

Original Research Article

DERMATOPHYTOSIS: AN EPIDEMIOLOGICAL STUDY IN A TERTIARY CARE CENTER IN RURAL SINDH

ABSTRACT:

AIMS AND OBJECTS: Dermatophytosis are common infection worldwide, and a public health issue. Hot, humid climates and overcrowding favors the spread of skin infection in general populations. The purpose of study to analyze the prevalence of disease in patients attending outpatient department of dermatology PUMHS Nawabshah. **METHODOLOGY:** The study type is cross-sectional, conducted at departments of Dermatology and Pathology, Peoples University of Medical and Health Sciences, Nawabshah, for 3 months, (June 2020 to August 2020). Total of 93 cases were included. Skin scraping, nail clippings, hair fragments and scalp, samples were obtained from patients attending Outpatient department. By using 10% potassium hydroxide (KOH) on glass slide with sample and passing over the flame 2-3 times. After confirmation, the samples were streaked on the sterilized Sabouraud dextrose agar medium containing antibiotic, Petri plates were incubated at 25-28 °C for two weeks, all cases were directed towards microscopic examination and biochemical tests, and results were entered into SPSS20 analyzed and tabulated. **RESULT:** Out of 93 suspects 84 (90.3%) samples were positive for fungal infection, and among them 68 (73.1%) cases gave positive growth, Male predominance is noticed with 60%. Tinea corporis 45.6% is the most common infection and T. unguis is least common 1.5%. The adult age group 20-40yrs were more affected followed by middle aged age group.

CONCLUSION: Dermatophytosis is common in younger and adult age group, but it is prevalent in our general population irrespective of age and gender.

KEY WORDS: Dermatophytosis, scraping, clipping, Sabouraud, agar, T. corporis, streaked.

INTRODUCTION:

Dermatophytosis is a universal concern with increasing prevalence in developing world, especially tropical countries^{1,2}. Dermatophytes are group of fungi that infect keratinized tissues of human and animals². They produce keratinase enzymes that help the fungi to invade and digest keratin³. Superficial mycoses are the frequent forms of human infections frequent form of infection of skin, hair and nails, affecting about 20–25% of the world's population⁴. The data recorded from the world shows great geographic variation in distribution, incidence, epidemiology, and target hosts. The key factors involved in these variations are geographic location, climate (temperature, humidity, wind, etc.), overcrowding, health care, immigration, environmental hygiene culture, and socioeconomic conditions^{4,5}. Studies reveals that in developed world, due to improved social, economic, health care, and hygiene practice factors, the prevalence of dermatophytosis has significantly reducing^{4,6}. The current study was designed to determine the prevalence of dermatophytosis and spectrum of fungal species in patients attending a tertiary care hospital in rural Sindh.

METHODOLOGY:

This cross-sectional work was conducted in the departments of Dermatology and Pathology, Peoples University of Medical and Health Sciences, Nawabshah, from July 2020 to June 2021. Based on clinical presentation and physical examination, a total of 93 cases were included in the study regardless of age and sex. Skin scraping, nail clippings, hair fragments and scalp were collected from patients with suspected fungal infections. All samples were obtained from patients attending Dermatology

Outpatient's department. For the identification of fungal infection 10% potassium hydroxide (KOH) solution was used for the direct examination of samples for the presence of stained refractile fungal elements. A small portion of sample was put on clean glass slide with a drop or two of KOH solution and passing over the flame 2-3 times. Once, the specimen was confirmed with the presence of fungal elements, the samples were streaked on the sterilized Sabouraud dextrose agar medium containing antibacterial streptomycin 100 µg/L. Petri plates were incubated at 25-28 °C for two weeks, and results were tabulated.

RESULTS:

In current study, we screened 93 clinically suspected cases of fungal infection, out of which 84 (90.3%) samples were declared positive for fungal infection when examined under microscope using KOH preparation. All the 93 suspected cases were inoculated on Sabouraud dextrose agar and 68 (73.1%) cases gave positive results, which were finally included in the study, comprising of 41 males and 27 females. The age of patients were ranged between 3-68 years with a mean of 32± 13.7. Male are affected more 60% and female were 40%. *Tineacorporis* 45.6% is the most common infection found in our study while *T. unguium* is least common 1.5%. The most common age group involved were adult age group 20-40 years followed by middle aged 41-60 years of age group. Children and above 60 years were affected less.

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- Comment [u3]: Did the study include children participants?

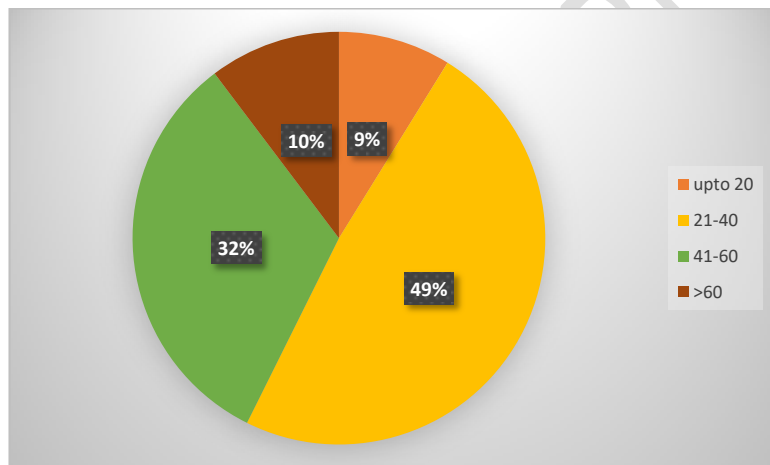


Figure-1. Dermatophytosis in different age groups

| S.N O | Age Group (years) | Number of Cases (%) | | | | | | | | | | | | Total |
|----------|-----------------------------|---------------------|--------|-------------|--------|------------|--------|--------------|--------|---------------|--------|------|--------|-------|
| | | Tineacorporis | | Tineacapiti | | Tineapedis | | Tinea cruris | | Tinea unguium | | Male | Female | |
| | | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female | | | |
| 01 | Upto 20 | 02 | 00 | 03 | 01 | 00 | 00 | 00 | 00 | 00 | 00 | 05 | 01 | 06 |
| 02 | 21-40 | 06 | 07 | 09 | 06 | 02 | 01 | 01 | 01 | 00 | 00 | 18 | 15 | 33 |
| 03 | 41-60 | 08 | 05 | 04 | 03 | 01 | 01 | 00 | 00 | 00 | 00 | 13 | 09 | 22 |

| | | | | | | | | | | | | | | |
|----|-------------|----------|----|----------|----|---------|----|---------|----|---------|----|----------|----|----|
| 04 | >60 | 02 | 01 | 00 | 01 | 01 | 00 | 01 | 00 | 01 | 00 | 05 | 02 | 07 |
| 05 | Total | 18 | 13 | 16 | 11 | 04 | 02 | 02 | 01 | 01 | 00 | 41 | 27 | 68 |
| 06 | Grand Total | 31 (46%) | | 27 (40%) | | 06 (9%) | | 03 (4%) | | 01 (1%) | | 68 (100) | | |

TABLE NO: 01. Number of cases of different Dermatophytes in different age groups

DISCUSSION:

Dermatophytes is a group of keratinolytic fungi causing infection in humans by invading and destroying keratinized tissue of skin, hair, and nails. They are also referred as ring worms defined to the nonliving cornified layers because of the inability of the fungi to penetrate the deeper tissues or organs of immune-competent hosts.^{7,8,9}

Dermatophytosis or also called as Tinea infections is a global health issue, In the tropical areas as the presence of atmospheric higher peaks of humidity, overcrowding, and poor sanitation increases its prevalence in these areas of globe.⁷

One of the dermatophytosis is Ringworm infection and is known to affect approximately 20–25% of the global population and 30 to 70% of adults are asymptomatic carriers of these diseases.¹⁰

In this study of dermatophytosis prevalence, the affected males were slightly higher 60% than females 40%, the same results were seen in Iceland¹¹, and Egypt¹², while some female predominance 76.3% were noticed in Ethiopia¹³, and in another study in India¹⁴ with 64% female and 34% male respectively.

The different prevalence in gender may be the by progesterone hormone as it is thought to play an important role in preventing dermatophyte multiplication in vitro¹⁵.

The most common age group affected were adults 20-40 years of age, same results were observed by Haroon S¹⁶. Disease is more common in children seen by Bakhtawar U¹⁷, result of Bakhtawar U¹⁷ and Alshehri⁷ are contradicted with our results.

The most prevalent infective agent seen is in our study is Tineacorporis 46% , In the years 1974-78 series, Tineacorporis was present in 69% of infections in Srilanka¹⁸, same results were seen in Iran¹⁹ 69.2%, and Libya²⁰ while the distinct results 10.8%, and 21.4% were seen in Ethiopia¹³ and Saudi Arabia⁸ respectively.

Tinea capitis in our study is 40%, in Ethiopia¹³ it is 20%, and 22.3% were seen Saudi arabia⁸ 22.3%. Another study conducted in Pakistan showed that T. capitis was 22%¹⁷. During 1993 a study showed that T. capitis was seen in 47.7% cases in Saudi Arabia²¹. In our study T.capitis is 2nd most common infection but another study carried out at central region of Saudi Arabia by Abnami²² showed that T.capitis is most prevalent infestation. In Kuwait²³ the most common organisms were T. capitis 76%. These variation are the results of different climate factors in those areas.

We confirm 9% cases of Tineapedis, the results from Ethiopia¹³ 4.9% were close to our results, another study from Iran by Rashdian¹⁹ showed T. pedis were 3.8%, and 17% were observed in Saudi Arabia⁸. However, another study revealed Tineacapitis and Tineapedis to be the most common, and Tineacorporis as the least common in the central (Riyadh) region of Saudi Arabia by Abnami²². Same pattern were observed in Iran by Rezaei²⁴, they stated that Tineapedis were seen (43.4%). Tineapedis 59.3% was the most frequent clinic form of dermatophytosis in Turkey, by Selma M.²⁵ Tinea cruris is 4% seen in our study, same results were observed in Saudi Arabia⁸, which were 4.5%, in Ethiopia¹³ 1.3%. Prevalence in Iran¹⁹ was detected slightly higher 15.4% than our study but it is the 2nd most common disease in that study, while another study of Iran²⁴ the prevalence was 20.7% by Rezaei²⁴.

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We isolate *Tinea unguium* 1% in our study, in Ehtiopia¹³; it was the most common (51.1%) clinical manifestation, in Saudi Arabia 17.9%⁸ and in India²⁶ *Tinea unguium* were 27.85%.

Conclusion:

In current study we found that the dermatophytosis is more prevalent in males in comparison to females in all types of dermatophytes. It affects all age groups but more common in 20-40 years age group. *Tinea corporis* was identified as the most prevalent clinical presentation followed by *Tinea capitis*, *Tinea pedis*, *Tinea cruris*, and *Tinea unguium*.

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