

Original research article

A Clinical Study of Palmoplantar Dermatoses in a Tertiary Care Teaching Hospital

Dr. Sandhya Rani Kakarla¹, Dr. Rachakonda Ramesh²¹Associate Professor, Dept of Dermatology, Pratima Institute of Medical Sciences, Nagunur, Karimnagar, Telangana State.²Assistant Professor, Dept of Dermatology, Pratima Institute of Medical Sciences, Nagunur, Karimnagar, Telangana State.

Corresponding Author: Dr. Rachakonda Ramesh

Email: drrameshr4u@gmail.com**Abstract**

Background: Palms and soles are affected by various dermatological diseases. There is no universally approved classification for palmoplantar dermatoses. They can be classified based on the causes into inflammation, infection, papulosquamous, and keratinization disorders. The current study aimed to evaluate various palmoplantar dermatoses presented to our tertiary care teaching institute in South India.

Methods: A total of n=60 cases of palmoplantar dermatoses were included in the study based on the inclusion and exclusion criteria. A thorough medical history was also taken, including information on the length of the disease, previous treatments, illnesses that ran in the family, and any pertinent co-morbidities. Each person underwent a general and dermatological check-up. The soles and palms were carefully inspected. Wet mount and 10% potassium hydroxide mount were used for scaly lesions, and Gram stain was used for pustular lesions.

Results: Eczema was seen in n=28(35%) of cases followed by fungal infection in n=18(22.5%) cases. Psoriasis in n=12(15%) of cases warts in n=7(8.75%) cases, palmoplantar hyperhidrosis in n=6(7.5%) cases, Pitted keratolysis in n=5(6.25%) cases, Callosity in n=4(5.00%) cases. Pruritus was present in n=45(56.25%) cases and was the most commonest symptom followed by pain in n=38(47.5%) cases some patients were having both the symptoms and n=22(27.5%) cases were without any symptoms. Based on seasonal variations n=16(20.0) cases were exacerbation in the winter season, followed by n=12(15.0) cases in the summer season and n=10 (12.5%) cases found exacerbation in the monsoon season and no relation to the season was found in n=42(52.5%) cases.

Conclusion: The diverse range of illnesses known as palmoplantar dermatoses has many different forms. These conditions cannot be categorized according to any accepted criteria. The majority of research on palmoplantar dermatoses concentrated on particular illnesses. There aren't many thorough investigations on palms and soles that are available in the medical literature. This study emphasizes the need for extensive research in palmoplantar dermatoses with a large population.

Keywords: Palmoplantar Dermatoses, Eczema, psoriasis, warts

Introduction

Dermatoses affecting the palms and soles are more prevalent in our daily lives. Because they are exposed to more allergens, mechanical stress, and infectious agents than any other area of our body, Patients' physical activities are negatively impacted by lesions in their palms and soles, which has a significant influence on their quality of life. Numerous dermatoses can affect the skin on the palms and soles, but only a few are exclusive to these areas and do not affect skin elsewhere on the body. There are subtle clinical differences between them that must be detected through careful observation. This aids in the diagnosing process. The most prevalent dermatoses include calluses, eczema, palmoplantar keratoderma, psoriasis, hand foot, and mouth disease, plantar warts, hyperhidrosis, and black heels and palms, piezoelectric pedal and palmar papules, and idiopathic recurrent palmoplantar hidradenitis. With a focus on the clinical characteristics and etiology Callosities are plaques of hyperkeratosis that develop as a typical defensive reaction to friction and/or pressure. ^[1] The phrase "Eczema of the hand and foot" describes eczema that mostly affects the hands and/or feet. ^[2] It is brought on by a variety of external and endogenous aetiological sources. However, dermatitis affecting the palms is endogenous, whereas that on the dorsal side is exogenous, even though any region of the hand may be affected by any type of eczema. Atopic dermatitis, discoid eczema, pompholyx, and hyperkeratotic eczema are examples of endogenous causes. Irritating and allergic contact dermatitis are examples of exogenous causes. A variety of keratinization conditions fall under the umbrella term palmoplantar keratoderma (PPK). The morphology, distribution of hyperkeratosis, genetic transmission, the occurrence of skin lesions on locations other than the palms and soles, and age of onset are used to categorize them. ^[3] As a lone morbid alteration, as a component of more widespread dermatoses, or even as a symptom of an underlying illness, they can be brought on by a variety of dermatological illnesses, both inherited and acquired. ^[4] Psoriasis on the palms and soles can manifest as the usual scaly patches that can be triggered by scratching and stopping at the wrist and sides of the fingers, as well as less clearly defined plaques, pustulosis, or mixed forms on occasion. ^[5] Primary or secondary infections of the palms and soles can be caused by a wide variety of bacterial, fungal, and viral species. Erythrasma and pitted keratolysis are corynebacterial diseases that affect the palms and soles. Erythrasma frequently manifests as asymptomatic toe web space scaling, fissuring, and maceration. Tinea manuum and Tinea pedis, dermatophytes infections of the palms and soles, can manifest as dry hyperkeratotic moccasin-type lesions, inflammatory/vesicular spreading lesions, or interdigital types. Intertrigo impacting the interdigital areas is how candidiasis appears. Skin benign papillomas called verruca plantaris are brought on by the DNA papillomavirus. Plantar warts come in three different types depending on the HPV type Scaling, fissuring, and maceration of the toes' web spaces. Therefore, it is crucial to understand the symptoms and signs of skin conditions that affect these areas. Additionally, different palmar and plantar lesions can serve as the disease's first presenting feature before other symptoms become obvious, and from now on, checking your soles and palms should be an essential component of a complete dermatological examination.

Material and Methods

This cross-sectional study was conducted in the Department of Dermatology, Prathima Institute of Medical Sciences, Naganoor, Karimnagar. Institutional Ethical approval was obtained for the study. Written consent was obtained from all the participants of the study after explaining the nature of the study in the local language.

Sample size calculation: $n=4pq/d^2$ (Where n=sample size, p=prevalence taken as p=10, q=90, d=absolute error taken as 7)

$n=4*10*90/49=74$ (The sample size taken in the study was 80)

Inclusion criteria

1. Patients who are attending the dermatology OPD with complaints primarily pertaining to palms and soles
2. Diagnosed with Palmoplantar Dermatoses
3. Males and females
4. All age groups

Exclusion criteria

1. Patients who were already been diagnosed and on treatment for palmoplantar dermatoses.
2. Patients who are not willing to participate in the study.

A total of n=80 cases of palmoplantar dermatoses were included in the study based on the inclusion and exclusion criteria. All participants' demographic information, including age, sex, and occupation, was recorded. A thorough medical history was also taken, including information on the length of the disease, previous treatments, illnesses that ran in the family, and any pertinent co-morbidities. Each person underwent a general and dermatological check-up. The soles and palms were carefully inspected. Wet mount and 10% potassium hydroxide mount were used for scaly lesions, and Gram stain was used for pustular lesions. A skin biopsy was done in some cases.

Statistical analysis: The data was collected and uploaded on an MS Excel spreadsheet and analyzed by SPSS version 22 (Chicago, IL, USA). Quantitative variables were expressed on mean and standard deviations and qualitative variables were expressed in proportions and percentages. Fisher's exact test has been used to find the difference between two proportions.

Results

Out of the n=80 patients included in our study, n=52(65%) were males and n=28(35%) were females the male to female ratio was 1.8:1. The most commonly involved age group was 31 – 40 years with 43.75% of cases followed by 41 – 50 years with 18.75% of cases. The third highest was the age group 21 – 30 years with 15.0% of cases depicted in table 1. The mean age of the cases in the study was 47.58 ± 8.45 years.

Table 1: Demographic profile of the cases included in the study

Age Group (Yrs)	Male	Female	Total (%)
00 – 10	1	1	2 (2.50)
11 – 20	3	3	6 (7.50)
21 – 30	8	4	12 (15.0)
31 – 40	25	10	35 (43.75)
41 – 50	10	5	15 (18.75)
51 – 60	3	3	6 (7.50)
> 60	2	2	4 (5.00)
Total	52	28	80 (100.0)

In this study, we found pruritus in n=45(56.25%) cases was the most commonest symptom followed by pain in n=38(47.5%) cases some patients were having both the symptoms, and n=22(27.5%) cases were without any symptoms. Based on seasonal variations n=16(20.0) cases were exacerbation in the winter season, followed by n=12(15.0) cases in the summer season and n=10 (12.5%) cases found exacerbation in the monsoon season and no relation to the season was found in n=42(52.5%) cases. The percentage-wise distribution of the seasonal variations is depicted in figure 1.

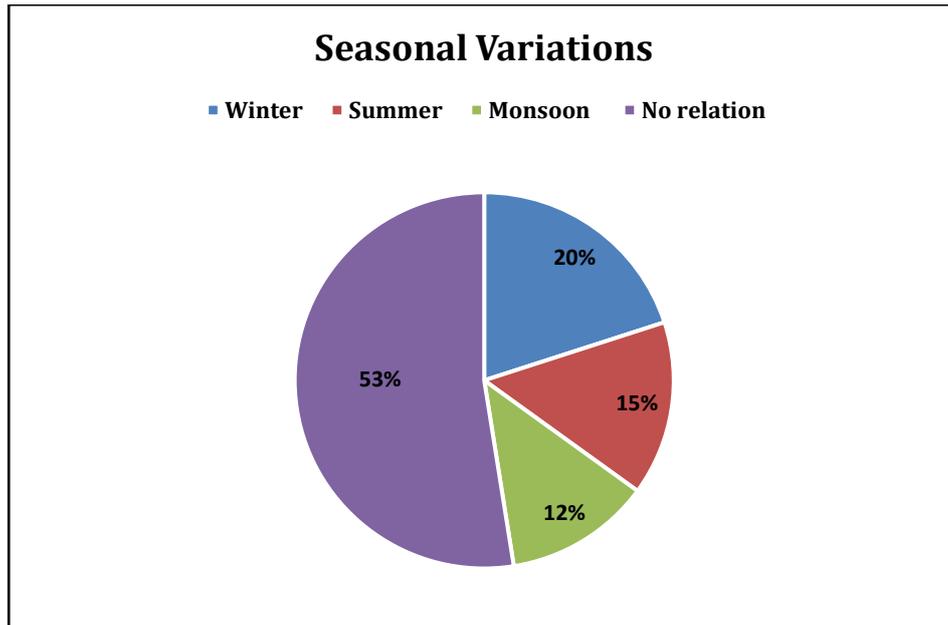


Figure 1: Seasonal Variation in Palmoplantar Dermatoses

The pattern of involvement in palmoplantar dermatoses Palmar region alone was the most commonly affected site it was found to be involved in n=36 (45.0%) cases sole alone was found to be involved in n=18 (22.5%) cases. Both palmar and plantar regions' involvement was seen in n=26(32.5%) cases. In the palmar dermatoses, fingers (45%) were most commonly affected; followed by the thenar region (32%). The least commonly affected site was a hypothenar region in 30%. In the plantar region, the metatarsal area (28%) was most frequently affected; followed by insole and heel. Incidence of various palmoplantar dermatoses revealed Eczema was seen in n=28(35%) of cases followed by fungal infection in n=18(22.5%) cases. Psoriasis in n=12(15%) of cases warts in n=7(8.75%) cases, palmoplantar hyperhidrosis in n=6(7.5%) cases, Pitted keratolysis in n=5(6.25%) cases, Callosity in n=4(5.00%) cases. Based on the occupation of involvement laborers were n=40(50.0%) followed by Housewife n=10(12.5%), Students and executives were n=5(7.5%) each and other groups were n=20(25.0%).

Table 2: Distribution of Eczema cases in the study

Age group (years)	Males	Females	Total (%)
15 – 20	11	4	15(53.57)
21 – 40	6	2	8(28.57)
41 – 60	4	1	5(17.85)
Total	21	7	28 (100.0%)

The total number of patients affected by eczema was n=28. The highest age group of involvement was 15 – 20 years with 53.57% of all cases. Males were more commonly affected as compared to females depicted in table 2. Morphological categorization of the cases of eczema showed a maximum number of cases of fingertip eczema n=10 cases followed by n=5 cases each of pompholyx and the unclassified type and n=2 cases were hyperkeratotic and keratoderma percentage representation is given in figure 1.

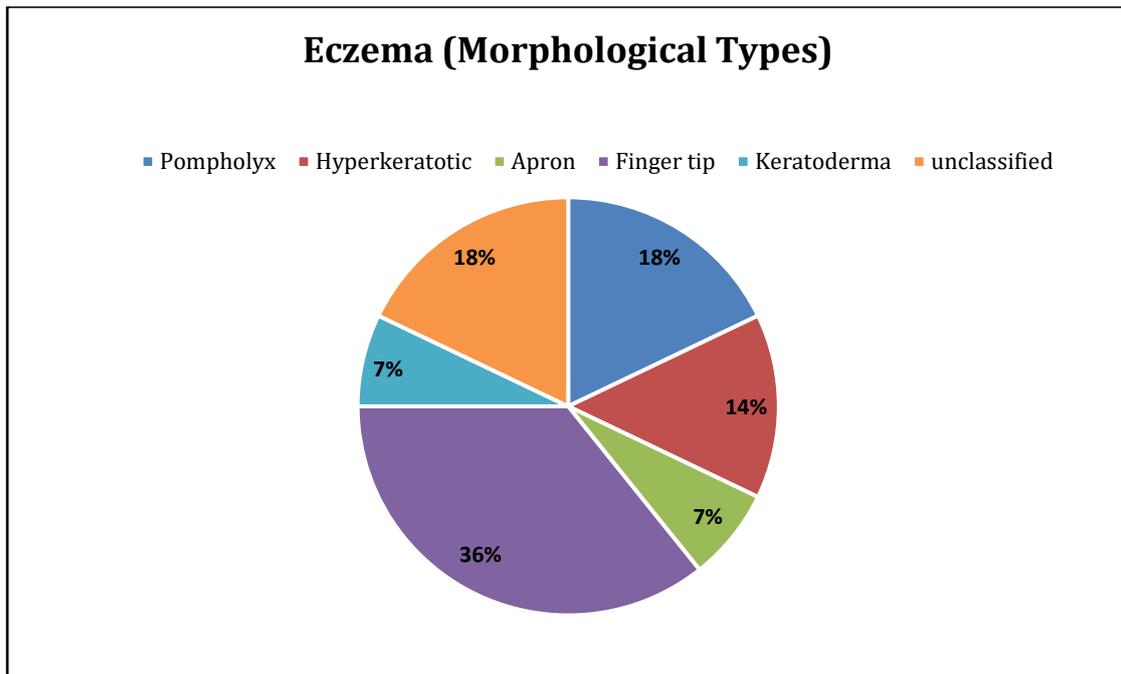


Figure 2: Morphological types of Eczema diagnosed in the cases

Candida intertrigo cases were seen in n=15(83.33%) cases of candida infection followed by n=3(27.77%) cases of palmoplantar dermatoses. The cases of candida intertrigo were highest among the age group 41 - 60 years details depicted in table 3. 60% of cases had exacerbation during the monsoon season. In dermatophytosis of palms and sole out of n=3 cases n=2 cases were males and n=1 case was female and palm was involved in n=2 cases.

Table 3: Distribution of candida intertrigo cases in the study

Age group (years)	Males	Females	Total (%)
15 – 20	0	2	2(13.33)
21 – 40	1	5	6(40.00)
41 – 60	3	4	7(46.67)
Total	4	11	15(100.0)

The total number of cases of psoriasis was n=12 and the most common age group involved is 21 – 40 years depicted in (table 4). In 75% of cases in the study seasonal variations were noted in 66.67% of cases in almost all the cases, and there was the involvement of both palm and sole. Among the different morphological types of psoriasis, the classical type was seen in n=4(33.33%) of cases followed by hyperkeratotic type was found in n=3(25%) of cases and keratoderma type n=2(16.67%) cases and pustular type n=1(8.33%) cases. The most commonly involved sites in the palm are the thenar and hypothenar areas n=8 (66.67%) and the most commonly involved site in the sole was the medial plantar arch n=7 (58.33%) cases.

Table 4: Distribution of psoriasis cases in the study

Age group (years)	Males	Females	Total (%)
15 – 20	0	0	0(0.00)
21 – 40	5	4	9(75.0)
41 – 60	3	0	3(25.0)
Total	8	4	12(100.0)

Wart was observed highest in the age group of 41 - 60 years (57.14%). N=3(42.28%) cases were females and n=4(57.14%) cases were males distribution given in Table 5. 71.43% had palm alone involvement and 28.57% had involvement of sole. In the hands the most common site was fingers and in the sole, the distribution was equal in both the head of the metatarsal and heel and the lateral border.

Table 5: Distribution of warts cases in the study

<i>Age group (years)</i>	<i>Males</i>	<i>Females</i>	<i>Total (%)</i>
15 – 20	0	1	1(14.28)
21 – 40	2	0	2(28.57)
41 – 60	2	2	4(57.14)
Total	4	3	7(100.0)

The distribution of cases of hyperhidrosis is given in table 5. It was found only in the age group above 21 years. Male was twice as affected as compared to females. N=4(66.67%) of patients gave a history of hyperhidrosis in the family members.

Table 5: Distribution of hyperhidrosis cases in the study

<i>Age group (years)</i>	<i>Males</i>	<i>Females</i>	<i>Total (%)</i>
15 – 20	0	0	0(0.00)
21 – 40	2	1	3(50.0)
41 – 60	2	1	3(50.0)
Total	4	2	6(100.0)

Pitted keratolysis was found in n=5(6.25%) out of all the n=80 cases out of which n=3(60%) were males and n=2(30%) were females. Pruritus was the most commonest symptom in these patients seen in 80% of these cases. Weight-bearing areas were commonly affected and particularly metatarsal area involvement in the sole was seen in all the patients 100% cases. Callosity was found in n=4 cases out of which n=2 cases occurred in palms and n=2 cases in the sole. 50% of these patients had a history of walking barefoot.

Discussion

A total of n=80 patients were enrolled in our study; of these, n=52 (65%) were men and n=28 (35%), were women the ratio of men to women was 1.8:1. Nair PA et al.,^[6] and Kang BS et al.,^[7] both noted a similar male majority. This observation may have occurred as a result of men participating in outdoor jobs that frequently cause harm to the palms and soles. In contrast, Hongal AA et al.,^[8] found that women predominated in their study 61. In this study, the common age group involved with lesions was 31 – 40 years with 43.75% of all cases. This age is economically active and involved in supporting their respective families. Similar observations have been reported by other studies done in this field. Based on occupation 50% of the cases were laborers followed by 12.5% housewives and 25.0% in other groups. Studies by Chopra et al.,^[9] and Kodali SA et al.,^[10] whereas Nair PA et al.,^[6] and Hongal AA et al.,^[8] observed palmoplantar dermatoses, predominantly in housewives. In our study, the commonest symptom followed by pain in n=38(47.5%) cases some patients were having both symptoms, and n=22(27.5%) cases were without any symptoms. Similar observations have been reported by Nair PA et al.,^[6] in addition peeling of skin was the second most commonly observed symptom in their study. Palmar region alone was the most commonly affected site it was found to be involved in n=36 (45.0%) cases sole alone was found to be involved in n=18 (22.5%) cases. Both palmar and plantar regions' involvement was seen in n=26(32.5%) cases.

Nair PA et al.,^[6] Palso made a similar observation in their study. The sole metatarsal area areas were commonly involved in our study, in contrast to heel in Nair PA et al.,^[6] In eczema cases out of the total n=28 case 75% were male and 25% were females. Most of them were manual laborers and females were housewives. We found fingertip eczema was common (figure 2). Handa S et al.,^[11] found that 30% of morphological patterns of hand eczema did not fit into any specific type. According to our study, atopy was one of the most important risk factors associated with hand eczema and it was reported in 50% of patients. JP Thyssen et al.,^[12] and Handa S et al.,^[11] also observed the same in their study. Candida intertrigo cases were seen in n=15(83.33%) cases of candida infection followed by n=3(27.77%) cases of palmoplantar dermatoses. The majority of the patients 73.33% were females and most of them were housewives. All the above observations were also made by Hongal AA et al.,^[8] The total number of cases of psoriasis was n=12 and the most common age group involved is 21 – 40 years. In 75% of cases in the study, seasonal variations were noted in 66.67% of cases. Similar observations were reported by Khandpur et al, Hongal AA et al.,^[8], and Nair PA et al.,^[6] But the study by B Kumar et al.,^[13] and Chopra et al.,^[9] reported almost equal involvement in men and women. Involvement of both palm and sole was seen in all the cases of our study, Nair PA et al.,^[6] Khandpur et al and Hongal AA et al.,^[8] also observed similar findings in their study 59,67,61. A Study by B Kumar et al.,^[13] reported plantar involvement was twice common compared to palmar involvement. the classical type was seen in n=41.25% of cases followed by the hyperkeratotic type found in n=3(25%) of cases. Kang BS et al.,^[7] reported palmoplantar pustulosis is the commonest type. Warts were found in n=3(42.28%) cases were females and n=4(57.14%) cases 43% had palm alone involvement and 28.57% had involvement of sole. In the hands the most common site was fingers and in the sole, the distribution was equal in both the head of the metatarsal and heel and the lateral border. All these observations were compared to the study of Ghadgepatil et al.,^[14] Palmoplantar hyperhidrosis was found in n=6 cases out of which n=4(66.67%) were males and the rest females. Park et al⁶⁹, preponderance of male (57%) in palmoplantar hyperhidrosis. However, in contrast to the study done by DR Srutton et al.,^[15] where female preponderance was observed in palmoplantar hyperhidrosis. Pitted keratolysis was found in n=5(6.25%) out of all the n=80 cases out of which n=3(60%) were males and n=2(30%) were females. Pruritus was the most commonest symptom in these patients seen in 80% of these cases. All these observations were similar to the study by CL Naik et al.,^[16]

Conclusion

The diverse range of illnesses known as palmoplantar dermatoses has many different forms. These conditions cannot be categorized according to any accepted criteria. The majority of research on palmoplantar dermatoses concentrated on particular illnesses. There aren't many thorough investigations on palms and soles that are available in the medical literature. This study emphasizes the need for extensive research in palmoplantar dermatoses with a large population.

References

1. Singh D, Bentley G. Callosities, corns and calluses. Br Med J. 1996; 312:1403-06. Valia RG. Eczema. In: Valia RG, Valia AR, editors. Indian Association of
2. Dermatologists, Venereologists and Leprologists Textbook of Dermatology. 3rd edition. Bhalani Publishing House. 2008; 1: 503-509.
3. Zemtsov A, Veitschegger M. Keratoderma. Int J Dermatol. 1993; 32:493-98.
4. Samanta BC, Banerjee BN. Aetiology of plantar keratoderma. Indian J Dermatol Venereol Leprol. 1976; 42:116-25.

5. Judge MR, McLean WHI, Muuro CS. Disorders of keratinization. In: Burns T, Breathnach S, Cox N, Griffiths C, editors. *Rook's Textbook of Dermatology*. 8th edition. Wiley – Blackwell Publication. 2010;1: 19.93-19.117.
6. Nair PA, Diwan NG, Singhal R, Vora RV, A prospective study of clinical profile in patients of palmoplantar dermatoses. *Indian Dermatol Online J* 2017; 8:331-35.
7. Kang BS, Lee JD, Cho SH. A clinicopathological study of palmoplantar dermatoses. *Korean J Dermatol*. 2006;44(6):714–20.
8. Hongal AA, Rajashekar N, Gejje S, Palmoplantar Dermatoses-A Clinical Study of 300 Cases. *J Clin Diagn Res*. 2016; 10(8): WC04–WC07.
9. Chopra A, Maninder, Gill SS. Hyperkeratosis of palms and soles: Clinical study. *Indian J Dermatol Venereol Leprol* 1997; 63:85-88.
10. Kodali SA. Clinico-Histopathological Study of Acquired Palmoplantar Keratoderma in a Rural-Based Tertiary Hospital. *J Evolution Med Dent Sci* 2014; 30:8500-05.
11. Handa S, Kaur I, Gupta T, Jindal R, Hand eczema: Correlation of morphologic patterns, atopy, contact sensitization, and disease severity. *Indian J Dermatol Venereol Leprol* 2012; 78:153-158.
12. Thyssen JP, Johansen JD, Linneberg A, Menné T. The epidemiology of hand eczema in the general population--prevalence and main findings. *Contact Dermatitis* 2010; 62: 75–87.
13. Kumar B, Saraswat A, Kaur J. Palmoplantar lesions in psoriasis: A study of 3065 patients. *Acta Derm Venereol*. 2002; 82:192–95.
14. Ghadgepatil SS, Gupta S, Sharma YK. Clinicoepidemiological Study of Different Types of Warts. *Dermatol Res Pract*. 2016; 2016: 7989817.
15. Strutton DR, Kowalski JW, Glaser DA, Stang PE. US prevalence of hyperhidrosis and impact on individuals with axillary hyperhidrosis: results from a national survey. *J Am Acad Dermatol*. 2004; 51:241–248.
16. Naik CL, Singh G. Clinico epidemiological study of pitted keratolysis. *Ind J Dermatol*. 2007; 52:35–38.