World Journal of Medical Sciences 5 (1): 17-21, 2010
ISSN 1817-3055


# Barbing Saloon Associated Fungal Disease Infection in Mubi, Adamawa State-Nigeria

[1]D.L. David, [1]A. Edward, [2]M.Z. Zaruwa and [3]P.A. Addass

[1]Department of Biological Science, Adamawa State University, Mubi P.M.B. 25, Mubi, Nigeria
[2]Department of Chemistry Adamawa State University, Mubi P.M.B 25, Mubi, Nigeria
[3]Department Of Animal Production Adamawa State University, Mubi P.M.B 25, Mubi, Nigeria

**Abstract:** A survey of barbing saloons was carried out in Mubi (Latitude 10°15'N and Longitude 13°16'E of Greenwich Meridian) of Adamawa State. Swabs were made of all the main equipment (clippers, combs and scissors) used in the saloons and cultured in Saboraud's Dextrose Agar. (SDA) The results obtained showed the presence of *Microsporum audouinii* and *Candida albicans* on comb and scissors, while the clippers were free of any significant infectious dermatophytes. It was observed that, though some forms of sterilization is practiced in the saloon, not all the equipment are subjected to proper sterilization.

**Key words:** Fungal infectious · Barbing saloons · Combs · Scissors and clippers

## INTRODUCTION

The most common fungal disease infection in Nigeria which was found to be common among school children serviced by local barbers is *Tinea capitis* [1]. About 14.02% infection rate of *Tinea capitis* and *Microsporum audouinii* were isolated as the most causative agents among school children in Ile-Ife, Nigeria [2]. Prevalence and types of opportunistic fungal infections is HIV/AIDS patients in Nigeria was studied by Ekong, *et al*. [3] and that patients easily developed fungal infections: *Tinea corporis* and *Tinea pedis* among others. Fungal infections are caused by a group of eukaryotic micro-organisms some of which are responsible for causing superficial, cutaneous, subcutaneous, systemic or allergic diseases generally called fungi. Fungi whose study is called Mycology is a large and successful group of micro-organisms with about 80,000 different species. They range from unicellular yeasts, moulds to the large toadstools, puffballs and stinkhorns and occupy a wide range of habitats which include both aquatic and terrestrial [4]. It is the intention of this study to investigate the fungal disease infections associated with barbing saloons in Mubi, so as to highlight on the possible control measures of the causative agent.

## MATERIALS AND METHODS

Twelve (12) barbing saloons were randomly selected from the four wards in Mubi (Yelwa, Sabon-Layi, Koleri and Lokuwa) out of which thirty six (36) samples were aseptically collected using sterile swab sticks on clippers, combs and scissors. Specimens were immediately inoculated onto prepared plates of Saboraud's 4% Dextrose Agar (SDA) made by Sigma-Aldrich GmbH, Germany. Samples were labeled and incubated in an incubator made by Genlab (IN420) in the UK at 37°C for seven (7) days. Growth was observed from the second and seventh day. Macroscopically, the colonial morphology of the fungal growth were made paying particular attention to colour and pigmentation, rate of growth and texture. Microscopically, those classified as dermatophytes were stained with lactophenol cotton blue and observed under X10, X40 and 100 oil immersion of the microscope (with camera) made by Zeiss Germany. Result was presented as obtained from the laboratory analysis.

## RESULTS

Growth of samples after two days from the four major wards in Mubi, the study area is shown on Table 1. In Yelwa ward all samples on clippers, scissors and combs were observed to have positive (+ve) growth except one sample on scissors in Yelwa 1 which showed negative (-ve) growth. In Sabon Layi, all samples on scissors and combs were observed to have positive growth while samples on clippers in Sabon Layi 1 and 2 showed negative growth. In the third ward (Kolere), only samples on the scissors had all positive growth throughout the three barbing saloons while negative growth on clippers

**Corresponding Author:** D.L. David, Department of Biological Science,
Adamawa State University, Mubi P.M.B. 25, Mubi, Nigeria

Table 1: Growth after Two Days

| S/N | Name Saloon | Specimen | Growth |
|---|---|---|---|
| 1. | Yelwa 1 | 1. Clipper | + |
| | | 2. Scissors | - |
| | | 3. Comb | + |
| 2. | Yelwa 2 | 1. Clipper | + |
| | | 2. Scissors | + |
| | | 3. Comb | + |
| 3. | Yelwa 3 | 1. Clipper | + |
| | | 2. Scissors | + |
| | | 3. Comb | + |
| 4. | Sabon Layi 1 | 1. Clipper | - |
| | | 2. Scissors | + |
| | | 3. Comb | + |
| 5. | Sabon Layi 2 | 1. Clipper | - |
| | | 2. Scissors | + |
| | | 3. Comb | + |
| 6. | Sabon Layi 3 | 1. Clipper | + |
| | | 2. Scissors | + |
| | | 3. Comb | + |
| 7. | Kolere 1 | 1. Clipper | - |
| | | 2. Scissors | + |
| | | 3. Comb | - |
| 8. | Kolere 2 | 1. Clipper | - |
| | | 2. Scissors | + |
| | | 3. Comb | + |
| 9. | Kolere 3 | 1. Clipper | - |
| | | 2. Scissors | + |
| | | 3. Comb | + |
| 10. | Lokuwa 1 | 1. Clipper | + |
| | | 2. Scissors | - |
| | | 3. Comb | + |
| 11. | Lokuwa 2 | 1. Clipper | + |
| | | 2. Scissors | + |
| | | 3. Comb | + |
| 12. | Lokuwa 3 | 1. Clipper | - |
| | | 2. Scissors | - |
| | | 3. Comb | - |

NB: (+) Positive Growth (-) Negative Growth

Table 2: Macroscopic Examination

| S/N | Name Saloon | Specimen | C/P | G/R | TXR | RMK |
|---|---|---|---|---|---|---|
| 1. | Yelwa 1 | 1. Clipper | BRWN | H | EB | N/Dphyt |
| | | 2. Scissors | BRWN | H | EB | |
| | | 3. Comb | BRWN | H | EB | |
| 2. | Yelwa 2 | 1. Clipper | BRWN | M | V.G | N/Dphyt |
| | | 2. Scissors | BRWN | M | V.G | |
| | | 3. Comb | BRWN | M | V.G | |
| 3. | Yelwa 3 | 1. Clipper | BRN | S | CRMY | Dphyte |
| | | 2. Scissors | CRMY | M | P | Yst |
| | | 3. Comb | BRN | H.S | V.G | N/Dphyt |
| 4. | Sabon Layi 1 | 1. Clipper | BRWN | L | V.B | N/Dphyt |
| | | 2. Scissors | CRMY | S | E.B | |
| | | 3. Comb | CRMY | S | E.B | |

Table 2: Continued

| | | | | | | |
|---|---|---|---|---|---|---|
| 5. | Sabon Layi 2 | 1. Clipper | CRMY | H | E.B | N/Dphyt |
| | | 2. Scissors | BRWN | S | CRMY | Dphyt |
| | | 3. Comb | CRMY | H | E.B | N/Dphyt |
| 6. | Sabon Layi 3 | 1. Clipper | CRMY | S | P | N/Dphyt |
| | | 2. Scissors | CRMY | S | V.B | Yst |
| | | 3. Comb | CRMY | S | V.B | N/Dphyt |
| 7. | Kolere 1 | 1. Comb | BRWN | M | V.G | N/Dphyt |
| 8. | Kolere 2 | 1. Clipper | CRMY | M | V.B | N/Dphyt |
| | | 2. Scissors | CRMY | M | P | Yst |
| | | 3. Comb | CRMY | M | P | Yst |
| 9. | Kolere 3 | 1. Clipper | CRMY | S | G | N/Dphyt |
| | | 2. Scissors | CRMY | S | BRN | N/Dphyt |
| | | 3. Comb | CRMY | S | V.G/G | N/Dphyt |
| 10. | Lokuwa 1 | 1. Clipper | BRN | V.G | S | N/Dphyt |
| | | 2. Scissors | BRN | V.G | S | N/Dphyt |
| | | 3. Comb | BRN | V.G | S | N/Dphyt |
| 11. | Lokuwa 2 | 1. Clipper | BRN | V.G | S | N/Dphyt |
| | | 2. Scissors | BRN | V.G | S | N/Dphyt |
| | | 3. Comb | BRN | V.G | S | N/Dphyt |
| 12. | Lokuwa 3 | 1. Clipper | BRN | M | V.B | N/Dphyt |
| | | 2. Scissors | BRN | M | V.B | N/Dphyt |
| | | 3. Comb | BRN | M | V.B | N/Dphyt |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| BRN | ---------- | Brown | BRWN | ---------- | Brownish | CRMY | ---------- | Creamy |
| N/Dphyt | ---------- | Non Dermatophytes | Dphyt | ---------- | Dermatophytes | TXR | ---------- | Texture |
| RMK | ---------- | Remark | C/P | ---------- | Colour Pigment | G/R | ---------- | Growth Rate |
| F.B | ---------- | Fluffy Black | V.G | ---------- | Velvet Green | V.G/G | ---------- | Velvet Green/Granular |
| H | ---------- | High | M | ---------- | Moderate | S | ---------- | Stable |
| G | ---------- | Granular | P | ---------- | Pasty | | | |

was observed all through the three saloons. On combs in Kolere ward however, saloon 2 and 3 had positive growth while saloon 1 had negative. Observation in the fourth ward being Lokuwa, positive growth on clippers and combs were recorded in the first and second saloons while positive growth on scissors was observed only in the second saloon. In the third saloon in Lokuwa ward, negative growth was observed on clipper, scissors and comb.

Shown on Table 2 is the macroscopic examination where colour pigment (CP), growth rate (GR), texture (TXR) and general remark (RMK) was considered for the 4 different wards on clippers, scissors and combs across all the 36 different saloons cutting across all the wards in Mubi town. In Yelwa being the first ward, observed in saloon 1 on the equipment for sampling (clipper, scissors and comb), brown colour pigment (CP), high growth rate(GR), fluffy black (FB) texture were evident on the three equipment for specimens sampled and the remark shown to be non-dermatophytes. In the second saloon in Yelwa, CP, GR and TXR were observed to be brown, moderate, velvet green respectively and non-dermatophytes was the remark. In the third saloon however, creamy colour pigment was observed on the scissors while on the growth rate pattern, stable, moderate and high-stable were observed on specimens 1, 2 and 3, respectively being clipper, scissors and comb. On the texture, creamy, paste and velvet green were evident on specimens 1, 2 and 3 accordingly while the remark was dermatophytes, yeast and non-dermatophytes for specimen 1, 2 and 3, respectively.

In Sabon Layi ward, three saloons were considered each of which three specimens were observed. On colour pigment, brownish pigment was evident in saloon 1 specimen 1 (clipper) and in saloon 2 specimen 2 (scissors) while creamy colour on all the other specimens across the three saloon specimens. On growth rate, lower growth was only seen on specimen 1 saloon 1 while stable growth rate was evident on the other two specimens in the same saloon. In saloon 2, specimens 1 and 3 showed high growth rate, while specimen 2 had stable. In saloon 3, stable growth rate was observed on all the 3 specimens. On the texture, velvet blue was on specimen 1 saloon 1 while fluffy black were on the other two. In saloon 2, creamy texture was observed on specimen 2, while fluffy black texture was on the others. In saloon 3, pasty texture

Table 3: Lactophenol Cotton Blue Stain on Dermatophytes

| S/N | Name of Saloon | Specimen | Observation | Remark |
|---|---|---|---|---|
| 1. | Yelwa | Comb | Spindle shaped *microconidia* | *M. audouinii* |
| 2. | S.Layi | Scissors | Same | *M. audouinii* |

NB: *M. audouini*----------*Microsporum audouini*

Table 4: Wet Preparations for Yeast

| S/N | Name of Saloon | Specimen | Observation | Remark |
|---|---|---|---|---|
| 1. | Yelwa | Scissors | Yeast Cell | N/C |
| 2. | Sabon Layi | Clippers | Yeast Cell | N/C |
| 3. | Kolere | Comb | Yeast Cell | N/C |
| | | Scissors | Yeast Cell | N/C |

NB: N/C-Not Conclusive

Table 5: Germ Tube Test for Identification of *Candida albicans*

| S/N | Name of Saloon | Specimen | Observation | Remark |
|---|---|---|---|---|
| 1. | Yelwa | Scissors | NG Tubes | N/C |
| 2. | Sabon Layi | Clippers | NG Tubes | N/C |
| 3. | Kolere | Comb | GT Present | *C. albicans* |
| | | Scissors | GT Present | *C. albicans* |

NB: NG Tubes - No germ tubess
GT present - Germ tubes present
*C. albicans* - *Candida albacans*

was shown on specimen 1, while velvet blue on the others. On the remark, non dermatophytes was evident on most specimens, dermatophyte was shown only on specimen 2 saloon 2 and yeast on specimen 2 in saloon 3.

In the third ward (Kolere), three saloons were used for the study named Kolere-1 to-3. On colour pigment, brownish pigment was shown on the specimen (comb) only, while creamy colour pigment was on the others in the 3 saloons specimens. Growth rate was medium in saloon 1 and 2, while slower growth rate was discovered in saloon 3. On the texture in Kolere ward, velvet green was evident in saloon 1, while pasty on 2 specimens in saloon 2 and 1 velvet green. In the third saloon, granular brown and velvet green/granular was observed on specimens 1, 2 and 3 respectively. On the remark, yeast was only seen on specimens 2 and 3 in saloon 2 while all the others showed non-dermatophytes.

In the fourth ward (Lokuwa) and all the three saloons therein with their respective specimens, colour pigment was discovered to be consistently brown unlike in the other wards. Growth rate in the first and second saloon was found to be velvet green while in the third saloon, moderate growth rate was evident on all specimens. Texture, just like the pattern of growth rate observed saloon 1 and 2 showed stable texture, while velvet blue was in saloon 3. Remarks in the fourth ward across the 3 saloons and specimens indicated non-dermatophytes.

Table 3 shows lactophenol cotton blue stain on dermatophytes. In Yelwa ward, on comb spindle shaped microconidia was observed which was suspected to be *Microsporum audouinii*. In Sabon Layi ward however, on scissors same observation was made which is concluded to be *Microsporum audouinii*.

Table 4 shows wet preparation for yeasts. Three wards (Yelwa, Sabon Layi and Kolere) were considered. Scissors and clippers were specimens considered in Yelwa and Sabon Layi wards respectively. Observation indicated the presence of yeast cells. In Kolere ward, comb and scissors were considered and yeast cells also were evident. Generally, remarks were not conclusive.

Germ Tube Test for Identification of Candida albicans is shown in Table 5. Yelwa, Sabon Layi and Kolere ward saloons were considered. Scissors and clippers were the specimens in Yelwa and Sabon Layi saloons respectively, while comb and scissors were in Kolere saloon. No germ tube was evident in the first two saloons while presence of germ tubes was noticed in Kolere saloon on both the specimens. Remark for saloons in the first and second saloons were not conclusive while *Candida albicans* was suspected in Kolere saloon both on the comb and scissors used as specimens.

## DISCUSSION

The five bacterial growth observed on most barbing saloon equipment in Mubi (Table 1) agreed with observations of other researchers in other parts of the country (Jos in Plateau State) as reported by Obasi and Clayton, [5] (Aba, in Abia State) as reported by Okafor and Agbugbaeruleke, [6] and Ile-Ife as repoetred by Ajao and Akintunde, [2].

The colour pigment, growth rate and texture as further evidence of fungal disease on saloon equipment in Mubi was so variable cutting across all saloons studied. (Table 2) agreed with the report of Ekong *et al.* [3]; Ayo-Bumpe *et al.* [7, 4]. These authors suggested a way forward among which are; calling the attention of public health workers concerned to enforce sterilization of saloon equipment not only in some part of the country but nation wide. Standard of sterilization must be put in place in all saloons and sensitization of saloon customers of the related health hazards.

As observed in tables 3 and 4 when further state of certainty of causative agent of fungal infection among saloon customers mostly school children was inline with the findings of many authors; [1,2,6, 8,9]. Generally this study has revealed that barbing saloon equipment were found to be good medium of transfer of fungal diseases among most innocent citizens of the country. Customers therefore are called upon to make sure that any saloon equipment to be used on them must be properly sterilized to their satisfaction or according to the standard of sterilization method [1].

## ACKNOWLEDGEMENT

We are grateful to Mrs. Comfort Vandu of Mubi Polytechnic who assisted in the laboratory work.

## REFERENCES

1. Soyinka, F., 2004. Epidemiology study of dermatophyte infections in Nigeria (Clinical Survey and Laboratory Investigations). Mycopathologia, 63(2): 99-103.
2. Ajao, A.O. and C. Akintunde, 2005. Studies on the prevalence of *Tinea capitis* Infection in Ile-Ile, Nigeria. Mycopathologia, 89(1): 43-48.
3. Ekong, E., A. Uwah and I. Grant, 2000. Prevalence and types of opportunistic fungal infections in HIV/AIDS patients in Nigeria. Int. Cong. Drug Therapy HIV, 22-26: 14 (SUPPL 4): 584.
4. Samuel, B.C., 1980. Medical Microbiology. Fourth Edition, Addisan-Wesley Publishing Company, pp: 889-893.
5. Obasi, O.E. and Y.M. Clayton, 1989. Dermatophyte fungi in the Guinea Savannah region of Nigeria and the changing phase of dermatophytoses in Nigeria. Mycosis, 32(8): 381-385.
6. Okafor, J.I. and A.K. Agbugbaeruleke, 1998. Dermatophytosis among school children in Aba, Nigeria and some physiological studies on the isolated etiologic agents. J. Com. Dis., 30(1): 44-49.
7. Ayo-Bimpe, G.H., C.S. Bello and H.C. Guinani, 1992. The etiological agents of superficial cutaneous mycosis in Nigeria. Mycosis, 35(56): 235-237.
8. O'Deal, W.B., 2005. *Microsporum oudouinii* infection of the scalp. Proc. R. Soc. Med., 234(9): 456-459.
9. Thorne, N., 1973. *Microsporum audouinii* infection scalp and hair in adult. Proc. R. Soc. Med., 66(3): 236-237.