

Prevalence of Tinea Capitis Among School Children in Obaku, Mbaitoli Local Government Area, Imo State, Nigeria

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ABSTRACT

The prevalence of *Tinea capitis* among selected primary schools in Ogbaku community, Mbaitoli L.G.A, Imo state was carried out in May, 2017. One hundred and eighty (180) primary school children through random sampling of assenting volunteers attending primary school were recruited into the study. A questionnaire was administered through interview to obtain demographic information. Physical examinations and laboratory culture of hair stubs/scrapings from scalps was done using standard mycology techniques. The overall prevalence was found to be 30%. The dermatophytes isolated were, *Microsporum audonii* (66%), *Trycophyton mentangrophyte* (27%) and *Microsporum canis* (7%) with *M. audonii* having the highest prevalence. Females showed a higher prevalence (63%) than males ($P<0.05$) whereas school children within the age range 11-13 years had the highest prevalence 26(47.27%) followed by those in the age range 8-10 years 42(27.59%) and 5-7 years 12(17.91%). This study has highlighted the need to monitor the practices of barbers and hairstylists and to create awareness among caregivers /school children on hygiene.

Key words: *Tinea Capitis*, School Childen, Imo State

INTRODUCTION

Dermatophytosis refers to mycotic infections caused by a group of Fungi that possess the propensity to colonize and infect superficial layers of the skin, hair or nails (Guerrant *et al.*, 2011). This group of Fungi that invade keratinized tissue associated with the stratum corneum of the skin, hair and nails on the living host are called Dermatophytes (Guerrant *et al.*, 2011). Dermatophytosis is caused by a group of fungi with predilection to colonize and infect stratum corneum of the skin, hair and nails on the living host. Such fungi referred to as dermatophytes include members of the genera *Epidermophyton*, *Microsporum*, and *Trichophyton* (Guerrant *et al.*, 2011).

Dermatophytosis has a worldwide distribution but is endemic to tropical regions as the growth of dermatophytes is facilitated by the warm and moist conditions (Prescott *et al.*, 2002; Higgins *et al.*, 2000). Apart from climate, the variability in distribution of dermatophytes worldwide is attributed to other factors such as population migration patterns, lifestyle, primary host range, secondary host immunity, presence of immunodeficiency diseases, and patients attitude to prompt treatment following clinical presentation and standard of living (Sheikh, 2009; Guerrant *et al.*, 2011).

Depending on the body site affected, Dermatophytosis may result in different clinical syndromes such as *Tinea capitis* (hair shaft and scalp), *Tinea corporis*(body), *Tinea cruris* (groin), *Tinea pedis* (foot), and *Tinea unguium* (hand). *Tinea capitis* is an infection of the scalp and hair shaft caused by several species of *Trichophyton* and *Microsporum* (Bennassar and Ramon, 2010; Balci *et al.*, 2014; Anyanlowo *et al.*, 2014). It is the most common dermatophytosis in children aged between Six months and prepubertal age (Anyalowow *et al.*, 2014; Feuilhade and Lacroix, 2001; Mane *et al.*, 2013). *Tinea capitis* is reported more in males than in females within prepubertal age (Sidat *et al.*, 2007; Balci *et al.*, 2014).

Tinea capitis is quite common in Africa and its prevalence among children is 14 – 86% (Guerrant *et al.* 2011). Africa being among the settings mostly affected, the rates of *Tinea* infection ranges between 10 and 30% among school-aged children (Chepchirchir *et al.*, 2009). Although *Tinea capitis*, like other Dermatophytes, is of Public Health importance, it is not a notifiable disease and as a result, little is known on its prevalence in many endemic areas (Sidat *et al.*, 2007; Ameh and Okolo, 2004). Despite the elusive reports, studies which have been carried out in different parts of Nigeria have proven that causative agents of *Tinea capitis* vary from one location to another.

METHODOLOGY

Study area

The study was carried out in the month of May, 2017 in Ogbaku Community, Mbaitoli L.G.A of Imo State which is located on the South-Eastern part of Nigeria on Longitude 5.5569°N and Latitude 6.9511°N in the Tropical Rain Forest region. The temperature range is between 35°C to 32°C. It is bordered by Abia State on the East, Rivers, Niger and Delta State by the West. Ogbaku is a town made up of Eighteen (18) villages in Mbaitoli Local Government Area of Imo State, South Eastern Nigeria. The community is situated along Onitsha-Owerri road, about 12Km to the city of Owerri. The area has a population density of 198,736 (NPC, 2006) while most of the people are farmers, traders and civil servants.

Advocacy, mobilization and pre-survey contacts

With a letter of introduction, consent was sought from the heads of the primary schools in the community. A proposal entailing the details of the methods and purpose of study was submitted to the school management for approval. The study was cleared by the Parents and Teachers Association (PTA). Assent was obtained from the school children for physical examination of the head region.

Study population

A total of 180 pupils, 60 from each school within the age range 5-13 years were randomly selected and physically examined. Those presenting with signs of *Tinea capitis* were separated and scrapings from sites were collected for laboratory confirmation. Questionnaires were administered in an interview to obtain information on socio demographic characteristics (age, class, guardian/parents occupation and levels of education, number of children in the family).

Each child was examined in a well lit room and the scalp was examined for scaly grey patches, lusterless hair strands, and purulent lesions (Akinboro *et al.*, 2011). The site of infection was cleaned with 70% alcohol and followed by the collection of scaly scrapings from actively growing margins of the lesions using sterile scalpel blades. The samples were transported to the laboratory for culture and identification.

The scalp scrapings were cultured on Sabouraud's dextrose agar plates with 0.05g Chloramphenicol and 5% NaCl (Weizman and Summerbell, 1995). The media were prepared according to the manufacturers' instructions and followed by the addition of Sodium Chloride and 0.05g Chloramphenicol as described by Weizman and Summerbell (David *et al.*, 2007).

The samples were inoculated onto the prepared medium and incubated for 3-4 weeks at room temperature and examined for growth weekly. A thin preparation of the fungal culture was made with a drop of Lacto phenol Cotton Blue solution on a glass slide, covered with a cover slip and observed under a microscope. Dermatophytes were identified based on macroscopic (growth characteristics and pigmentation) and microscopic morphology (formation of macro conidia and micro conidia or other elements) as described by David *et al.*, (David *et al.*, 2007).

All the data gathered were analyzed using frequency distribution table and expressed as simple percentages.

RESULTS

The result showed that out of 180 pupils screened, 54 were positive for *Tinea capitis* making a prevalence of 30.0% (Figure 1).

The age related prevalence showed that the age range 11-13 years had the highest prevalence 26(47.27%) followed by the age range 8-10 years with a prevalence of 42(27.59%). The age range 5-7 had the least prevalence 12(17.91%). (Table 1).

The sex related prevalence showed females 100(63.0%) had a higher prevalence than males 80(37.0%). (Figure 2).

Laboratory data showed that three dermatophytes were encountered of which *Microsporum audouinii* 101(66.0%) had the highest prevalence followed by *Microsporum canis* 42(27.0%) and *Trichophyton mentagrophyte* 10(7.0%). (Figure 3).

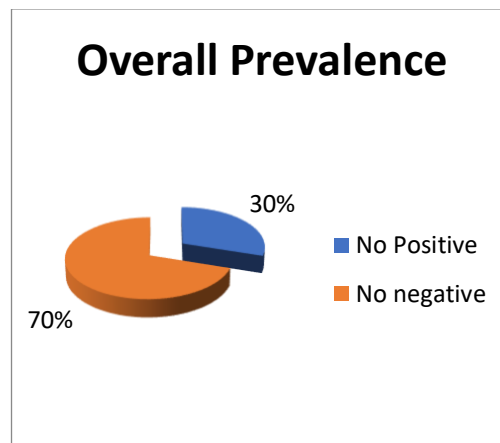


Figure 1: Overall Prevalence of *Tinea capitis* among school children in the study area

Table 1: Age related prevalence of *Tinea Capitis* in the study area

Age Range(Years)	No Examined	No positive	No Negative	Prevalence (%)
5-7	67	12	55	17.91
8-10	58	16	42	27.59
11-13	55	26	29	47.27
Total	180	54	126	30.00

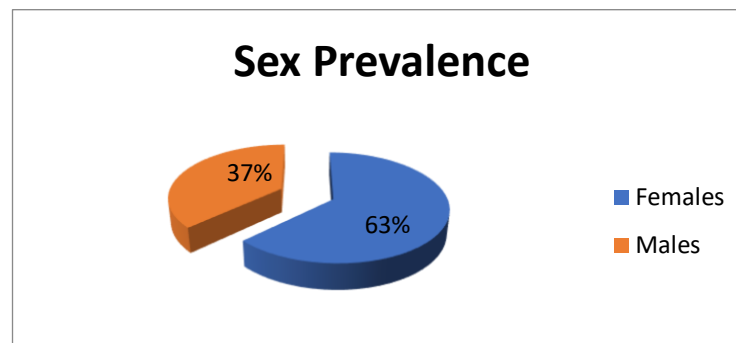


Figure 2: Sex Related prevalence of *Tinea capitis* in the study area

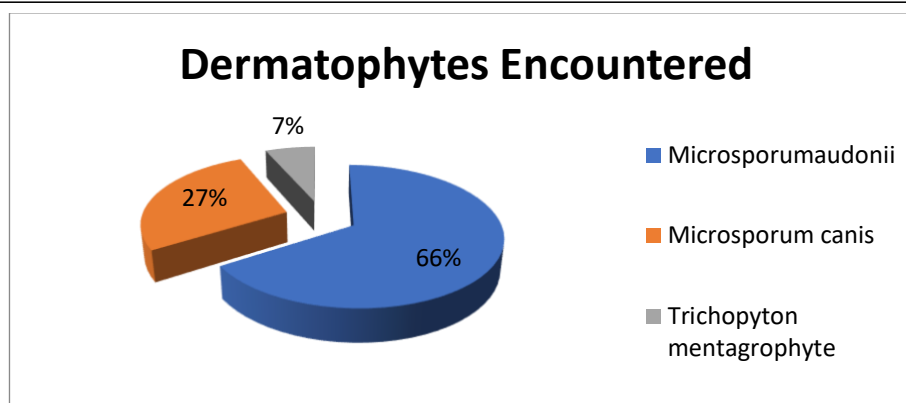


Figure 3: Distribution of the Dermatophytes encountered in the study area

DISCUSSION

This present study assessed the prevalence of *Tinea capitis* among school children in Ogbaku Community, Mbaitoli L.G.A of Imo State. The study recorded *Tinea capitis* prevalence of 30% in the study area which is below the prevalence of 53% obtained in a study by Akinboro *et.al*, 2011 in Osogbo, Southwestern Nigeria (Akinboro *et.al*, 2011). However, the prevalence of this study was higher than those obtained in other studies: 9.5% for a study carried out on 2150 Quranic scholars in Kano State, 15.4% for a study on 604 children in a rural settlement in Southwestern Nigeria, and 9.4% for a study in Anambra State involving 47723 children (Adeleke *et.al*, 2008; Emele and Oyeka, 2008; Ayanlowo *et.al*, 2014). A number of factors may be attributed to the varying prevalence and frequency of *Tinea capitis* in different parts of Nigeria as well as other countries (Ahmed *et.al*, 2006). These include population growth, close contact among infected children at home and school, and poor personal hygiene (Moto *et.al*, 2015).

With respect to gender, prevalence was higher among females than males (63%: 37%), as also recorded from the findings of some previous studies that reported higher infections among females in Nigeria and Egypt (Omar, 2000, Anosike *et.al*, 2005). This could be attributed to the fact that most females carry longer and most times, braided hair which are not washed regularly unlike males that wash their hair daily during baths. In addition to this, hair beauty salons could be a possible focal point for Transmission of *Tinea capitis* among women through combs and other fomites.

School children in the age range 11-13 years recorded the highest prevalence (47%) followed by the age range 8-10 years (28%) and 5-7 years (18%). This maybe as a result of the active nature of older children; who play unsupervised and enjoy a higher degree of independence in personal grooming by caregivers.

The most prevalent Dermatophyte isolated was the anthropilic dermatophytes, *Microsporium audouinii*. Other dermatophytes isolated were *Microsporium canis* and *Trichophyton mentagrophyte*. *Microsporium audouinii* was the most prevalent dermatophyte isolated (66%) while *Microsporium canis* and *Trichophyton mentagrophyte* was (27%) and (7%) respectively. This result is in consonance with findings by Emele and Oyeka which reported *Microsporium audouinii* as the most prevalent dermatophytes following a study among school children in Anambra State, Nigeria (Emele and Oyeka, 2008). The dominance of anthropilic dermatophytes may reflect important risk factors involved in the spread of *Tinea capitis* in the

community such as direct contact with infected humans or indirect contact with infected fomites (Johnson, 2003). It was observed in the study that some school children with *Tinea capitis* were siblings and shared the same bed.

CONCLUSION

Tinea capitis had a prevalence of 30.0% among school children in Ogbaku Community, Mbaitoli L.G.A, Imo State, Nigeria. This study showed that the most prevalent causative agents of *Tinea capitis* in Ogbaku community are the anthropophilic dermatophytes, *Microsporum audouinii* (56.11%) followed by the zoophilic dermatophytes *Microsporum canis* (23.33%) and *Trichophyton mentagrophyte* (5.56%). This may be attributed to the socioeconomic status of parents, living and sanitary conditions. Hence, there is a need to create awareness on *Tinea* infections and preventive measures such as good personal hygiene and sanitary practice and prompt treatment. There is also a need to educate barbers and hair stylists on proper disinfection of fomites.

References

- Adeleke, S. I., B. Usman and G. Ihesiulor (2008): Dermatophytosis among Itinerant Quaranic Scholars in Kano (Northwest) Nigeria. *The Nigerian Medical Practitioner*. 53(3).
- Akinboro, O.A., Olayinka, A. Olasade and O. Onayemi (2011): The Pattern, Risk factors and Clinic-aetiological correlate of *Tinea capitis* among the Children in a Tropical Community Setting of Osogbo, South Western Nigeria. *AfroEgyptian Journal of Endemic Diseases*. 1(2):53-64.
- Anosike, J.C., I.R. Keke, J.C Uwaezuoke, J.C. Anozie, C.E Obiukwu, B.E.B. Nwoke and O. U. Amajuoyi (2005): Prevalence and distribution of Ringworm infection in Primary Schools in parts of Eastern Nigeria. *Journal of Applied Sciences and Environmental Management*. 9(3):21-25.
- Anyalowo, O.A., Akinkugbe, R., Oladele and M. Balogun (2014): Prevalence of *Tinea capitis* infection among Primary School Children in a Rural Setting in Southwest Nigeria. *Journal of Public Health in Africa*. 5(1):349.
- Amen, I.G and Okolo, R.U. (2004): Dermatophytoses among school children: Domestic Animals as Predisposing Factor in Sokoto, Nigeria. *Pakistan Journal of Biological Sciences*. 7: 1109-1112.
- Balci E., M. Gulgun, and O. Babacan (2014): Prevalence and Risk Factors of *Tinea capitis* in School Children in Turkey. *Journal of the Pakistan Medical Association*. 64(5):514-518.
- Bennassar, A and G. Ramon (2010): Management of *Tinea capitis* in Childhood. *Clinical, Cosmetic and Investigational Dermatology*. 3:89-98.
- Chechirchir, A., Bii, C. and Ndinya-achola J.O (2009): Dermatophyte Infections in Primary School Children in Kibera Slums of Nairobi Correlation. *International Journal of Dermatology*. 24(2):116-119.
- David, E., S. Davis, H. Alexiou, R. Handke and R. Bartley (2007): Description of Medical Fungi. The Authors. Mycology Unit, Women's and Children's Hospital. School of Molecular and Biomedical Science, University of Adelaide, Adelaide Australia.(2nd Edition).
- Emele, F.E and Oyeka, C.A (2008): *Tinea capitis* Among Primary School Children in Anabra State of Nigeria. *Mycoses*. 51(6):536-541.
- Feuilhade, M and C. Lacroix (2001): Epidemiology of *Tinea capitis*. *Pressed Medicals*. 3(1):499-504.
- Guerrant, R.L., D.H. Walker and P.F Weller (2011): Tropical Infectious Diseases: Principles, Pathogens and Practice. Elsevier Churchill Livingstone, Philadelphia, USA. 3rd Edition.
- Higgins, E. M., L.C. Fuller and C.H. Smith (2000): Guidelines for the Management of *Tinea capitis*. *British Journal of Dermatology*. 143(1):53-58.
- Johnson, L. (2003): Dermatophytes- The Skin Eaters. *Mycologist*. 17(4):147-149.

Mane, V., A.D. Urheka, S. Mali, N. Patil, S.A. Patil and K.G. Shit(2013): Tinea capitis infection in Children along with Tertiary Care Hospitals with Reference to in-vitro antifungal Susceptibility testing of Dermatophytes Isolate. *International Journal of Research and Reviews in Pharmacy and Applied Science*. 3:199-208.

Moto, J.N., J.M. Maingi and A.K. Nyamache(2015): Prevalence of Tinea capitis in School going Children from Mathare Informal Settlement in Nairobi, Kenya. *BMC Research Notes*. 8:274.

Nigeria Population Commission (2006): Report of Nigeria's National Population Commission.

Omar, A.A (2000): Ringworm of the Scalp in Primary School Children in Alexandria: infection and carriage. *Eastern Mediterranean Health Journal*. 6 (5-6):961-967.

Prescott, L.M., J.P. Harley and D.A. Klein (2002): *Microbiology*. McGrawHill New York, NY, USA. 5th Edition.

Sheikh, H.A (2009): Epidemiology of Dermatophytes in the Eastern Province of Saudi Arabia. *Research Journal of Microbiology*. 4(6):229-234.

Sidat, M.M., Correia, D. and Buene, T.P (2007): Tinea capitis among Children at one Suburban Primary School in the city of Maputo, Mozambique. *Revista de Sociedade Brasileira de Medicina Tropical*. 40:473-475.

Weitzman, I. and R.C. Summer bell (1995): The Dermatophytes. *Clinical Microbiology Reviews*. 8 (2):240-259.