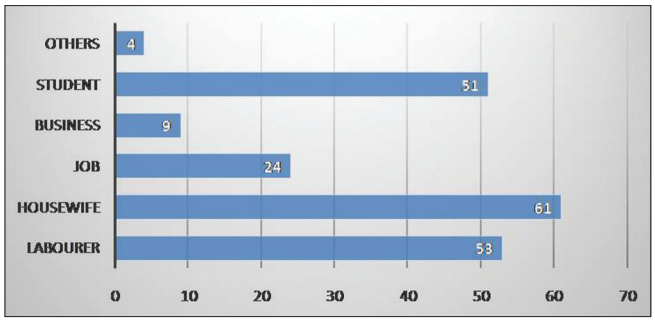

Figure 2: Occupational distribution

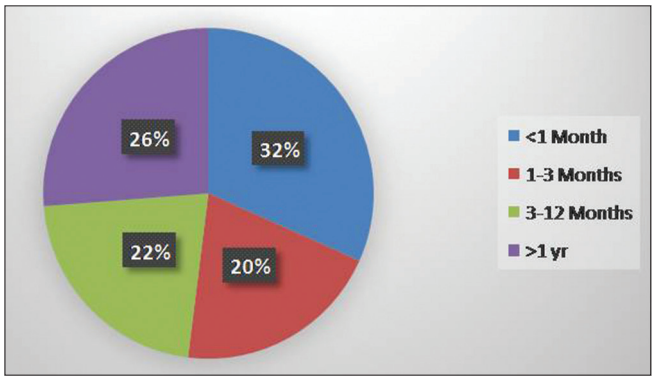

Figure 3: Duration of dermatosis

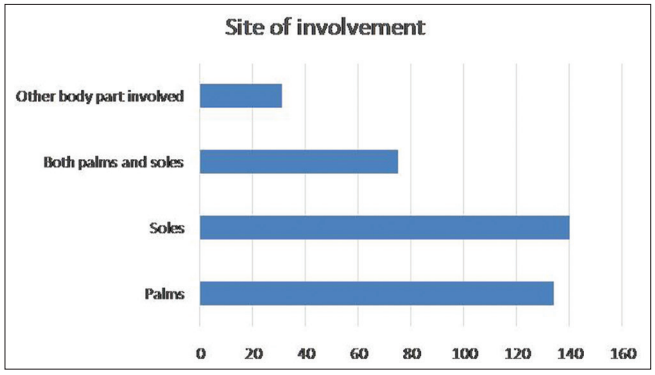

Figure 4: Site wise distribution of dermatosis

of which PPP, PPK, and HE had mean DLQI scores 8.60, 8.53, 8.60 and CDLQI scores 8.40, 8.28, 8.26, respectively. Gender, age, occupation, duration, progress, and type of dermatoses did not show statistically significant association with DLQI/CDLQI (*P*-value > 0.05) [Table 3]. However, PPP, PPK, and HE showed significant impairment in QOL in relation with occupation and duration of disease (*P*-value < 0.05) [Table 4]. In PPP, there was not much variation seen in DLQI/CDLQI score in patients with only palmoplantar involvement (8.34/8.56) with that of palmoplantar area with other body parts involvement (8.43/8.24). Patients with only sole involvement, only palm involvement, and both palm and sole involvement, the DLQI/CDLQI scores were equivalent suggesting no change in QOL with change in site. In DLQI, highest effect of various palmoplantar dermatoses

Table 2: Number of patients undergone DLQI and CDLQI questionnaire

	DLQI[a]	CDLQI[b]	Total
All palmoplantar dermatoses	164	38	202
PPP[c]	45	11	57
PPK[d]	30	5	35
HE[e]	21	5	26

[a]Dermatology life quality index. [b]Children's dermatology life quality index. [c]Palmoplantar psoriasis. [d]Palmoplantar keratoderma. [e]Hand eczema

was due to symptomatic complaints and by effect of feeling regarding the dermatoses. The least effected variable was related to work and school [Table 5]. In CDLQI, the highest effect of various palmoplantar dermatoses was due to symptomatic complaints and effect of feeling regarding the dermatoses. Least affected variable was sleep [Table 6].

Discussion

Palms and soles have a nonhairy skin, which is marked by series of ridges and grooves with a configuration unique to each individual known as dermatoglyphics.[3] Various dermatoses affect palms and soles, few are specific to palms and soles, while few involve other parts of the body also.

Palmoplantar dermatoses are the predominant dermatoses in laborers in accordance to the usual belief that more friction would cause hyperkeratosis of palms and soles[4] as pressure areas are more exposed to trauma and friction with Koebner's phenomenon contributing and maceration is commonly present over web spaces due to exposure to detergents and other chemicals. Palmoplantar dermatosis particularly if of chronic duration affects QOL such as psoriasis, eczema, and keratoderma but infective conditions of acute nature do not have any impact on QOL.

There was no association found between occupation and duration with DLOI score of 164 patients, as Chi-square was 14.32 and 12.517, degree of freedom (df) was 20 and 16, and *P* value was 0.814 and 0.708, respectively.

The prevalence of HE among general population is estimated to be about 2–10% and it accounts for 21–34% of all types of eczema in various hospital-based studies.[5] In our study, the mean DLQI and CDLQI in patients of HE were 8.60 and 8.26, respectively, suggesting significant negative impact of HE on QOL of patients of both the age groups i.e., 5–16 and >16 years. The mean DLQI in studies by Charan *et al.*[6] and Ghaderi *et al.*[7] were 9.54 and 8.68, respectively. In contrast to Charan *et al.*,[6] occupation and duration significantly affected the QOL of patients of HE, while gender, age, and progress did not show significant correlation with DLQI/CDLQI. Similar correlation was also found in a study done by Agner *et al.*[8] Thus, there can be a great difference between QOL of HE patients in different countries which can be attributed to social and cultural differences.

PPP is reported to affect approximately 5% of all patients with psoriasis.[9] PPP causes a significant psychological impact on the sufferer and hampers his/her daily activities. Management is difficult and more difficult than plaque psoriasis of nonpalmoplantar areas.[10] Chung *et al*.[11] conducted a study on QOL in patients of PPP and chronic plaque psoriasis and found that the adjusted odds of reporting at least a moderate impact on QOL (DLQI score >5) were 2.08 times higher for patients with PPP compared with those with plaque psoriasis. Also, they have shown significant correlation of PPP with that of age, sex, and mean duration of disease (P-value < 0.05). In their study, 56.1% patients of PPP had DLQI score 0–5 (No–small effect), while 43.9% had DLQI 6–30 (Moderate–extremely large effect). van Geel *et al.* showed high correlation between DLQI and CDLQI scores (r = 0.90, P < 0.001). In that study, the mean DLQI score (5.41 ± 5.20) was lower than the mean CDLQI (6.61 ± 5.74) (P < 0.001). The major part of this difference (Δ0.61) was caused by the low score regarding sexual difficulties in the DLQI (0.11 ± 0.49) and the high score concerning sleep in the CDLQI (0.71 ± 0.93).[12] In our study, mean DLQI score was 8.60 and mean CDLQI score was 8.40. After literature search on QOL in childhood psoriasis, one study showed that childhood psoriasis and atopic dermatitis caused the greatest impairment (CDLQI scores of 30.6 and 30.5%), followed by urticaria (20%) and acne (18%). Using the generic CDLQI (scored 0–36) from the parental perspective, the highest score was for allergic dermatitis (33%), followed by urticaria (28%), psoriasis (27%), and alopecia (19%).[13] de Jager *et al.* studied 39 children with chronic plaque psoriasis and found that disease severity measures calculated by physicians global assessment (PGA) and psoriasis area severity index (PASI) moderately correlated with CDLQI.[14]

Table 3: Association between demographic parameters and palmoplantar dermatoses (*n*=202) (*P*)

	DLQI[a] (*n*=164)	CDLQI[b] (*n*=38)
Age	0.829	0.610
Sex	0.713	0.165
Occupation	0.814	NA
Duration	0.708	0.079
Progress	0.375	0.464
Type of dermatoses	0.216	0.003

[a]Dermatology Life Quality Index. [b]Children's Dermatology Life Quality Index

Similar to our study, Mahagen *et al*.[15] found PPK to be more common in males (64.63%). Laborers, farmers, and mechanical workers (48.16%) were most common affected group with most common age group being 11 to 20 years (32.92%) in their study. Our study showed mean DLQI and CDLQI scores as 8.53 and 8.28, respectively, in PPK.

To the best of authors' knowledge, after a detailed literature search, no Indian study is available that has been conducted on QOL of patients having PPP and PPK in children (5–16 years).

We had not considered QOL of 84 patients out of 202 patients having dermatoses other than PPP, PPK, and HE individually such as infections and drug reactions as they were acute and treatable in nature. Dermatoses such as vitiligo, vesiculobullous disorders, hyperhidrosis, corn/callosity, Darier's disease, ichthyosis did not have adequate sample size to evaluate the QOL.

The study on palmoplantar dermatoses is complex, as the term palmoplantar includes heterogenous group of disorders, but no classification exists. These dermatoses frequently affect the QOL as palms and soles are involved in day-to-day activities. Cosmetically also, they bother the patient as these are the parts of body that are easily visible. Mainly the individuals having chronic recalcitrant disease belong to middle age group as they are frequently exposed to trauma, and those working as housewives and laborers constitute the most vulnerable group being affected.

Limitation of the study

We did not assess the severity of various dermatoses and therefore, relation between severity of various dermatoses and QOL was not established.

Conclusion

Palmoplantar dermatoses showed significant impairment in QOL. Housewives and laborers are most common occupational groups involved. Chronic recalcitrant dermatoses such as PPP, PPK, and HE had positive

Table 4: Association between demographic parameters and PPP, PPK, and HE (*P*)

Disease Score	PPP[a] (*n*=57)		PPK[b] (*n*=35)		HE[c] (*n*=26)	
	DLQI[d] (*n*=45)	CDLQI[e] (*n*=11)	DLQI (*n*=30)	CDLQI (*n*=5)	DLQI (*n*=21)	CDLQI (*n*=5)
Age	0.710	0.722	0.811	0.762	0.632	0.684
Sex	0.732	0.752	0.810	0.735	0.822	0.611
Occupation	0.001	NA	0.002	NA	0.004	NA
Duration	0.010	0.011	0.014	0.012	0.011	0.001
Progress	0.712	0.654	0.745	0.746	0.712	0.624

[a]Palmoplantar psoriasis. [b]Palmoplantar keratoderma. [c]Hand eczema. [d]Dermatology Life Quality Index. [e]Children's Dermatology Life Quality Index

Table 5: Total score of DLQI questionnaire (*n*=164)	
Questionnaire (DLQI)	**Mean (SD)**
Symptoms and feelings (questions 1 and 2)	2.63 (1.40)
Daily activities (questions 3 and 4)	1.56 (1.30)
Leisure work (questions 5 and 6)	1.06 (1.16)
Work and school (question 7)	0.42 (0.63)
Personal relationships (questions 8 and 9)	0.69 (1.02)
Treatment (question 10)	0.57 (0.76)

Table 6: Total score of CDLQI questionnaire (*n*=38)	
Questionnaire (CDLQI)	**Mean (SD)**
Symptoms and feelings (questions 1 and 2)	2.76 (1.36)
Personal relationship (questions 3 and 8)	1.54 (0.9)
Leisure activities (questions 4, 5, and 6)	2.16 (1.09)
School or holidays (question 7)	0.76 (0.76)
Sleep (question 9)	0.44 (0.50)
Treatment (question 10)	0.57 (0.69)

correlation with occupation of patient and duration of disease.

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Conflicts of interest

There are no conflicts of interest.

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