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A clinical study on the prevalence of foot dermatoses in adults (18-60 years) in tertiary health care setup in Kelambakkam

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Abstract

Background: Foot dermatoses significantly contribute to work-related diseases and household activity disruption. This study aimed to assess the clinical types, localizations, and frequencies of foot dermatoses and their association with sociodemographic factors. Despite their prevalence, these conditions are often underreported due to lack of awareness and delayed diagnosis. This study focused on evaluating foot dermatosis prevalence among individuals in Chennai.

Materials and Methods: An observational study included 220 patients from field camps, Dermatology OPD visits at Chettinad Hospital and Research Institute, and rural health centers in Poonjeri and Siruseri (Nov 2022-Nov 2023). Participants were recruited using inclusion and exclusion criteria, with informed consent obtained in their regional language. Data were recorded in an Excel sheet to determine the prevalence of various dermatoses.

Results: Among the 220 participants, 35.9% were diagnosed with allergic contact dermatitis, followed by callosity (20.0%), tinea pedis (16.8%), and irritant contact dermatitis (5.9%).

Conclusion: Foot dermatoses are prevalent and require a comprehensive approach to prevention, diagnosis, and management to improve public health outcomes.

Keywords: Foot dermatoses, allergic contact dermatitis, occupational exposure, prevalence, skin lesions, psychosocial impact

Introduction

Foot dermatoses contributes to a significant portion of work-related diseases also tampering household work. We aimed to sort out clinical types, localizations and frequencies of foot dermatoses and to evaluate the relationship with sociodemographic parameters. Most of the times, the subject is unaware of the presenting skin lesions and are neglecting it without the knowledge of the disease progression^[1]. Despite their high frequencies, the dermatological conditions of the feet are underreported due to a lack of interest and awareness.

Patients often fail to visit the doctor promptly regarding these foot disorders, and therefore the diseases are usually extensive during their primary visit itself. Therefore, Foot dermatoses have a somewhat negative impact on a person's ability to function in daily life. The deterioration of the skin's protective barrier in these situations has led to recent diagnosis and treatment, and the condition predisposes to a number of other illnesses, including cellulitis, lymphangitis, and erysipelas^[2]. Wearing sandals and exposed shoes, particularly in the summer, makes FD noticeable to others, which has a detrimental effect on the psychosocial condition of the patients.

The most common foot disease is foot callosities, foot eczema, common wart, tinea pedis, psoriasis Vulgaris, Allergic contact dermatitis (ACD), irritant contact dermatitis (ICD). A person's capacity to carry out daily tasks is slightly hampered by foot dermatoses. Recent diagnosis and treatment have been made possible by the loss of the skin's protective layer in these conditions, and the condition predisposes to a number of other ailments, such as cellulitis, lymphangitis, and erysipelas^[2]. It is especially obvious in the summer when people wear sandals and open shoes, which negatively impacts the sufferers' emotional state.

Aim and Objective

1. To evaluate the prevalence of foot dermatosis in individuals residing in Chennai.

- To inculcate awareness about the various foot dermatosis among these individuals and thereby aid in the prevention of these diseases.

Materials and Methods

It is an observational study comprising of total 220 patients. Patients were collected during field camps, Dermatology OPD visits in Chettinad Hospital and Research institute, and rural health centre in Poonjeri and Siruseri for a period of one year from November 2022 to November 2023. They were recruited based on the inclusion and exclusion criteria, and examined after getting informed consent in their regional language. All collected data were entered into an excel sheet and prevalence of various dermatoses were established.

All age group patients of both gender with feet dermatoses were included in study. Patients already with resolving lesions, on long term treatment, with comorbidities, nail disorders and not willing for the study were excluded. The confidentiality of all enrolled patients was maintained.

All the data were collected in proforma and entered in excel sheet. The data were represented as frequency, percentage, mean and standard deviation. For all statistical purpose a p-value of <0.05 was considered statistically significant.

Results

A total of 220 volunteers, ranging in age, were enlisted for the study. Ages 20 to 29 accounted for the largest percentage of cases (27.3%), followed by ages 30 to 39 [22.3%] With a range of 4 to 86 years, the mean age was

31.60 ± 14.83 years.

Table 1: Age distribution

| Age group | Frequency | Percent |
|-----------|-----------|---------|
| < 20 | 25 | 11.4% |
| 20 to 29 | 60 | 27.3% |
| 30 to 39 | 49 | 22.3% |
| 40 to 49 | 38 | 17.3% |
| 50 to 59 | 25 | 11.4% |
| 60 to 69 | 13 | 5.9% |
| 70 to 79 | 8 | 3.6% |
| 80 to 89 | 2 | 0.9% |
| Total | 220 | 100.0% |

In all, 220 volunteers of all ages were enrolled in the study. The age of 20 to 29 years Old saw the greatest percentage of instances (27.3%) then comes the age group of 30 to 39 years old (22.3%). With the range of 4 to 86 years, the mean age was 31.60 ± 14.83 years^[10].

Table 2: Distribution of participants by sex

| Sex | Frequency | Percent |
|--------|-----------|---------|
| Male | 97 | 44.1% |
| Female | 123 | 55.9% |
| Total | 220 | 100.0% |

In the present study, a slight female preponderance was seen, with 55.9% of participants being of the female gender as opposed to 44.1% being males. There was a similar distribution seen across all ages.

Table 3: Distribution of participants by occupation

| Occupation | Frequency | Percent |
|------------|-----------|---------|
| Corporate | 15 | 6.8% |
| Farmer | 50 | 22.7% |
| Homemaker | 81 | 36.8% |
| Labourer | 21 | 9.5% |
| Retired | 7 | 3.2% |
| Student | 46 | 20.9% |
| Total | 220 | 100.0% |

More than one-third of the participants recruited in the study (36.8%) were found to be homemakers by occupation. The next common occupation groups were found to be farmer (22.7%) and student (20.9%). The other occupations documented included labourers (9.5%), corporate employees (6.8%) and retired individuals (3.2%)^[11].

Table 4: Distribution of participants by diagnosis

| Diagnosis | Frequency | Percent |
|-----------------------------|-----------|---------|
| Allergic contact dermatitis | 79 | 35.9% |
| Atopic dermatitis | 4 | 1.8% |
| Callosity | 44 | 20.0% |
| Hyperkeratotic eczema | 8 | 3.6% |
| Irritant contact dermatitis | 13 | 5.9% |
| Juvenile plantar dermatosis | 7 | 3.2% |
| Plantar Warts | 12 | 5.5% |
| Pompholyx | 11 | 5.0% |
| Stasis dermatitis | 5 | 2.3% |
| Tinea pedis | 37 | 16.8% |
| Total | 220 | 100.0% |

Majority of the participants were diagnosed to have allergic contact dermatitis (35.9%). followed by callosity (20.0%).

Other diagnoses include tinea pedis (16.8%) and irritant contact dermatitis (5.9%). Rare among the presentations were pompholy (5.0%), hyperkeratotic eczema (3.6%) juvenile plantar dermatosis (3.2%), stasis dermatitis (2.3%) and atopic dermatitis (1.8%)^[12].

Table 5: Distribution of participants by presenting complaints

| Presenting complaint | Frequency | Percent |
|----------------------|-----------|---------|
| Discharge | 7 | 6.8% |
| Itching | 151 | 22.7% |
| Pain | 30 | 36.8% |
| Redness | 32 | 14.5.5% |
| Total | 220 | 100.0% |

Among participants, itching was found to be the most frequent presenting complaint, followed by redness (14.6%) and pain (13.6%). Discharge was seen in only 3.2% of participants^[13].

Discussion

A total of 220 volunteers, ranging in age, were enlisted for the study. Ages 20 to 29 accounted for the largest

percentage of cases (27.3%), followed by ages 30 to 39 [22.3%] With a range of 4 to 86 years, the mean age was 31.60 ± 14.83 years. These results were in view of findings of Chougule A *et al.*, who also found a high distribution of foot dermatoses in the young age group. However, the findings of Nedorost S *et al.* showed that a higher proportion of disease was seen among patients aged above 40 years.

In the present study, a slight female preponderance was seen, with 55.9% of participants being of the female gender as opposed to 44.1% being males. There was a similar distribution seen across all ages.

The findings were similar to those of Chougule A *et al.* and Febriana SA *et al.* which also showed the higher proportion in females. However, the study by Bhatia R *et al.* among cases of contact dermatitis had a higher proportion of male cases as compared to females [3].

More than one-third of the participants recruited in the study (36.8%) were found to be homemakers by occupation. The next common occupation groups were found to be farmer (22.7%) and student (20.9%). The other occupations documented included labourers (9.5%), corporate employees (6.8%) and retired individuals (3.2%)

The occupation plays an important role in dermatitis based on the exposure to various allergens. Nedorost S *et al.* found a significant association between occupational exposure to chromate and contact dermatitis. Among housewives, exposure to rubber and metals was found to have higher proportion. The majority of participants coming to the institute were from rural areas, at 76.8% and only 23.2% hailed from urban areas [4].



Fig 1: Infective Eczema

A study by Bajaj AK also found a higher proportion of dermatitis among those hailing from rural areas. However, the study by Handa S *et al.* found a greater percentage of instances found in cities. Among participants, itching was found to be the most frequent presenting complaint (68.6%), followed by redness (14.6%) and pain (13.6%). Discharge was seen in only 3.2% of participants [5].

Scaling was the most common lesion seen (35.0%) followed by skin thickening and erythema. Other lesions included vesicles and bullae. The results were similar to findings of many studies, with itching being the most frequent presentation of foot dermatoses, both in India and in foreign nations.



Fig 2: Hyperkeratotic Eczema

Majority of the participants presented with symptoms of duration 7 days or less (53.6%). This was followed by duration 8 to 15 days (26.8%) and then 19.5% with duration 16 to 30 days.

Majority of the participants were diagnosed to have allergic contact dermatitis (35.9%), followed by callosity (20.0%). Other diagnoses include tinea pedis (16.8%) and irritant contact dermatitis (5.9%). Rare among the presentations were pompholyx (5.0%), hyperkeratotic eczema (3.6%) juvenile plantar dermatosis (3.2%), stasis dermatitis (2.3%) and atopic dermatitis (1.8%). [6].



Fig 3: Stasis Eczema

Comparable results were observed in the study by Mohanty S *et al.*, in which irritant contact dermatitis (ICD), with 11 cases (18.9%), trailed allergic contact dermatitis (ACD), which accounted for 23 cases (39.7%) of foot dermatitis [7]. The manner in which these two circumstances began and developed allowed them to be distinguished from one another. In addition, comparable patterns were found for pompholyx and hyperkeratotic eczema. With 3.4% and 1.7% of cases, respectively, atopic dermatitis and infective eczema were the least frequent conditions [8].



Fig 4: Irritant Contact Dermatitis



Fig 5: Dyshidrotic Eczema and onychomycosis

ACD exhibited a higher prevalence among females, comprising 60.9% of cases, whereas ICD was more commonly observed in males, accounting for 63.6% of cases. The dorsal aspects of the feet were predominantly affected in over half the cases (55%), with scaling (79.3%) and crusting (37.9%) being the most common presenting complaint^[9]. It's interesting to note that, in situations of ACD, scaling predominated (87%), whereas in cases of ICD, crusting predominated (82%). With 85% of cases reporting pruritus, it was found to be the most prevalent symptom, followed by scaling, dryness, and pain.



Fig 6: Soft warts seen over the plantar aspect of the foot and Warts seen over the dorsum of the feet



Fig 7: Leucoderma caused due to Allergic contact dermatitis to rubber footwear and Allergic contact dermatitis

Conclusion

The prevalence of foot dermatoses underscores the significance of addressing these conditions as integral components of dermatological care and public health initiatives. With estimates suggesting that up to one-quarter of the population may experience foot dermatoses at some

point in their lives, these conditions exert a substantial burden on individuals, healthcare systems, and society at large. The multifactorial nature of foot dermatoses necessitates a holistic approach to prevention, diagnosis, and management. Educating the public about proper foot hygiene practices, the importance of well-fitted footwear, and early recognition of symptoms can mitigate risk factors and promote early intervention. Additionally, fostering interdisciplinary collaboration among dermatologists, podiatrists, primary care providers, and other healthcare professionals is essential for delivering comprehensive care and optimizing patient outcomes. Furthermore, addressing disparities in access to healthcare and resources is crucial for ensuring equitable treatment for individuals affected by foot dermatoses, particularly vulnerable populations such as the elderly, individuals with diabetes, and those with limited mobility or socioeconomic resources. By promoting awareness, advocacy, and research efforts, strides can be made towards reducing the global burden of foot dermatoses and improving quality of life for affected individuals.

Conflict of Interest

Not available

Financial Support

Not available

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