Original Research Article

# Study of sociodemographic and clinical factors affecting duration of stay of Child and Adolescent patients admitted in Child and Adolescents Psychiatry unit of a tertiary care center in India.

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**Abstract**

**Background** :Need is to identify psychiatric illnesses at the earliest and to effectively manage them not only because they have significant impact on the long term development of the child or adolescent but also because first onset of mental disorders usually occurs before 18 years of age. Child and adolescent specialized psychiatric units are now gradually on increase improving quality of care particularly inpatient care. The present study gains insight about inpatient admissions (Hospitalization) of children and adolescents i.e. factors affecting duration of stay in inpatient wards.**Methods** :Our sample included past treatment record of all patients who were treated as inpatients in childhood and adolescent unit. We carried out a retrospective search of past records for socio demographic profile, diagnosis, mode of discharge, Duration of stay, Family History of psychiatric illness and CGAS scores at the time of admission of admitted from the July 2017 to June 2018.**Results:** Mean age of subjects was 14.2 years. 56.9% were male, rest were female. 84.7% children were from Hindu families. Most of the patients (70.8%) were from rural background. Bipolar affective disorder (27.5%) was found the most common diagnosis in childhood and adolescent unit. Only factor found to be significantly associated with duration was CGAS score at the time of admission.**Conclusion** :Level of functioning at the time of admission may significantly predict duration of admission in psychiatric ward which may help clinician to effectively plan management although it needs to be individualized in hospitalized child and adolescents

**Keywords:** Child and adolescent, inpatient, duration of stay



## Introduction

Superficial fungal infections are the most common skin diseases affecting millions of people throughout the world. The majority of these infections are caused by dermatophytes[1].

Dermatophytes are a group of closely related keratinophilic fungi, all of which produce keratinase that can invade the stratum corneum of skin or other keratinized tissues derived from epidermis such as hair and nails[2,3].Dermatophytosis is an infection produced by a dermatophytic fungus in the keratinized tissues - hair, nails and stratum corneum of skin [1]. Dermatophytosis is generally called "tinea" or "ringworm". Tinea is a Latin word for 'larva of small insect'. The common clinical term given to dermatophytosis is designated by appending Latin word to an anatomical site at which infection is present to the term tinea[4].Trichophyton rubrumand Trichophytontonsurans are two common dermatophytes. T. rubrum are found in face, trunk, beard area, nails, feet and groin area infection. T.tonsuransare found in endothrix and black dot infection. These two species are usually transmitted from person to person.

Another common dermatophyte is Microsporumcanis, which is transmitted from animals such as cats and dogs to humans [5,6]. Dermatophytes like to live on moist areas of the skin, such as places where there are skin folds. The dermatophyte infection that affects the scalp and hair is known as tineacapitis. It is especially common among school-aged children.For reasons that are not well understood, tineacapitis does not usually occur after puberty. In recent times few cases of subcutaneous and deep fungal infections have been reported to be caused by dermatophytes. It has been noted that dermatophyte infections are more common in adolescents and adults[7].There is scanty of data about the prevalence of dermatophytes in North Indian Population, hence, the present study was planned to study the prevalence of dermatophytes infection in different patients and to find the etiological agents of dermatophytes.

**Materials and Method**

This prospective study was conducted at Department of Microbiology at Patna Medical College and Hospital, Patna. The study was approved by the institutional ethical and research committee. The study was conducted from September 2020 to May 2021. An informed and written consent was taken from all the participating subjects prior to the commencement of the study.The Study was conducted on the patients attending dermatology OPD of our institution. The study samples consisted of skin scrapping, nail, hair and hair roots received to the laboratory. Identification & isolation of Dermatophytes specimens on the basis of KOH preparation, SDA and DTM.

**Statistical analysis**

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Descriptive statistics were analysed and presented. The Chi-square test was used for comparisons. The predictive values of KOH such as sensitivity, specificity, positive & negative predictive vales (PPV &NPV) and accuracy was calculated. Analysis was carried out on SPSS 16.0 version (Chicago, Inc., USA).

**Results**

More than one third of the patients were between 21- 30 (37.9%) years followed by ≤20 (21.2%), 31-40 (18.9%), 41-50 (12.7%), 51-60 (6.8%) and >60 (2.5%) years. Majority of the patients were males (81.4%). More than one third of the patients were manual worker (40.1%). More than half of the patients belonged to lower middle class (52%) [Table 1].

**Table 1: Distribution of demographic profile of patients.**

| Demographic profile | No. (n=354) | % |
|---|---|---|
| **Age in years** | | |
| ≤20 | 75 | 21.2 |
| 21-30 | 134 | 37.9 |
| 31-40 | 67 | 18.9 |
| 41-50 | 45 | 12.7 |
| 51-60 | 24 | 6.8 |
| >60 | 9 | 2.5 |
| Mean ± SD (Range) | 31.97 ± 12.92 (19-75) | |
| **Gender** | | |
| Male | 288 | 81.4 |
| Female | 66 | 18.6 |
| **Occupation** | | |
| Manual worker | 142 | 40.1 |
| House wife | 41 | 11.6 |
| Student | 112 | 31.6 |
| Professional | 26 | 7.3 |
| Others | 33 | 9.3 |
| **Socio-economic status (SES)** | | |
| Lower class | 122 | 34.5 |
| Lower middle class | 184 | 52.0 |
| Middle class | 39 | 11.0 |
| Upper middle class | 9 | 2.5 |

Groin lesion was in 59.6% and abdomen was in 9.6% [Table 2].

**Table 2: Distribution of patients according to type of lesion.**

| Type of lesion | No. (n=354) | % |
|---|---|---|
| Groin lesion | 211 | 59.6 |
| Back | 5 | 1.4 |
| Finger | 6 | 1.7 |
| Thumb | 5 | 1.4 |
| Abdomen | 34 | 9.6 |
| Legs | 40 | 11.3 |
| Hands | 44 | 12.4 |
| Scalp | 3 | 0.8 |
| Generalized | 24 | 6.8 |

Majority of the specimen were from skin (96%) followed by nail (3.1%) and hair (0.9%) [Figure 1].

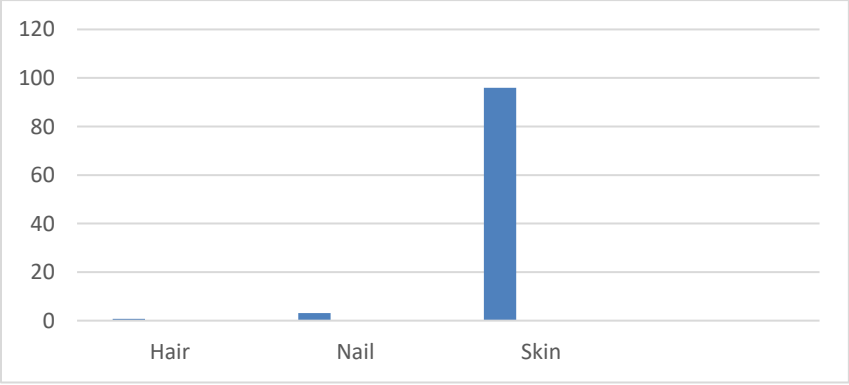


**Fig 1:Distribution of patients according to site of specimen**

The Dermatophytoses infection was found to be 78.8% (279/354) [Figure 2].

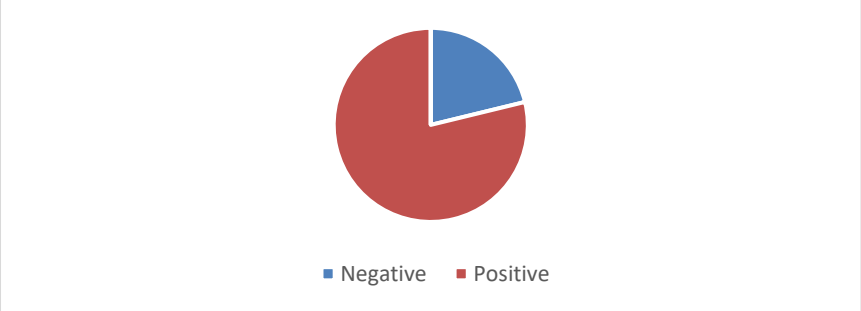


**Fig 2:Distribution of patients according to Dermatophytoses infection**

Dermatophytoses infection was found to be higher in the age group of 41-50 years (84.4%) and was least in the age group of >60 (55.6%). The difference was found to be statistically insignificant (p>0.05). Dermatophytoses infection was found to be higher in males (79.9%) than females (74.2%). The difference was found to be statistically insignificant (p>0.05). Dermatophytoses infection was found to be insignificantly (p>0.05) higher among middle class (87.2%) than lower class (79.5%), lower middle class (77.2%) and upper middle class (66.7%). Dermatophytoses infection was found to be insignificantly (p>0.05) higher among manual worker (81.7%) than house wife (80.5%), professional (76.9%), student (76.8%) and others (72.7%). The Dermatophytoses infection was found to be higher in skin sample (79.7%) than nail (63.5%) and hair (33.3%. The difference was found to be statistically insignificant (p>0.05) [Table 3].

**Table 3: Dermatophytoses infection according to demographic profile**

| Demographic profile | No. of patients | With Dermatophytoses | | Without Dermatophytoses | | p-value1 |
|---|---|---|---|---|---|---|
| | | No. | % | No. | % | |
| **Age in years** | | | | | | |
| ≤20 | 75 | 60 | 80.0 | 15 | 20.0 | 0.54 |
| 21-30 | 134 | 105 | 78.4 | 29 | 21.6 | |
| 31-40 | 67 | 53 | 79.1 | 14 | 20.9 | |
| 41-50 | 45 | 38 | 84.4 | 7 | 15.6 | |
| 51-60 | 24 | 18 | 75.0 | 6 | 25.0 | |
| >60 | 9 | 5 | 55.6 | 4 | 44.4 | |
| **Gender** | | | | | | |
| Male | 288 | 230 | 79.9 | 58 | 20.1 | 0.31 |
| Female | 66 | 49 | 74.2 | 17 | 25.8 | |
| **SES** | | | | | | |
| Lower class | 122 | 97 | 79.5 | 25 | 20.5 | |
| Lower middle class | 184 | 142 | 77.2 | 42 | 22.8 | |
| Middle class | 39 | 34 | 87.2 | 5 | 12.8 | 0.43 |
| Upper middle class | 9 | 6 | 66.7 | 3 | 33.3 | |
| **Occupation** | | | | | | |
| Manual worker | 142 | 116 | 81.7 | 26 | 18.3 | |
| House wife | 41 | 33 | 80.5 | 8 | 19.5 | |
| Student | 112 | 86 | 76.8 | 26 | 23.2 | 0.76 |
| Professional | 26 | 20 | 76.9 | 6 | 23.1 | |
| Others | 33 | 24 | 72.7 | 9 | 27.3 | |
| **Type of specimen** | | | | | | |
| Hair | 3 | 1 | 33.3 | 2 | 66.7 | |
| Nail | 11 | 7 | 63.6 | 4 | 36.4 | 0.06 |
| Skin | 340 | 271 | 79.7 | 69 | 20.3 | |

SDA and DTM were positive in 79.7% [Table 4]. Trichophyton Rubrum (57.4%) was found to be most common organism and Trichophyton Mentagrophytes (24.1%) was the second most common organism. The percentage of other organism was less than 10% [Table 5].

**Table 4: Distribution of patients according to culture**

| Culture | No. (n=354) | % |
|---|---|---|
| **Sabourauds's Dextrose Agar (SDA)** | | |
| Positive | 282 | 79.7 |
| Negative | 72 | 20.3 |
| **Dermetophyte Test Medium (DTM)** | | |
| Positive | 282 | 79.7 |
| Negative | 72 | 20.3 |

**Table 5: Distribution of patients according to isolates**

| Organism | No. (n=282) | % |
|---|---|---|
| Epidermophyton Floccosum | 16 | 5.7 |
| Microsporumaudouini | 6 | 2.1 |
| Microsporumcanis | 6 | 2.1 |
| Microsporumgypseum | 9 | 3.2 |
| TrichophytonMentagrophytes | 68 | 24.1 |
| TrichophytonRubrum | 162 | 57.4 |
| TrichophytonSchaenleinni | 1 | 0.4 |
| TrichophytonTonsurans | 12 | 4.3 |
| TrichophytonViolaceum | 2 | 0.7 |

The sensitivity of KOH was 84.4% and specificity was 43.1% with PPV being 85.3%. In 67.2% specimens, both DTM and KOH were found to be positive [Table 5].

**Table 5: Predictive value of KOH test**

| | | DTM test | | |
|---|---|---|---|---|
| | | **Positive** | **Negative** | **Total** |
| KOH test | Positive | 238 (67.2%) | 41(11.6%) | 279 (78.8%) |
| | Negative | 44 (12.4%) | 31 (8.8%) | 75 (21.2%) |
| | Total | 282 (79.7%) | 72 (20.3%) | 354 (100%) |
| Sensitivity | 84.4 | | | |
| Specificity | 43.1 | | | |
| PPV | 85.3 | | | |
| NPV | 41.3 | | | |
| Accuracy | 76.0 | | | |

**Discussion**

Dermatophytoses are superficial infections of keratinised tissue, the skin, hair and nails, caused by dermatophytes. The prevalence of dermatophytosis is determined by environmental conditions, personal hygiene and individuals susceptibility. The variation in clinical presentation is related to the species of the fungus, size of the inoculum, the involved sites, and the immune status of the host. The higher incidence of superficial mycoses is seen in month of July to September due to rainy season & humid atmosphere which is also correlating well with other studies[8-10].In the present study, 354 clinically suspected cases of dermatophytoses attending Skin and Venereal disease outpatient Department of our institute were studied. In the present study, most common age group affected was 41-50 years with 84.4% followed by ≤20 years (80%), 31-40 years (79.1%). Overall, most of the cases of dermatophytoses are in 21-60 years age group while it is least common at extremes of age.

Most of the studies from different parts of India reported commonest age group affected to be 21-30 years[11-15].The present study was correlated with other studies done by Patwardhan and Dave (1999) Aurangabad, Peerapur et al. (2004) at Bijapur, Sen and Rasul. (2006) at Assam, Kumar et al. (2014) at Mangalore, Najotra et al. (2015) at Jammu and Kashmir.

High infection of dermatophytosis in this age group (21-60 years) might be due to increased physical activity, high chances of exposure and hormonal factors. In the present study, males (79.9%) were more affected than females (74.2%). Male to female ratio was 4.7:1. The higher percentage of males might be due to that females are much lower enrolled in this study.

The present study was correlated with studies done by Sen et al (2006) at Assam, Bindu et al (2002) at Calicut, Patwardhan et al. (1999) Aurangabad, Singh and Beena (2003) at Baroda all of which reported male preponderance.

Male preponderance might be due to more involvement of them in physical and outdoor activities thereby increasing their chance of exposure[16-18]. Male: Female ratio of 4.7:1 (higher as compared to other studies), may be due to increasing involvement of females now a days in outdoor activities and increasing health awareness among them.In the present study, Dermatophytoses infection was found to be insignificantly (p>0.05) higher among middle class (87.2%) than lower class (79.5%), lower middle class (77.2%) and upper middle class (66.7%). This was in agreement to the study done by Sarada et al (2015) at Vijayawada which states that 73.6% cases are from low socio-economic status[18]This may be due to poor hygienic conditions, overcrowding, sharing of linen, towels etc., poor nutrition. These all factors are frequently associated with lower economic classes of society[19].Dermatophytoses infection was found to be insignificantly (p>0.05) higher among manual worker (81.7%) than house wife (80.5%), professional (76.9%), student (76.8%) and others (72.7%). This was in agreement to the study done by Veer et al. (2007). This may be due to more involvement of manual workers in physical activities and thereby increased chance of exposure (Chander, 2009).

Direct microscopy, although false negative in 5 to 15% of cases in ordinary practice (Rippon, 1988), is a highly efficient screening technique. Scrapings and hairs may be mounted for direct examination in 25% KOH or NaOH mixed with 5% glycerol, heated (e.g., for 1 h at 51 to 548C) to emulsify lipids, and examined under 3400 magnification for fungal structures. Another formulation is 20% KOH–36% dimethyl sulfoxide ((Rippon, 1988)), and two techniques for fluorescence microscopy, the calcofluor white technique and the Congo red technique, may be used[21-25].

In the present study, out of 354 clinically suspected cases of dermatophytoses, fungal elements was demonstrated in 67.2% were positive by both microscopy and DTH, 11.6% were positive by microscopy but were negative by DTH, 12.4 cases were negative by microscopy but DTH positive, 8.8% were negative both by microscopy and DTH. This was comparable with the other studies done by Singh et al (2003) Baroda, Yadav et al. (2013), Navi Mumbai[23]

Considering DTH as gold standard sensitivity of KOH was found to be 84.4% and specificity was 43.1%, Positive predictive value (PPV) was 85.3% and Negative predictive value (NPV) was 41.3%. Sensitivity of direct microscopy was comparable to the study done by Gupta et al (2014). In this study, as sensitivity of direct microscopy was high it appears to be good screening test for diagnosing and starting early treatment in suspected cases of dermatophytoses as DTH report often take time.

Culture is generally considered gold standard for diagnosis of dermatophytoses. But culture also have draw back of high false negativity as suggested by various[24,25].This high false negativity can be due to presence of nonviable hyphae in specimens, insufficient and improper collection of specimen. But as all the sample collection was done by me, last two variables insufficient and improper collection of specimen was largely addressed in this study.

In the present study, TrichophytonRubrum (57.4%) was found to be most common organism and TrichophytonMentagrophytes (24.1%) was the second most common organism. The percentage of other organism was less than 10%. This was comparable to the findings of studies done by Najotra et al. (2015) at J&K (T. rubrum: 41.8%, T. mentagrophytes: 22.4%), Ranganathan et al. (1995) at Madras (T. rubrum: 52.2%, T. mentagrophytes: 29.35%)

In contrast, Karmakar et al. (1995) Rajasthan reported T. violaceum (55.76%) as most common isolate followed by T. rubrum (42.3%). Bhatia and Sharma (2014) at Himachal Pradesh reported T. mentagrophytes (63.5%) as most common isolate followed by T. rubrum (34.6%)[26,27]

This shows wide variation in isolation of various dermatophyte species across different geographical area.

**Conclusion**

Dermatophytoses are quite common in India because of hot and humid climate along with poor hygienic conditions, both playing important role in the growth of these fungi. There is varying difference in isolation of different species of dermatophytes from different regions of India.

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