

## Evaluation of Clinico Epidemiological Profile of Dermatophyte Infections in Children in a Tertiary Care Teaching Hospital

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### Abstract:

**Background:** Dermatophytes are parasitic fungi that infest the skin and cause infections of the skin, hair and nails because of their ability to obtain nutrients from keratinized material. **Subjects and Methods:** This present study was conducted in the Department of Dermatology, Jawaharlal Nehru Medical College and Hospital, Bhagalpur, Bihar. Total of 267 children visiting the hospital with skin conditions, 56 were diagnosed with superficial dermatophyte infection. **Results:** Tinea cruris was observed most common dermatophyte condition in boys whereas Tinea unguium was predominant in girls. Tinea cruris infections were common in age group 8-11 years. This study shows that most dermatophyte infections were prevalent in age group of 8-11 years. **Conclusion:** Tinea cruris was observed most common dermatophyte condition in male children whereas Tinea unguium was predominant in female children.

**Keywords:** Dermatophyte, Cutaneous, Tinea cruris and Tinea unguium.

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### Introduction

The cutaneous mycoses, mainly caused by dermatophyte fungi, are among the most common fungal infections worldwide, affecting several age groups and adversely affecting the quality of life of infected patients.[1] It is estimated that superficial fungal infections affect roughly 20-25% of the world population.[2] Dermatophytes are parasitic fungi that infest the skin and cause infections of the skin, hair and nails because of their ability to obtain nutrients from keratinized material. These organisms colonize the keratin tissues and in response to their metabolic byproducts, host experiences inflammatory reactions.[3] The organisms belong to 3 genera, Trichophyton, Epidermophyton and Microsporum. Dermatophytes may be grouped into 3 categories based on host preference and natural habitat. Anthropophilic species predominantly infect humans, Geophilic species are soil based and may infect both humans and animals, and Zoophilic species generally infect non-human mammals. [4] Traditionally infections caused by dermatophytes have been named according to the anatomical locations involved, by appending the Latin term designating the body site after the word Tinea.[5] Dermatophytosis is a major public health concern in the world today. Dermatophytosis is common in tropical countries like India and may reach epidemic proportion in areas with high rate of humidity, over population and poor hygienic conditions.[6] The disease is more frequent among men than woman. There are many causes that increase the prevalence of disease such as trauma, increased sweating and diabetes.[7] Aim of the study was to evaluate the clinico-epidemiological profile of dermatophyte infections in children in a Tertiary Care Teaching Hospital.

### Subjects and methods

This present study was conducted in the Department of Dermatology, Jawaharlal Nehru Medical College and Hospital, Bhagalpur, Bihar. This present study was conducted on 56 clinically suspected cases of dermatophytoses over 4 months from September to December 2019 after obtaining approval from the ethical committee of the institute. Patients under antifungal treatment for >4 weeks and non-dermatophytic fungal infections were excluded from the study. The written informed consent was taken from the subjects and from their parents. Relevant clinical history and detailed examination of the lesion was done. Samples were collected from affected lesions. Whenever the patients presented with lesions at clinically different sites samples were collected from all those sites and each of these were processed and examined individually. After cleaning the affected area with 70% ethanol, skin scrapings were taken with sterile scalpel from the active edge of the lesions. In case of nail infections, clippings and scrapings are taken from friable or discolored areas of hyperkeratotic nails. Hair clippings were taken in cases of scalp infection. Scrapings/clippings were sent to lab for easy visualization of specimens and processed for direct microscopy and culture techniques. The findings were noted in pretested semi-structured proforma. Data analysis was performed with Microsoft Excel. The statistical analysis was done using chi square test and p value of <0.05 was considered significant.

### Observations and results

This present study was conducted in the Department of Dermatology, Jawaharlal Nehru Medical College and Hospital, Bhagalpur, Bihar. Of the total 267 children visiting the hospital with skin conditions, 56 were diagnosed with superficial dermatophyte infection giving the prevalence rate of about 20.97%. Total of fifty-six, out of which 32(57.14%) were male children and 24(42.85%) were female children of age group 5-14 years. Most common age group in the study was 8-11 years. Tinea cruris was observed most common dermatophyte condition in boys whereas Tinea unguium was predominant in girls. Tinea cruris infections were common in age group 8-11 years. This study shows that most dermatophyte infections were prevalent in age group of 8-11 years.

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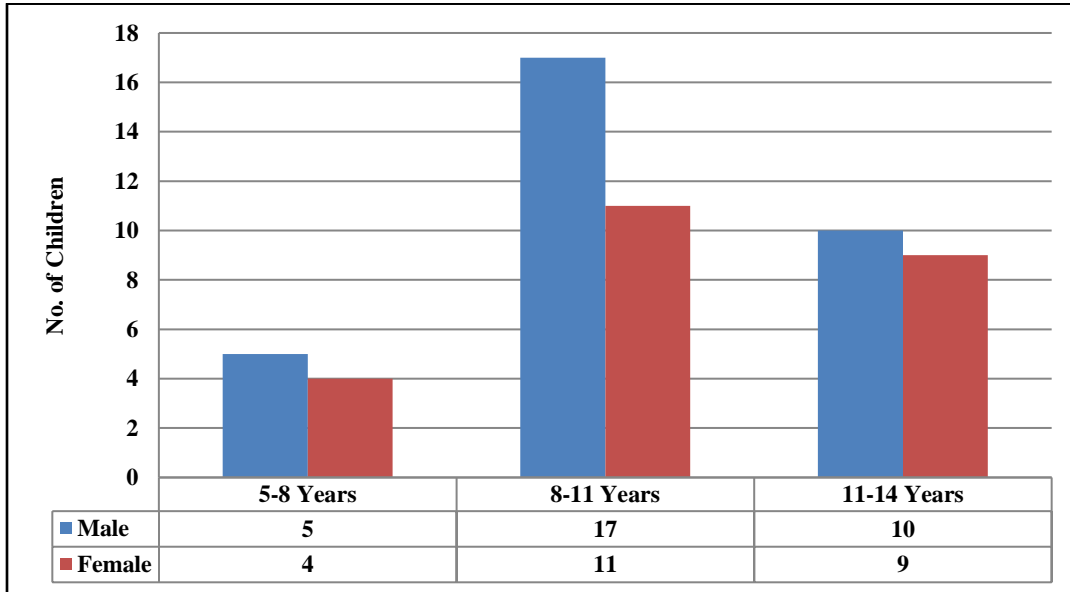
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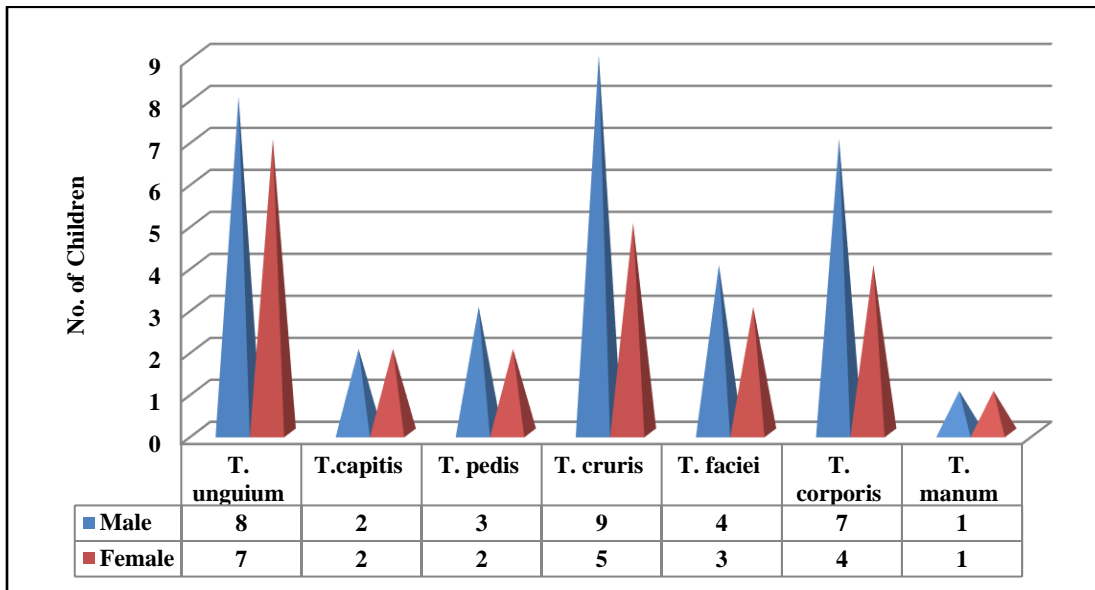
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**Table 1: Shows the distribution of Sex.**

Sex	No. of children (%)
Male	32 (57.14%)
Female	24 (42.85%)
<b>Total</b>	<b>56 (100.0%)</b>



**Fig 1: Shows the distribution of sex according to age group.**



**Fig 2: Shows the distribution of dermatophyte infections.**

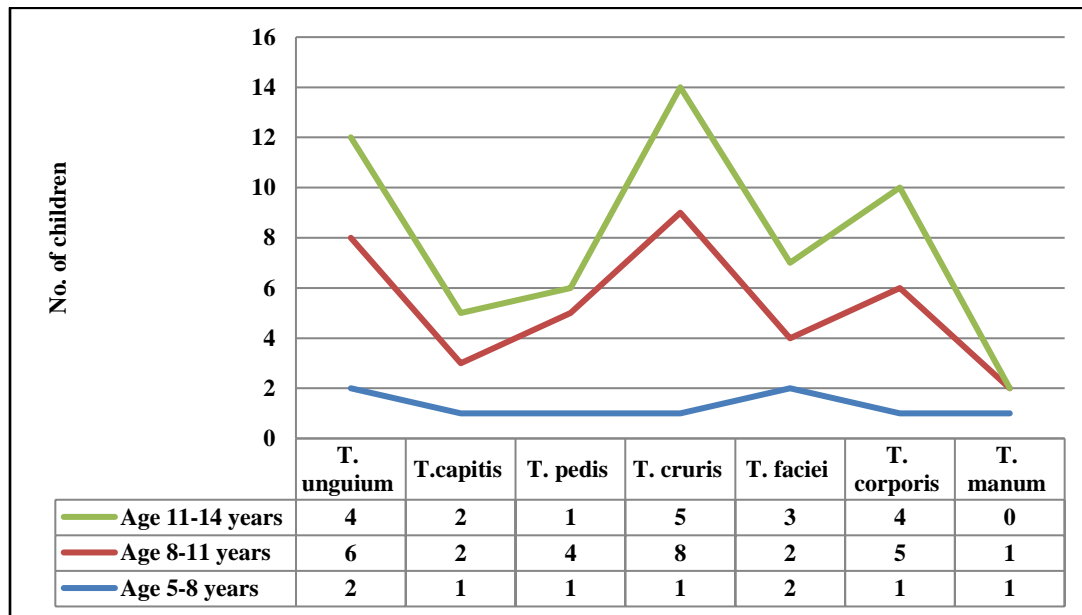


Fig 3: Shows the distribution of sample with respect to dermatophyte infections and age.

### Discussion

Fungal infections involving the skin can be either superficial or subcutaneous mycosis. Superficial mycoses are among the most frequent forms of human infections, affecting more than 20%–25% of the world's population.[8] Among all the superficial fungal infections, dermatophytic infections have the highest prevalence in the developing countries with significant associated morbidity. Dermatophytic infections are caused by the Trichophyton, Epidermophyton, and Microsporium species.[9] Superficial fungal infections can be caused by dermatophytes as described above and nondermatophytes such as cutaneous candidiasis, pityriasis versicolor, tinea nigra, and black and white piedra.[10] Tinea infections classically present as annular plaques or patches with raised erythematous borders often associated with central clearing. The lesions may also be associated with inflammatory papules and pustules. Dermatophytes parasitize keratin rich tissues and produce dermal inflammatory response. This leads to redness, intense itching/burning in turn causes cosmetically poor appearance.[11] The severity of the infection depends on various factors like immune reactions of the host to the fungal metabolic products, virulence of infecting strain, anatomical location of the infection and environmental factors.[12] Among 56 clinically diagnosed cases of dermatophytosis, tinea unguium was the most common clinical types in female children whereas Tinea cruris was observed most common dermatophyte condition in male children. Tinea cruris infections were common in age group 8-11 years. This study shows that most dermatophyte infections were prevalent in the age group of 8-11 years. A study conducted by Hosthota A et al reveals that Tinea cruris was the commonest clinical type (50%) followed by Tinea corporis (18.4%) and Tinea unguium(11.9%). Trichophytonrubrum was the aetiological agent isolated in majority(33%), followed by Trichophytonmentagrophytes (20%).[13] Results of study conducted by Chaudhary et al shows that males were 88% more prone to dermatophytoses than females in total positive case. Tinea cruris was the most common clinical presentation and Trichophytonrubrum was the most common fungal pathogen isolated from clinical samples. This study analyzed the Dermatophytic infections are prevalent throughout the world—due to a lack of education or resources for diagnosis and became a larger threat.[14] Similar study conducted by

Gupta CM et al concluded that Tinea unguium (52.0%) was predominant clinical condition. Males were affected more (79.0%) than females. Dermatophytosis was predominantly found in more than 60 years (32.0%) and 31-45 years (24.0%). Fungi were demonstrated in 55.0% cases by KOH mount and 46.0% cases were positive by culture. 16.0% cases were KOH negative and culture positive. Trichophyton rubrum (41.0%) was the predominant species.[15] Thus these findings underline the realization that education on approach to the management of dermatophyte infection is lacking, especially in the periphery. This further, raises the bar on us dermatologists to take extra steps to communicate, educate and counsel each patient of tinea that crosses our doors about the importance of compliance with therapy as well other environmental measures and to spread the message across in the community as well.

### Conclusion

These findings suggest that the tinea cruris was observed most common dermatophyte condition in male children whereas Tinea unguium was predominant in female children. Tinea cruris infections were common in age group 8-11 years. This study shows that most dermatophyte infections were prevalent in age group of 8-11 years. There are several risk factors which can cause dermatophytoses. Poor hygiene and topical steroid usage were the major risk factors which was responsible for spreading dermatophytoses. People should be educated regarding personal hygiene and sanitary control to reduce the risk of dermatophytoses.

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