



**A CLINICOEPIDEMIOLOGICAL STUDY OF CURRENT TREND OF DERMATOPHYTOSES**

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**ARTICLE INFO**

**Article History:**

Received 6<sup>th</sup> February, 2022

Received in revised form 15<sup>th</sup>

March, 2022

Accepted 12<sup>th</sup> April, 2022

Published online 28<sup>th</sup> May, 2022

**Key words:**

Dermatophytoses, Tineacorporis

**ABSTRACT**

**Background:** Dermatophytoses is an infection of the hair, skin and nails. It is a major public health problem worldwide particularly in developing countries and continue to increase.

**Objectives:** This study was conducted to determine biosocial correlates and the prevalence of current trend of dermatophytes infection among patients attending tertiary-care hospital.

**Material and methods:** Observational cross sectional study was done on 1045 clinically diagnosed cases of dermatophytoses attending skin OPD. Samples were collected from these patients for KOH mount and fungal culture examination.

**Result:** Clinically the prevalence of dermatophytoses was more common in males, among age group of 31-40 years belonged to low socioeconomic status and manual workers by occupation. Tineacorporis was the most common clinical type of presentation and *Trichophyton rubrum* was the most common isolated species observed. The frequency of steroid abuse was found in 62.97% of patients.

**Conclusion:** This study focused on the variations in dermatophytoses presentation and their biological correlates among patients. Tineacorporis was the most common clinical presentation.

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**INTRODUCTION**

Dermatophytoses is a disease of major public health problem around the globe particularly in developing countries, causing a considerable burden of dermatoses among patients attending hospitals. The incidence of dermatophytoses is increasing over the last few years and there are many cases of dermatophyte infections which are recurrent and chronic which affect the quality of life.

Fungi are a diverse group of organisms that exist as saprophytes, parasites or commensals. Clinically, mycoses or fungal infections are classified into four groups, i.e., superficial mycoses, subcutaneous mycoses, systemic mycoses and opportunistic mycoses. Superficial fungal infections of skin, hair and nails are common worldwide with a prevalence of 20-25%, of which dermatophytes are the most common causative agents.<sup>1</sup>

Dermatophytoses is defined as an infection of the hair, nails or skin by the dermatophytes which includes three genera, i.e., *Trichophyton* spp (which causes infection on skin, hair and nails), *Microsporum* spp (causes infection on skin and hair), and *Epidermophyton* spp (causes infection on skin and nails).

Dermatophytes are classified according to site of infection in which the most common clinical morphology encountered are Tineacorporis and Tineacurris.<sup>1,2</sup>

The incidence of specific dermatophyte species in a particular region varies due to population movement, mass migration, socio-economic status, lifestyle, cultural practices, change in climatic condition and changing drug therapies.<sup>3,4</sup>

India is a large subcontinent with remarkably varied topography, situated within the tropical and subtropical belts of the world. Its climate is conducive to the acquisition and maintenance of mycotic infections.<sup>5</sup>

Currently, dermatophytoses is a disease of worldwide importance which leads to public health problems in many parts of the world particularly in developing countries.<sup>6,7</sup>

Apart from increasing urbanisation, overcrowding, poverty, non-compliance, and immune suppressive states like diabetes, HIV/AIDS, and use of immune suppressive drugs, the easy availability of inexpensive and irrational corticosteroid-antifungal-antibacterial combinations sold over the counter in India are responsible for chronic and recurrent courses of dermatophytoses. These drugs are being used very commonly as so-called fairness or anti-itch cream by people as a blanket treatment for virtually every kind of dermatoses results in difficulty in diagnosis and treatment.

Thus this study will help us to channelise our resources in a much effective manner to find out the current scenario of clinicoepidemiological dermatophyte infections.

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## MATERIAL AND METHODS

The study was a cross sectional observational study conducted in the OPD of department of Dermatology of a tertiary health care center in Agra. After approval of the study protocol by our institutional research and human ethical committee, the patients that fulfilled the inclusion criteria were studied. A total 1045 clinical samples were collected from October 2020 to September 2021. A detailed history regarding the disease was taken. The diagnosis was based upon the clinical examinations and lab findings. Our study included patients with clinically diagnosed cases of dermatophytoses of all age group and both sexes further confirmed by KOH mount and fungal culture, different clinical types of dermatophytes infection, patients treated with steroids in the past and present with modified lesion.

Patients with non dermatophytes infections, dermatophytoma (fungal abscess), deep fungal infections and severe systemic illness were excluded from the study.

The objectives of our study to determine biosocial correlates and the current trend of dermatophytoses, the prevalence of different clinical pattern of dermatophytoses and the prevalence of topical or systemic steroids abuse in dermatophytoses.

### Culture and microscopic examination

Negative KOH wet mount examination and cultures excludes other conditions in the different diagnosis. Sample were collected under aseptic condition by skins scraping, nails and hair clipping by using scalpel or forceps in a clean black paper packets. Direct microscopy was done by using 10% Potassiumhydroxide (KOH) for skin scraping, and 20% KOH for epilated hair and nail clipping specimens. After direct microscopic examinations irrespective of demonstration of fungal elements, the specimen was inoculated into a test tube containing Sabouraud's dextrose agar with 0.05% chloromphenicol & 0.5% cycloheximide. This was incubated at 28 degreecelcius for upto4weeks. If no growth was found after 4 weeks, it was taken as negative for growth of fungi.

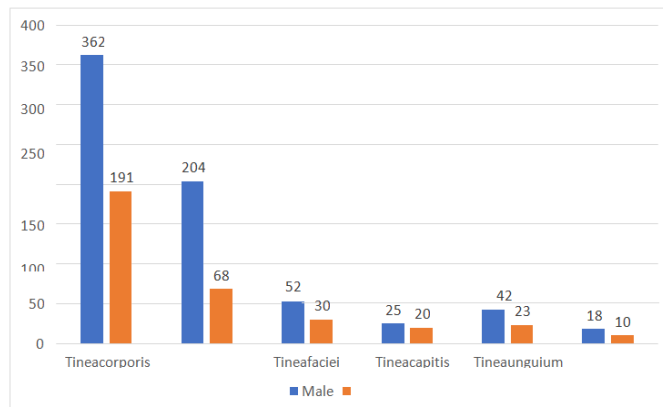
## RESULT

In our study, total of 1045 cases between 0-80 years of age were evaluated over a period of one year. The maximum number of cases was seen in the age group of 31-40 years (36.84%), followed by age group of 21-30 years (22.97%). The youngest patient was 15 months old, and the oldest was 76 years old.

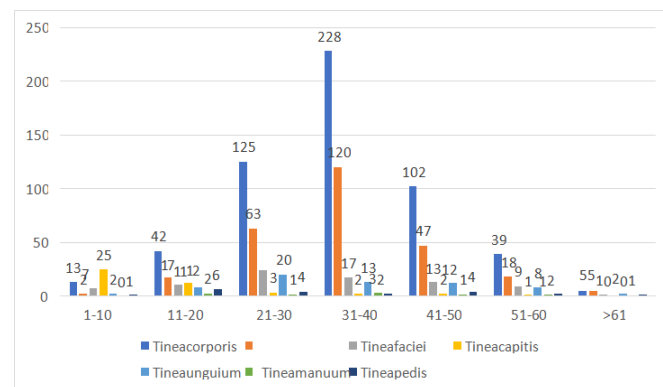
Males were more commonly affected than females, accounting for 683cases (65.35%), and female patients were 362(34.65%), so male to female ratio was 1.9:1. Most of the patients belonged to low socio economic status (33.11%) and sub urban areas (49.92% males and 48.62% females). In our study, Dermatophyte infections were more common in manual workers (labour/farmers) and field workers (24.12%). Family history of dermatophytoses present in 334 (31.96%) cases. A total of 428 cases (40.95%) had history of recurrence. Tineacorporis was found as the commonest clinical presentation (52.91%), followed by Tineacurris (26.02%).

KOH wet mount direct microscopy examination showed 71.87 % samples were positive while 61.82 % samples were culture positive in this study. In culture positive samples,

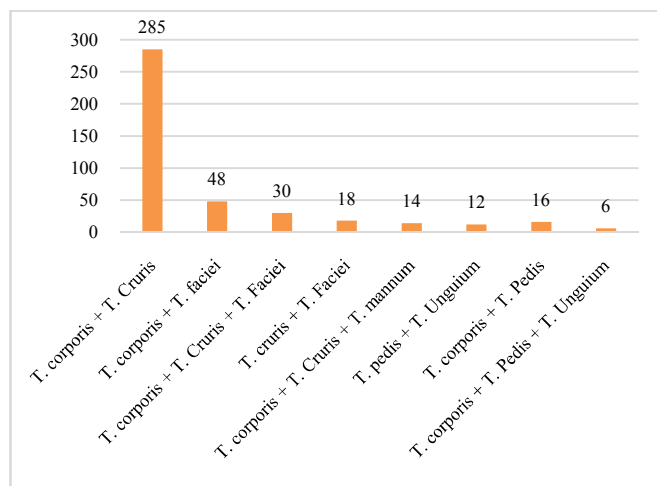
Trichophytonrubrum was the most common isolated species observed. The frequency of steroid abuse was found in 658 patients (62.97%), in which topical abuse seen in 427cases (64.89%), oral 111 cases (16.86%) and injectables 120 cases (18.24%).



Above table showing sex distribution in relation to clinical types.



In the above table, Age wise distribution in relation to various clinical types of dermatophytoses was given. Most common age group involved was between 31-40 years with most common clinical type Tineacorporis.



In the above table distribution of mixed dermatophytoses was given. Tineacorporis with Tineacurris was the most common mixed dermatophytoses observed.

## DISCUSSION

Dermatophyte infections are very common globally. All races are usually affected and the clinical presentations and prevalen

certainly depend on environmental factors and lifestyle. India is a tropical country, and its climate is very favorable for dermatophytoses. Estimation of the prevalence of dermatophyte infections and their various clinical presentations help in early diagnosis and treatment of dermatophyte infections.

In our study maximum number of cases were seen in the age group of 31-40 years (36.84%), followed by age group of 21-30 years (22.97%).

Similarly Sudha M *et al*,<sup>8</sup> in their study reported that dermatophytoses, most commonly involved 31-40 years of age group. Venkatesh *et al*<sup>9</sup> observed most of the patients were in the age group of 21-30 years (37.4%), followed by 31-40 years age group.

In our study, males were more commonly affected than females, accounting for 683 cases (65.35%), and female patients were 362 (34.65%). So in our study, male-to-female ratio is 1.9:1. Tonita MNoronha *et al*<sup>10</sup> also reported male predominance (Male to female ratio was 1.63:1). It may be due to more exposure of male.

In the present study, Tinea corporis was found as the commonest clinical presentation (52.91%), followed by Tinea cruris (26.02%). Pankaj Saxena *et al*<sup>11</sup> and Suruchibhagra *et al*<sup>12</sup> also reported that the Tinea corporis was the most common clinical type observed. Most common mixed dermatophytoses observed in our study was Tinea corporis with Tinea cruris. Dammu and Saileela *et al*<sup>13</sup> also reported the same combination.

In the present study, during evaluation of the socio-economic status (KSES) distribution, we found that lower class accounted for most of the cases -346 (33.11%), followed by upper lower class with 324 cases accounting for 31.01% of study population. Clarissa J. Lyngdoh *et al*<sup>14</sup>, Lavanya V *et al*<sup>15</sup>, in various studies stated that there was significant relationship of the socio-economic status and dermatophyte infection, lower the socio-economic status, higher is the incidence. It could be due to poor hygienic practices, poverty, lack of selfcare, living in crowded place and their social belief of seeking nonmedical advices.

In our study, most of the patients belonged to sub-urban area and infection were more common in manual workers (24.12%). Ujjwal Kumar *et al*<sup>16</sup> reported that the dermatophyte infections were more common in Rural population and in manual workers (20.1%). It might be due to non availability of medical practitioners, wrong medications by quacks in their vicinity and also due to heavy manual work which leads to more sweating.

In our study, family history of dermatophytoses present in 334 cases (31.96%), probably due to direct physical contact and fomites due to sharing of beds, soaps, towels and clothings among family members. Verma S *et al*<sup>17</sup> in their study also reported family history of superficial dermatophytoses. Ujjwal Kumar *et al* in their study reported 41.6% of family history of superficial dermatophytoses. Ankita Tuknayat *et al*<sup>18</sup> conducted a study on 113 families, which included 673 subjects, reported that 55.5% study population were affected by dermatophytoses. In our study, out of total 1045 study population 428 (40.95%) cases had history of recurrence. Rekha Sharma *et al*<sup>19</sup> conducted a study in a tertiary health care centre in Sikkim, reported around 64.4% of patients gave

a history of similar illness, single or multiple episodes, within last two year. Ujjwalkumar *et al* also found recurrence of 37.5% in their study. Such *et al* Pathania *et al*<sup>20</sup> conducted a study in a tertiary care hospital in India reported, out of total 1600 patients with dermatophyte infection, 150 (9.3%) had are current disease.

In our study, the frequency of steroid abuse was found in 658 patients (62.97%), in which topical abuse seen in 427 cases (64.89%), oral 111 cases (16.86%) and injectables 120 cases (18.24%). FDC (Fixed Drug Combination) containing topical steroids, antifungal, antibacterial are easily available over the counter, which are cheaper than other standard topical antifungal creams. Patients keep using these medication without seeking proper medical advice for months and sometime even for years, which results in chronic and recurrent course of the disease, and also leads to atypical modified presentation of dermatophyte infection.

Typical classical presentation of tinea is an annular plaque with raised margin and central clearing with superficial scaling as fungus invades stratum corneum centrifugally and host inflammatory response is present on advancing border of lesion. This pattern was observed in 37.03% patients in our study. Non classical morphological presentation collectively outnumbered classical presentation in our study which leads to difficulty in diagnosis. Use of steroids/FDC and longer duration of the disease could be factors for this findings. Most common side effect of topical steroids observed was fixed erythema and most common side effect of injectable steroid was cushingoid features. Bansal Charu *et al*<sup>21</sup> in their study reported that out of 200 patients of dermatophytoses, 120 patients (60%) had used steroid formulations, either topical (80%), oral (12.5%) or injectables (7.5%). Nayankumar H Patel *et al*<sup>22</sup> in their study found, out of total 203 patients, 178 patients (87.68%) had history of previous treatment, out of 178 patients, 131 (64.5%) had history of using steroid either as monotherapy or in topical fixed drug combination with topical antibacterial and antifungal.

## CONCLUSION

In the present study Tinea corporis was the most common clinical type observed in both male and female population. Prevalence of dermatophytoses was commonly seen in males of suburban and rural regions belonging to low socio-economic class and farmers or manual labourers by occupation.

The role of over crowding, poverty, low level of health education, poor personal hygiene are the most important factors responsible which can be controlled easily by public awareness, proper sanitation, and providing better health facilities.

The present study gives an insight about the burden (prevalence) of different types of dermatophytoses in this part of India, which could help in the estimation of the problem and hence in the prevention of spread of dermatophytoses with adequate control measures. Moreover, awareness of the preventive measures regarding public health and maintenance of personal hygiene could reduce the incidence of dermatophytoses and hence the burden of this disease in the community.

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### How to cite this article:

Sudha Chaudhary *et al* (2022) 'A Clinico epidemiological Study of Current Trend of Dermatophytoses', *International Journal of Current Advanced Research*, 11(05), pp. 900-903. DOI: <http://dx.doi.org/10.24327/ijcar.2022.903.0205>

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