



# Clinicoepidemiological Study of Dermatophytosis at Tertiary Care Centre in Anand District

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## Research Article

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## Abstract

**Background:** Dermatophytes are the major causal organism for most of superficial fungal infections. Globally, the prevalence of superficial fungal skin infection is 20–25%. In general population, tinea corporis and tinea cruris infections are very common.

**Aim:** (1) To study the demography of dermatophytosis at tertiary care centre in Anand district. (2) To study various clinical patterns of dermatophytosis at tertiary care centre in Anand district.

**Method:** A 3 year retrospective study was undertaken in the Outpatient Department of Dermatology at a tertiary care teaching hospital from March 2017 to February 2020. All patients who came to the skin outpatient department and were diagnosed to have Dermatophytosis clinically were included in the study, irrespective of age or sex. According to a proforma age, sex, occupation, duration, site, family history, locality, socioeconomic status, etc were recorded and evaluated.

**Results:** The study was conducted on 924 subjects. The most common age group affected was of 31-40 years, with a male to female ratio of 1.80:2.24. About 52% of patients belonged to urban background, and 41% were from a low socioeconomic background. 52% of patients reported to have positive family history, and 55% of patients were having poor personal hygiene. Tinea corporis was the most common clinical variant of dermatophyte infection (59.46%) in our study. Nearly 63% of patients had been treated previously, 30% had applied steroid and 33% had taken oral/topical antifungals inappropriately.

**Conclusion:** Dermatophytosis is a common public health problem affecting all age groups in our area and usually seek medical advice for cosmetic reasons. The present study reveals that Tinea corporis was the most common clinical variant of dermatophyte infection.

**Keywords:** Dermatophytosis; Rural

## Introduction

Dermatophytes are a distinct group of fungi that infect the keratinized tissues like skin, hair, and nails of humans, animals and can produce a variety of cutaneous infections. This group of fungi are closely related antigenically, physiologically, morphologically and are commonly known as ringworm fungi [1]. Dermatophytes are classified into three group: Epidermophyton, Microsporum, and Trichophyton

[2]. On the basis of their primary habitat, dermatophytes can also be divided into anthropophilic, zoophilic, and geophilic. Species of all the three groups can cause human infection [3]. The severity of the dermatophytoses depends on the specific strain of the infecting dermatophyte, the sensitivity of the host, and the site of infection [4]. About 20–25% of the world's population is infected with dermatophyte and the incidence is increasing steadily [5]. Worldwide, the incidence and distribution of these fungal infections varies significantly

as the prevalence of different species varies with geographic regions, local cultural practices, climate and socioeconomic conditions. Overcrowding, areas with high humidity, poor hygienic conditions are the major factors, which predispose to dermatophytosis. It has become a significant health problem affecting all age groups. This infection although trivial, has a lot of psychological effect and requires long term regular treatment which is often costly.

## Material and Methods

A 3 year retrospective study was undertaken in the Outpatient Department of Dermatology at a tertiary care teaching hospital from March 2017 to February 2020. All patients who came to the skin outpatient department and were diagnosed to have Dermatophytosis clinically were included in the study, irrespective of age or sex. According to a proforma age, sex, occupation, duration, site, family history, locality, socioeconomic status, etc were recorded and evaluated. Patients with exclusive nail involvement were not included as it can be caused by dermatophytic as well as non-dermatophytic organisms. Data such as age, sex, occupation, duration, site, family history, locality, socioeconomic status, etc was recorded. Also, data regarding epidemiological profile, duration, site, symptoms, personal hygiene, history of similar complaints in the family members, associated skin or systemic conditions, history of application of medications were collected and results entered in a prestructured proforma.

## Results

The study was conducted on 924 subjects. In our study, we found that maximum number of patient were in the age group of 31-40 years (n=218, 23.60%), followed by 41-50 years (n=200 21.64%). The youngest patient in our study was found to be 15 months and the oldest was 86 years. Females were affected more (n=512, 55.42%) than males (n=412, 44.58%) in the ratio of 2.24:1.80 in our study. Dermatophytic infection was more prevalent in urban locality with 482 patients (52.16%) than rural locality with 442 patients (47.84%). In this study, housewives/office workers were most commonly affected (n= 763, 82.58%) followed by labourers (n=161,17.42%). The most common type of clinical presentation was tinea corporis (n=394,42.65%) followed by tinea cruris (n=218,23.69%), tinea facie (n=93,10.03%), tinea pedis (n=88,9.42%), tinea mannum (n=48,7.39%), tinea capitis (n=48,5.28%), tinea barbie (n=8,0.83%) and tinea unguium(n=6,0.66%).

Dermatophytic infections were commonly found in lower socio-economic class with (n=381, 41.24%) followed by middle class (n= 347, 37.55%) and then higher class (n=196, 21.21%). In our study, 254 patients (26.52%) had

infection for less than 1 month, 385 patients (41.66%) for 1-3 months, 37 patients (14.82%) for 3-6 months and 107 patients (11.58%) for 6-12 months. Only 50 patients (5.42%) had symptoms for more than 1 year. Majority of our patients had annular lesions which contributed 86.14% (n=796) and large group of lesions had erythematous base (83.55%,772 patients), clear central area (80.85% ,747 patients) and active margins (82.68%,764 patients). 86.80% patients (n=802) presented with excoriation of lesions and 75.10% (n=694) presented with inflammation. 97.95% (905 patients) had itching as associated symptom and only 11.68% (108 patients) cases presented with complaint of pain over lesion.

We found positive family history in 51.30% patients (n=474). 57 patients(6.16%) had diabetes mellitus, 24 patients (2.60%) were pregnant, 27 patients (2.92%) were lactating females and 14 patients (1.52%) had immunocompromised state. 59.30% patients had been previously treated with oral/topical antifungals (n=308, 33.33%) and topical steroids (n=273, 29.54%) Tables 1 & 2.

Age	Number of patients		Percentage (%)	
	Male	Female	Male	Female
1-10 year	6	8	0.64	0.86
11-20 years	15	14	1.62	1.51
21-30 years	67	78	7.27	8.44
31-40 years	90	128	9.74	13.85
41-50 years	88	112	9.52	12.12
51- 60 years	84	77	9.09	8.33
61-70 years	40	56	4.32	6.06
71-80 years	20	28	2.16	3.03
81-90 years	2	11	0.21	1.19

**Table 1:** Age wise distribution of Dermatophytosis.

Clinical type	Number of patients		Percentage(%)	
	Male	Female	Male	Female
Tinea corporis	192	202	20.77	21.86
Tinea cruris	84	134	9.09	14.5
Tinea facie	45	48	4.87	5.19
Tinea pedis	40	48	4.32	5.19
Tinea mannum	20	49	2.16	5.3
Tinea capitis	21	27	2.27	2.92
Tinea Barbie	8	0	0.86	0
Tinea unguium	2	4	0.21	0.43

**Table 2:** Different clinical types of Dermatophytosis.

## Discussion

Globally, dermatophyte infections are very common. Epidemiological features vary according to the geographical area as a consequence of migratory streams, lifestyle and socioeconomic conditions [6]. Comorbidities like diabetes mellitus, chronic kidney disease, malnutrition, Cushing's syndrome, thyroid disorders, immunocompromised status and pregnancy can affect course and treatment outcome of dermatophytoses. In recent decades, a growing etiological role of some anthropophilic dermatophytes has become evident all over the world. All races are usually affected and the clinical varieties and prevalence appear to depend mainly on environmental factor [7]. India is a tropical country and its climate is conducive for dermatophytosis.

Although males are more prone to develop dermatophytosis, this could be due to the fact that males are physically more active and wear tight clothes, which predisposes to increased sweating, in our study, there was female dominance (55.42%); males accounted for 44.58% of the study population. The female-male ratio was 2.24:1.80 while in a study by Uma Penmetcha, et al. [8] they reported that males were more frequently affected by dermatophytes infection compared to females with incidence of 52.8% in males and 47.2% in females, Kalita JM, et al. [9] and Nagaral GV, et al. [10] also reported more male predilection. In our study the prevalence of dermatophytic infection was highest in the age group of 31-40(23.59%), while in studies by Uma Penmetcha, et al. [8] Nagaral GV, et al. [10] and Kalita JM, et al. [9] the highest incidence of dermatophytosis was seen in the age group of 21-30 years. The higher prevalence of this dermatophyte infection in this age group may be due to increased physical activity and clothing pattern which leads to excessive sweating which is more favourable for the dermatophytes growth. In our study these infections were commonly found in patients from urban locality (52.16%) and from a lower socioeconomic status (41.24%) which was similar to the findings of George and Altraide [11]. Ranganathan, et al. [12], Poluri, et al. [13], also reported higher prevalence in lower socioeconomic strata.

In this study, maximum number of cases of dermatophytoses were seen in housewives/office workers followed by labourers while Uma Penmetcha, et al. reported [8] maximum number of cases of dermatophytoses in daily wage labourers and farmers who work outdoor and are more exposed to soil as a part of their occupation, which in turn predisposes to dermatophyte infections. About 51.29% patients had positive family history which is similar to Ghosh, et al. [14] (48%) and Singh BS et al (48.8%) [15]. Personal hygiene was found to be poor in (54.76%) of our patients which included the failure to bath daily or wear freshly washed clothes, wearing of damp undergarments,

sharing of clothes, towels and combs between the affected family members. These factors play an important role in causing the spread of infection, leading to its persistence, and its recurrence which are important factors in treatment failure. Educating each and every patient regarding personal hygiene, washing clothes separately with hot water each day, avoiding dampness, sharing of clothes and other fomites is essential for tackling dermatophyte infection. A hand out of Do's and Don'ts in their vernacular language along with pictographic presentation was given to each of the patient to emphasis on life style modification.

In our study, maximum number of cases 41.66% suffered from 1-3 months of duration symptoms followed by 26.52% while in Janardhan, et al. [16] and Singh BS, et al. [15] observed 42.76% and 17 % patients with 1 month disease duration respectively, Agarwal, et al. [17] and Anand Kumar, et al. [18] reported highest number of patients after 3 months of disease.

About 20-25% of the world's population is infected with dermatophytes and the incidence is increasing steadily. Over the past few years, dermatophyte infections have increased by many folds in India also [19]. The recent prevalence of dermatophytes in India is 36.6 -78.4% [20]. Studies suggest that emergence of Trichophyton mentagrophytes as principal causative organism and high terbinafine resistance could be the cause of these changing patterns of the disease and response [21]. The other major contributing factors are steroid abuse, less than effective doses, and inadequate duration of antifungal treatment. These aspects were highlighted in our study also when we found that, 548 patients had been treated either by a general practitioner, non allopathic practitioner, chemist, and other unqualified personnel before visiting a dermatologist. Among them majority of patients about 33.33% were treated with oral/topical antifungal, but in improper manner and 29.54% were treated with topical steroids. Dash, et al. [22] too has reported that a majority of their participants (61.11%) were treated by non-dermatologists and with steroid creams. Thus these findings underline the realization that education on approach to the management of dermatophyte infection is lacking, especially in the periphery.

## Conclusion

Dermatophytoses are worldwide distributed with increased incidence especially in tropical countries like India. Several factors such as age, sex, illiteracy, poor hygiene, pattern of clothes and social economy influence infection with dermatophytes. In our study, tinea corporis was the most commonly found clinical condition followed by Tinea cruris. This study provides an assessment of demographic data and etiological profile which could help in estimation of problem

and hence in prevention of spread of Dermatophytosis with adequate control measures. As dermatophytosis required long term antifungal therapy with proper consultation which has been practiced by other specialities and as well as general practitioner.

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