

# Prevalence of Dermatophytosis in Patients in A Tertiary Care Centre

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## ABSTRACT

**Introduction:** Dermatophytosis is an infection of the hair, skin, or nails caused by a dermatophyte, which is most commonly of the *Trichophyton* genus and less commonly of the *Microsporum* or *Epidermophyton* genera. Study aimed to find out the prevalence of dermatophytosis in patients attending tertiary care hospital.

**Material and methods:** Observational Cross sectional study was done on 1000 patients attending outpatient department of Government Rajaji Hospital, Madurai to check the prevalence of dermatophytosis.

**Result:** Clinically the prevalence of dermatophytosis was 13%, it was observed more in males. *T.rubrum* was the commonest species of dermatophyte isolated, which presented as *Tinea corporis*.

**Conclusion:** This study focused on the variations in dermatophytosis presentation and the species involved and found that *Trichophyton rubrum* was the most common affecting the present population.

**Keywords:** Dermatophytes, *Tinea rubrum*, *Tinea corporis*, superficial mycoses

## INTRODUCTION

Skin infections due to dermatophytes have become a significant health problem affecting all age groups. The dermatophytes are hyaline septate molds with more than 100 species described. Nearly 40 % of these are associated with human disease. According to Emmon's morphological classification, the dermatophytes are classified into three anamorphic genera -*Trichophyton*, *Microsporum* and *Epidermophyton* based on conidial morphology.<sup>1</sup> The dermatophytes manifest as infections of keratinized tissue like skin, hair, nails etc., of humans and animals. Some species of dermatophytes are endemic in certain parts of the world and have a limited geographic distribution. *T.soudanense*, *T.gourvilii* and *T.yaoundii* are restricted to Central and West Africa. *T.concentricum* is confined to islands in the South pacific. The increasing mobility of the world's population is disrupting several epidemiological patterns. Some dermatophytes like *E.floccosum*, *T.rubrum* and *T.tonsurans* are globally distributed.<sup>2</sup> Though various Indian and International studies on epidemiology of dermatophytosis are available no such study has been carried out in Madurai. So present study was done to find out the prevalence of dermatophytosis in patients attending tertiary care hospital in Madurai, India.

## MATERIAL AND METHODS

Observational cross sectional study done in 1000 cases attending the Dermatology outpatient department of Government Rajaji Hospital, Madurai. Ethical committee approval and informed consent from the patients was obtained before the start of the study. 1000 Patients were screened for fungal infections. 130 suspected dermatophytosis cases were selected and fungal scrapings from these patients were obtained. Processing

of specimens was done on the same day of the collection of specimen. Direct KOH mount was done for all the specimens and culture was done in Sabouraud's dextrose agar, containing chloramphenicol (0.04gms/litre) and cycloheximide (0.5g/litre) was. For observing the microscopic appearance, using teasing needle, mounts from the culture were made in Lactophenol cotton blue [LCB]. Slide culture was done when needed.

## STATISTICAL ANALYSIS

Microsoft office 2007 was used to make tables. Descriptive statistics like mean and percentages were used to infer results.

## RESULTS

A total of 1000 patients attending skin OPD were first screened for the presence of dermatophytosis and 130 cases (13%) were included for the study. It was observed that the highest number of dermatophytosis was seen in the age group of 31-40 years (40.76%) (Table-1). 130 samples were analyzed, sex wise and it was found that 81 were males (62.3%) and 49 were females (37.7%).

The samples were further analyzed depending upon the clinical manifestations and it was found that 74 cases out of 130 had *Tinea corporis* (56.9%), 37 out of 130 had *Tinea cruris* (28.5%), 7 had *Tinea faciei* (5.4%), 5 had *Tinea capitis* (5.4%) and 7 had *Tinea unguium* (5.4%) (Table-2).

In gender wise correlation of clinical presentation, among males 43 had *Tinea corporis*, 27 had *Tinea cruris*, 5 had *Tinea faciei*, 2 had *Tinea capitis* and 4 had *Tinea unguium*. So in males, *Tinea corporis* was the commonest lesion followed by *Tinea cruris*. Among female, 31 had *Tinea corporis*, 10 had *Tinea cruris*, 2 had *Tinea faciei*, 3 had *Tinea capitis* and 3 had *Tinea unguium*. Here also *Tinea corporis* was the commonest lesion followed by *Tinea cruris*.

Out of 130 samples, 112 were positive by KOH mount (86%) and 100 showed culture positivity (77%). On analyzing the 100 dermatophyte species isolates 74 cultures were *T.rubrum* (56.92%), 22 isolates were *T. mentagrophytes* (16.92%), 2 isolates were *T.Violaceum* (1.54%), one *E.floccosum* and one *M.gypseum*. (Table-4)

It was seen that *Tinea corporis* and *Tinea cruris* are predominantly caused by *T.rubrum*. All *Tinea unguium* cases

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**How to cite this article:** Sudha M, Ramani CP, Heber Anandan. Prevalence of dermatophytosis in patients in a tertiary care centre. International Journal of Contemporary Medical Research 2016;3(8):2399-2401.

are caused by *T.rubrum*. *T.violaceum* was involved in *T.capitis* and *E.floccosum* in *T.cruis* only (Table-5).

## DISCUSSION

India is a tropical country and it's climate is conducive for dermatophytosis.<sup>3</sup> Finding the prevalence of Dermatophyte infections and their various clinical presentations helps in the early diagnosis and proper treatment of Dermatophytosis. In this study, it was observed that 40.76% cases were affected with Dermatophytosis in the age group 31-40 years. Similar study by Prasad P.V.S. et al<sup>4</sup> also showed that the common age group involved in Dermatophytosis is 21-40 yrs. The present observation correlates with previous publications. It is obvious that the mean age of 30 years is the period where the laborers exert more physically, resulting in increased perspiration which produces a hot, humid, environment in the body, favoring the

growth of Dermatophytes. Excessive perspiration also washes away fungus killing oils in the skin making it more prone to dermatophyte infection. The male: female ratio was 1.8:1. This correlates with other studies by Prasad PVS et al<sup>4</sup> Suman et al<sup>6</sup> and SS Sen et al<sup>7</sup> where the male:female ratio was 1.75:1.1. Peerapur BV et al<sup>8</sup> and Philpot CM<sup>9</sup> have observed that higher incidence in males might be due to greater physical activity and increased sweating. In the present study, the male cases were mostly labourers and coolies working in sunlight most of the time leading to profuse sweating which in turn resulted in increased dermatophyte infection. Of the 130 cases analyzed in this study, *Tinea corporis* was the commonest presentation [58.8%] followed by *Tinea cruris* [12.3%] which corresponds to Kanwar AJ et al study,<sup>10</sup> Prasad PVS et al<sup>4</sup>, Suman et al<sup>6</sup> who have also showed that *Tinea corporis* was present in 52.8% cases and *Tinea cruris* in 15.6% cases. In this study *Tinea capitis* was seen in 3.8% of patients. All *Tinea capitis* cases were in the age group of 0-10yrs. This corresponds to the study by Philpot in which he reported that *Tinea capitis* was a disease of children. It is said that pubertal changes in hormones results in acidic sebaceous gland secretions which is responsible for decrease in incidence of *Tinea capitis* in adults. In this study, the diagnosis of dermatophytosis cases were made by demonstrating dermatophytes under microscope by KOH mount and culturing the specimen on SDA with cycloheximide media and proved that direct KOH mount was found to be a good screening test for dermatophytosis because 86.2% samples were positive in KOH mount while 76.9% were positive in culture. The study by Kannan, C.Janaki et al<sup>11</sup> and Suman singh et al<sup>6</sup> also showed that KOH mount positivity was seen in 80% of cases. But in contrast to this study, the culture positivity was only 45%.

## CONCLUSION

Clinically the prevalence of dermatophytosis was 13%. Males were more affected. The mean age group of dermatophytosis was 30 years. *Tinea capitis* was seen only in the age group of 0-10yrs. The commonest clinical manifestation was *Tinea corporis*. *Trichophyton rubrum* was the commonest species of dermatophyte isolated.

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Age in years	Patients	%
0 - 10	5	3.84
11 - 20	11	8.46
21 - 30	21	16.15
31 - 40	53	40.76
41 - 50	28	21.54
51 - 60	12	9.23

Table-1: Age wise distribution

Diagnosis	Patients	%
<i>Tinea corporis</i>	74	56.9
<i>Tinea cruris</i>	37	28.5
<i>Tinea faciei</i>	7	5.4
<i>Tinea capitis</i>	5	3.8
<i>Tinea unguium</i>	7	5.4
Total	130	100

Table-2: Clinical Presentation

Diagnosis	Male		Female	
	N	%	N	%
<i>Tinea corporis</i>	43	33.07	31	23.8
<i>Tinea cruris</i>	27	20.8	10	7.7
<i>Tinea faciei</i>	5	3.8	2	1.5
<i>Tinea capitis</i>	2	1.5	3	2.3
<i>Tinea unguium</i>	4	3.07	3	2.3

Table-3: Gender and clinical presentations

Species	Patients	%
<i>T. rubrum</i>	74	74
<i>T. mentagrophytes</i>	22	22
<i>T. violaceum</i>	2	2
<i>E. floccosum</i>	1	1
<i>M. gypseum</i>	1	1

Table-4: Dermatophyte Species Isolated

Species	<i>T.corporis</i>	<i>T.cruis</i>	<i>T.capitis</i>	<i>T.facei</i>	<i>T. unguium</i>
<i>T.rubrum</i>	47 (63.5%)	22(59.5%)	-	1 (14%)	4(57%)
<i>T.mentagrophytes</i>	14(18.9%)	3(8.1%)	1(20%)	4(57%)	-
<i>T.violaceum</i>	-	-	2(40%)	-	-
<i>E.floccosum</i>	-	1(2.7%)	-	-	-
<i>M.gypseum</i>	-	-	-	1(14%)	-

Table-5: Species Involved in Various Dermatophytosis

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**Source of Support:** Nil; **Conflict of Interest:** None

**Submitted:** 15-06-2016; **Published online:** 31-07-2016