



## A STUDY ON DRUG PRESCRIBING PATTERN OF ANTIFUNGALS IN PAEDIATRIC POPULATION IN DERMATOLOGY DEPARTMENT OF A GOVERNMENT TERTIARY CARE HOSPITAL MANDYA

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### ABSTRACT

**Background:** Childhood dermatological problems contribute about one-third of all consultations in the setting of both paediatrics and dermatology outpatient services. Skin disorders in children may cause anxiety to parents. The pattern of skin diseases varies from one country to another and across different parts within the same country. A proper treatment is essential for cure and control of these diseases. The aim of the study was to find the pattern of fungal diseases in Mandya district of Karnataka and common group of drugs prescribed for them. **Objective:** To describe the antifungal drugs prescribed to paediatrics in dermatology department of MIMS, Mandya. **Methods and Methodology:** It was a record based cross sectional study. The research period was about 6 months. The relevant data was collected from OPD prescriptions by taking photographs of the prescriptions and details were filled in the predesigned proforma. **Results:** 250 prescriptions were analysed; 52 prescriptions were of fungal infection. There were a greater number of males (61.53%) than females (38.46%). The maximum numbers of patients were found in the age group of Children (1-12years). Most frequently prescribed anti-fungal agents were the azoles; amongst which most commonly prescribed individual antifungal was topical Luliconazole (25.4%). Most common cases reported were Tinea corporis (17.6%) **Conclusion:** Almost all the drugs prescribed as oral formulation were present in the WHO Essential list, India 2019. Whereas some topical formulations prescribed were not present in the WHO Essential list. Prescriptions encountered with injection were 0. This is a very encouraging sign. Therefore, regular educational interventions like sensitization on pharmacovigilance by the pharmacology department in the medical college may further promote rational prescription.

**KEYWORDS:** Dermatology, Prescribing pattern, Antifungal, Paediatric dermatology.

### INTRODUCTION

Skin is the largest organ of the human body with a total area of about 20 square feet thus it is exposed to injury by various extrinsic factors such as environmental, chemical and infectious agents, as well as intrinsic factors such as metabolic, genetic and immunological so it is said metaphorically as a mirror to various internal diseases.<sup>[1]</sup> In developing countries like India, skin diseases have a more significant impact on the quality of life of people; due to the wide variation of climate, religion, and socioeconomic status in different parts of the country.<sup>[2]</sup>

Fungal infection of the skin and nail are the most common global problems. Children are most commonly

affected due to predisposing factors such as overcrowding in schools and low socioeconomic factors.<sup>[3]</sup> Childhood dermatological conditions are more common it contribute about one-third of all consultation in paediatrics and dermatology outpatient service.<sup>[4]</sup> The occurrence of the fungal infection is increasing and this presenting an enormous challenge to health care professionals.<sup>[5]</sup>

The superficial fungal infections are caused by dermatophytes (such as tinea capitis, tinea faciei, tinea corporis, tinea unguium, tinea manuum, and tinea pedis) and nondermatophytes such as pityriasis versicolor, cutaneous candidiasis, tinea nigra, black piedra, and white piedra.<sup>[5]</sup> Tinea capitis is the most common

superficial fungal infection in children.<sup>[6]</sup> The antifungal agent used for the treatment of fungal infection in paediatrics are terbinafine, ketoconazole, itraconazole and fluconazole.<sup>[7]</sup>

According to WHO the rational use of drugs helps in developing standard treatment guidelines, preventing inappropriate drug use, adoption of essential list of drugs, and determining irrational prescription.<sup>[8]</sup> The study of prescription pattern is a component of medical audit that helps prescribers to provide rational and cost effective medical care which will be beneficial to patients.<sup>[9]</sup>

The main aim of this study is to determine the pattern of dermatological diseases in the locality and to study the prescription pattern of antifungal in this institution. The data regarding pattern of drug used in India, particularly in dermatology departments are very limited. This prescription pattern of antifungal study provides an insight to the prescriber regarding various issues related to polypharmacy, cost analysis and prevalent disease pattern in the region.

## MATERIALS AND METHODS

**Study Design:** Record Based Cross Sectional study

**Study Period:** 6 months after getting approval. (4 months of data collection and 2 months for analysis & write up)

**Study Population:** Outpatients of Paediatrics coming to Dermatology Department, MIMS. Mandya

**Sampling Method:** Convenience sampling

### Inclusion Criteria

1. Prescriptions of Paediatric patients coming to Dermatology Department, MIMS. Mandya.
2. Patients below the 18years.

**Exclusion Criteria:** Patients aged above 18years

**Method of Data Collection (study tools):** Data was collected from prescriptions of Paediatrics patients coming to Dermatology Department, MIMS. Mandya.

**Analysis:** Descriptive statistical analysis has been carried out in the present study. Simple percentage calculation was conducted to arrive at the conclusion of our study. Data was entered in Microsoft Excel and word. This has been used to generate graphs, tables, etc.

## RESULTS AND DISCUSSION

### Patient Distribution Based On Gender

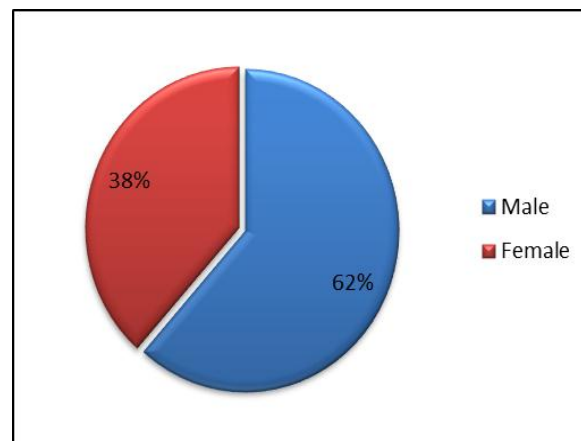
The result of this study shows that out of 250 prescription studies 52 prescriptions were of fungal infection. Data was collected from the outpatient department of Dermatology MIMS, Mandya.

Figure 1 shows the percentage of patients in each sex groups. Out of 52 prescriptions, 32 (61.53%) were of males and 20 (38.46%) of females. There was high

percentage of males than females and the male to female ratio of our study was 1.6.

**Table 1: Patients distribution based on Gender (n=52).**

|        | Characteristics | Frequency (n=52) | Percentage (%) |
|--------|-----------------|------------------|----------------|
| Gender | Male            | 32               | 61.53          |
|        | Female          | 20               | 38.46          |



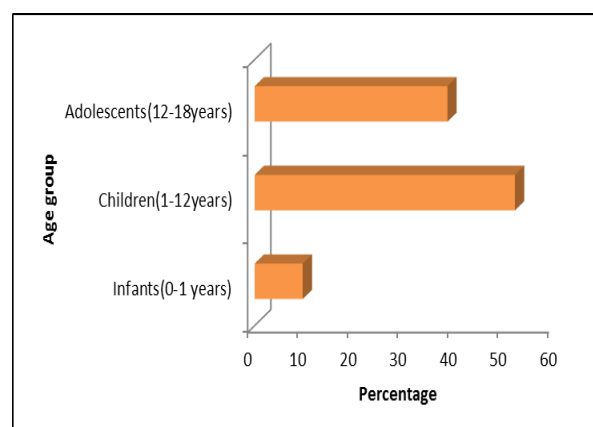
**Figure 1: Patients distribution based on Gender.**

### Patient Distribution Based On Age

During whole study period, the maximum number of patients were found in the age group of Children(1-12years) followed by Adolescents(12-18years) and the minimum number of patients were found in the age group of infants (1month to 1 year) that visited to the OPD. This shows that the Children in the age group 12-18years are more prone to fungal infection.

**Table 2: Patients distribution based on the Age.**

|                         | Number of patients | Percentage of patients (%) |
|-------------------------|--------------------|----------------------------|
| Infants(0-1 years)      | 05                 | 9.61                       |
| Children(1-12years)     | 27                 | 51.92                      |
| Adolescents(12-18years) | 20                 | 38.46                      |



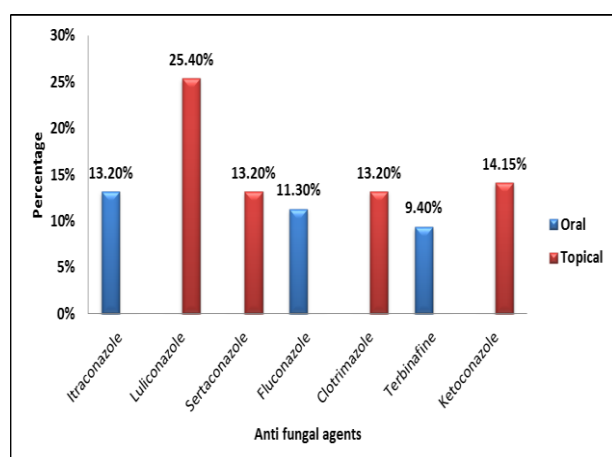
**Figure 2: Patients distribution based on the Age.**

### Antifungal Drugs Found Among The Prescription

Most frequently prescribed anti-fungal agents were the azoles; amongst which most commonly prescribed individual antifungal was Topical Luliconazole (25.4%) followed by Ketoconazole (14.15%), Sertaconazole, Clotrimazole, Itraconazole (13.2%) and the least prescribed antifungal is oral Terbinafine (9.4%).

**Table 3: Antifungal drugs found among the prescription.**

| Sl. no | Antifungal agents | Number of prescription | Percentage (%) |
|--------|-------------------|------------------------|----------------|
| 1      | Itraconazole      | 14                     | 13.2           |
| 2      | Luliconazole      | 27                     | 25.4           |
| 3      | Sertaconazole     | 14                     | 13.2           |
| 4      | Fluconazole       | 12                     | 11.3           |
| 5      | Clotrimazole      | 14                     | 13.2           |
| 6      | Terbinafine       | 10                     | 09.4           |
| 7      | Ketoconazole      | 15                     | 14.15          |



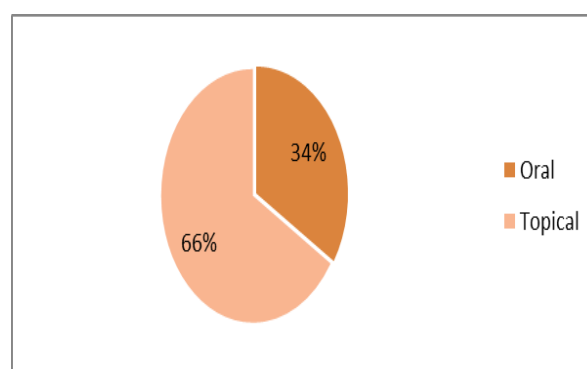
**Figure 3: Antifungal drugs found among the prescription.**

### DOSAGE FORMS OF THE DRUGS

Among the 106 antifungal agents 36 drugs are prescribed oral route of drug administer and the remaining 70 drugs are prescribed topical route of administration. In this oral route of drug administer most commonly prescribed oral antifungal agent is Itraconazole followed by Fluconazole and Terbinafine. In the topical route of drug administration the frequently used drug is Luliconazole followed by Sertaconazole, Clotrimazole and Ketoconazole.

**Table 4: Dosage forms of the drugs.**

| Sl. no | Dosage forms | Total number of drugs | Percentage (%) |
|--------|--------------|-----------------------|----------------|
| 1      | Oral         | 36                    | 33.96          |
| 2      | Topical      | 70                    | 66.03          |



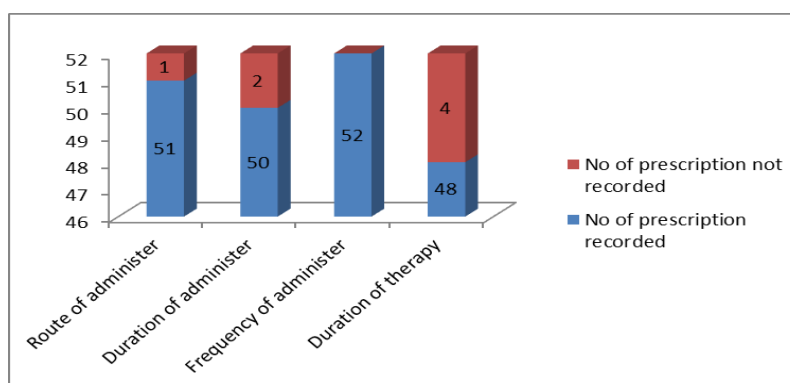
**Figure 4: Dosage forms of the drugs.**

### Apropriateness of Prescription

In our study it is heartening to note that more than 98 percentage of medicines recorded route of administration, dose, frequency of administration and duration of treatment. This positive observation would be a sign of good prescribing patterns in this dermatology outpatient department.

**Table 5: Apropriateness of prescription.**

| Sl. no | Parameter               | No of prescription recorded | No of prescription not recorded |
|--------|-------------------------|-----------------------------|---------------------------------|
| 1      | Route of administer     | 51                          | 1                               |
| 2      | Duration of administer  | 50                          | 2                               |
| 3      | Frequency of administer | 52                          | 0                               |
| 4      | Duration of therapy     | 48                          | 4                               |



**Figure 5: Appropriateness of prescription.**

### Detail on Prescribing Indicators

Regarding WHO specified drug use indicators as shown in Table 6. Out of 250 prescriptions, 52 were of antifungal. The other commonly co-prescribed drugs were antihistamines, topical steroids and vitamins. Average number of drugs prescribed per encounter is

2.58. Average number of antifungal prescribed per encounter is 2.03. Average number of oral antifungal drugs prescribed per encounter is 0.6. Percentages of encounters with injections were 0%. Percentages of drugs prescribed from WHO-EML were 37.73%.

**Table 6: WHO prescribing indicators.**

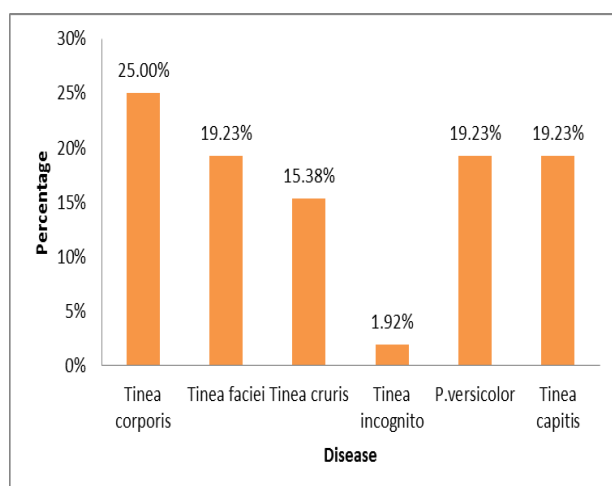
| Sl. no | Indicators                                                          | Average |
|--------|---------------------------------------------------------------------|---------|
| 01     | Number of drugs prescribed per encounter                            | 2.58    |
| 02     | Average number of antifungal prescribed per encounter               | 2.03    |
| 03     | Average number of Oral antifungal drugs prescribed per encounter    | 0.6     |
| 04     | Average number of topical antifungal drugs prescribed per encounter | 1.46    |
| 05     | Percentage of encounters with injections                            | 0%      |
| 06     | Percentage of drugs prescribed from WHO EML                         | 37.73%  |

### Fungal Disease Distrubution Among The Study Group

A total of 5 different fungal diseases were observed in the current study during analysis of 52 prescriptions. Most common cases reported were Tinea corporis (17.6%), Tinea faciei(17.2%), P.versicolor(19.23%) followed by Tinea cruris (16.4%), Tinea incognito (6.8%).

**Table 7: Fungal disease distributions among the study group.**

| Sl. no | Disease         | Number of patients | Percentage (%) |
|--------|-----------------|--------------------|----------------|
| 01     | Tinea corporis  | 13                 | 25.0           |
| 02     | Tinea capitis   | 10                 | 19.23          |
| 02     | Tinea faciei    | 10                 | 19.23          |
| 03     | Tinea cruris    | 8                  | 15.38          |
| 04     | Tinea incognito | 1                  | 01.92          |
| 05     | P.versicolor    | 10                 | 19.23          |



**Figure 6: fungal disease distributions among the study group.**

### DISCUSSION

In the present study, even though the sample size was not very large, it gave a cross-section of patients and the diseases for which they reported for treatment. The

disease profile described in this study corresponds well with the health statistics from the Indian dermatology department (fungi infection, dermatitis) accounting for most morbidity reported from the dermatology outpatient department. The number of male patients was more than females and the ratio was more than that expected from the sex ratio of other studies. It is important to choose the right medicine(s) for a patient and in an appropriate manner in order to achieve the best results of medicine therapy. In our study it is heartening to note that more than 90 percentage of medicines, recorded route of administration, dose, frequency of administration and duration of treatment. This positive observation would be a sign of good prescribing patterns in this dermatology outpatient department. The irrational use of drugs is a common occurrence throughout the world. Average number of drugs per prescription is an important index of prescription audit. In our study the mean number of drugs per prescription was found to be 2.03.

Total number of males and females among all patients were 32 (61.53%) and 20 (38.46%) respectively. The findings were similar to the study conducted by Rajathilagam T. which showed 61% of the patients were men and 39% were women.<sup>[10]</sup>

As per table 2, Out of total enrolled patients with fungal infections of skin, most common age group (51.92%) was Children (1-12years). According to study conducted by Özçelik S et al 12 to 16 was the most common age group.<sup>[11]</sup>

This study showed that Itraconazole (48.8%) was the most commonly prescribed oral antifungal. Rajathilagam conducted a study also demonstrated that fluconazole was the most commonly used oral antifungal agent.<sup>[10]</sup>

A total of 5 different fungal disease were observed in the current study during analysis of 52 prescriptions. Most common cases reported were Tinea corporis (17.6%), Tinea faciei(17.2%), P.versicolor(19.23%) followed by Tinea cruris (16.4%), Tinea incognito (6.8%). Mrutunjay Dash et al, also demonstrated that Most (102 [51.51%]) of the patients belonged to 11–15 years age group with

tinea cruris (99 [50%]) and tinea corporis (94 [47.47%]) type of pattern being the most common.<sup>[12]</sup>

## CONCLUSION

Almost all the drugs prescribed as oral formulation were present in the WHO Essential list, India 2019. Whereas some topical formulations prescribed were not present in the WHO Essential list. Prescriptions encountered with injection were only 0. This is a very encouraging sign. Therefore, regular educational interventions like sensitization on pharmacovigilance by the pharmacology department in the medical college may further promote rational prescription.

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