

Maternal Perception and Management of Tinea Capitis of Infected School Children in Southern Nigeria

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ABSTRACT

Background: Tinea capitis (TC) is a chronic neglected skin disease in Sub-Sahara Africa which requires appropriate management to reduce its prevalence.

Objectives: The aim was to explore their perception of causes and prognosis of TC, and to also explore the various preventive and management strategies they employed for the infection.

Materials and Method: We carried out an In-depth Interview among 24 mothers of school children infected with TC.

Results: Our findings showed that majority of the mothers had poor perception of TC, as they considered it a normal infection in children. Many of them did not adopt any preventive strategy. Also, we discovered that unstandardized herbal products and drugs with wrong prescriptions were administered by the mothers.

Conclusion: Our study result is a clarion call for health care workers, most importantly community and school health personnel to create awareness on TC and its appropriate management as well as support the treatment of infected school children.

Key words: Herbal therapy, Mothers, Perceptions, School children, Tinea Capitis.

INTRODUCTION

Tinea capitis is a skin disease that has been documented in many parts of the world but gains little attention as a result of its not being considered a life threatening condition. Globally, TC is rarely reported by public health agencies as current evidence suggests that TC occurs more often in children of African origin.^[1] Therefore, no exact global record of its prevalence except those reported in clinical and epidemiological studies in different countries.^[2] Studies carried out in various countries such as Ivory Coast^[3] and Bostwana,^[4] show a significant prevalence affecting 14-86% of school children. In Nigeria, the prevalence of TC among school children in the North is 45-91%^[5,6] 14.5-

31.6% in the South-East;^[7,8] 19.5-35% in the South-West;^[9,10] and 5.9% in the South-South.^[11]

Tinea capitis has been known to impact negatively on health, and it is a significant burden among school children.^[12] A study that was conducted in Rivers State, Nigeria, that TC has a psychosocial impact on daily lives of school children, with more than half of the children experiencing mild-to-severe grades of psychosocial impact.^[13] It is also a known fact that children infected with TC become more susceptible to cellulitis, impetigo, loss of hair, and brain abscess.^[14]

Perception has long been identified as either facilitator or barrier to health seeking behavior. Perception of severity of

any illness will determine the extent to which an individual seeks health care and the urgency of seeking for health care.^[15] Perception also determines the interpretation of illnesses, and this interpretation differs by diverse ethno-racial background.^[16, 17] Aside from perception which may affect mothers' management of TC of their children, TC, as a skin infection is not considered a serious infection or a medical emergency to be reported in the hospital setting. This perception has contributed to utilization of remedies that are not scientifically proven.^[18] In addition, due to poor socio-economic status of many parents of infected children, taking their wards to conventional hospitals for treatment is a rare occurrence, thereby resorting to alternative therapy.^[19,20]

The medical management of TC has remained the allylamines such as terbinafine and azoles group, which include ketoconazole, itraconazole and fluconazole.^[21] This is also similar to the Nigerian recommendation by Federal Ministry of Health.^[22] The FDA-approved paediatric treatment options for TC are griseofulvin and terbinafine.^[23] Topical treatments alone are not effective for TC because, the pathogenic fungi are located within the hair hence, the need for both systemic and topical management.^[24] Over the years, orthodox treatment of TC in Nigeria has remained the use of azoles group via systemic and topical routes. Despite the availability of these drugs in the country, anecdotal evidences have shown that TC is a chronic infection among elementary school children especially those in public schools, who also have the affected part exhibiting traces of bacterial infections. Therefore, exploring what mothers perceive to be causes and prognosis of TC, in addition to their preventive and management strategies is imperative to identifying health care intervention point for reduction of TC among school children in Nigeria.

MATERIAL AND METHODS

Design and Sample Settings

We made use of phenomenology qualitative research design in this study by conducting In-depth interviews among 24 mothers of infected school children who were indigenes of two communities (Ile-Ife and Benin) in Southern Nigeria.

Ile-Ife is a town popularly referred to as 'Orisun' (the source) of the Yorubas, and it is located in Osun State, Nigeria. The indigenes are notorious for worshipping 201 gods and goddesses.^[25] They are also noted for using herbs, roots, concoction, verbal incantations, to cure some diseases and the efficacy of the medicine is dependent on the approval of their gods and goddesses.^[26] Benin is located in Edo State Nigeria, and the indigenes are popularly known for keeping a shrine or shrines to gods while families and subdivisions (quarters) of the city are known for keeping communal shrines for the worship of various local deities.^[27] In order to combat diseases and infections, the Edos (as they are called) depend on herbs, roots and bark of trees to treat infections.^[28] In Benin, cultural norms, values, and taboos contribute significantly to issues of health and it is not unusual for the sick to bring charms and amulets (wore round their necks, waists and legs) to the hospitals to decrease severity of illness and promote recovery.^[29]

Participant Selection and Data Collection

One elementary school that was observed to have large number of children with TC was purposively selected from each of the two communities. We went round the classes to select 15 children that were clinically assessed to have TC from each of the schools. A confirmatory test was carried out by a Medical Laboratory Scientist. The affected part of the head of each child was scraped using sterile scalpel, one per child. The site was cleaned with methylated spirit before and after the scraping. The scrapings were collected into a sterile universal bottle for each of the child and sent to laboratory for microscopy examination for presence of TC causative agents. Out of the 30 samples,

20 samples were positive for aspergillus, 3 samples were positive for trichophyton, 1 sample was positive for both aspergillus and trichophyton, and 6 were negative. Therefore, 24 children were selected, and they were traced down to their homes to select their mothers for the study.

Data collection was between September, 2017 and February, 2018. An In-depth Interview Guide, which was translated to local languages (Ife and Binis) were used for data collection. The instrument elicited information on perceived causes of TC, perceived prognosis of TC and preventive strategies for TC. The guide also explored the local and orthodox management of TC among the mothers. The interview was carried out by the Principal Investigator in the various homes of the mothers, and it lasted for approximately 20 minutes. The sessions were audio recorded, while two Research Assistants who were pre-trained, assisted in taking field notes. Translated instruments were used for women who could not understand English.

Ethical Consideration

Ethical approval for the study was obtained from the Health, Research and Ethics Committee of the Institute of Public Health, Obafemi Awolowo University, Ile-Ife, and also from University of Benin, Benin City. Permission to conduct study was received from the Head of the elementary schools under study. In addition, assent and consent of the children and their mothers were obtained respectively.

DATA ANALYSIS

Thematic data analysis was carried out. We transcribed the responses verbatim and then translated those in local languages back to English. We also read through and listened to the audio to ensure that important responses were captured. We then coded the responses manually according to themes which corresponded to the variables in the study. Sub-themes were also identified under each theme and referred to as categories. The themes were: Perceived Causes of TC; Perceived Prognosis of TC;

Prevention of TC; Local Management of TC; and Orthodox Management of TC.

RESULTS

Perceived Causes of Tinea Capitis

Five categories emerged as causes of TC and they are: the use of barber's clipper; contact with dirt, cockroaches and jatropha plant ('ewe lapalapa'); inadequate nutrition; blood infection; and use of hair cream. Some of them mentioned that they did not know the cause of TC. We observed that the Benin women stressed more on presence of dirt and cockroaches in homes while Ife women stressed on having contact with Jatropha plant, the use of hair cream as well as having infective organisms in the blood. Below are excerpts from the interview.

Germ's cause TC. It is a disease of the dirty people. You see that house, the people living there are very dirty and their children have the infection. She (her daughter) plays with them, which is where she contacted the infection (Benin Participant).

I do not know the exact cause of the Tinea Capitis ('apanigogo') but I believe it is caused by cockroach and dirt. Dirt attract cockroach and when a child bed wet, it will attract cockroach and the cockroach (Ehenbven) will leak the head of the child and also urinates on his head then, the child will develop tinea capitis (Benin Participant).

What I know is that Tinea Capitis ('Tanmona') lives in the blood (black blood [ejedudu]) and it comes out of the body gradually" (Ife Participant).

Jatropha plant ('ewe lapapa') causes TC, if a child plays with Jatropha plant and the fluid from the leaf has contact with the child's head then, TC will develop" (Ife Participant).

Perceived Prognosis of Tinea Capitis

Four categories (TC is normal in children, last a longer period; appearance of moon prolongs healing; leads to head ulcer)

emerged for perceived prognosis of TC. Tinea capitis was perceived a less serious disease but a normal condition in children by the women. However, this perception was more among Benin women than Ife women. One of the Benin Participant reported thus:

It doesn't pose any problem. It heals on its own but takes a longer period if not treated on time. This infection is over a year on my son's head (Benin Participant).

Meanwhile, the perception that TC is shaped like a moon on the head of a child, and that the appearance of the moon makes its treatment difficult was common among Ife women.

Tinea capitis is difficult to cure and it appears like the moon on the child head. If treated, it results in good outcome and if not treated it will be bad. If you treat during moon appearance, it will not respond to treatment (Ife Participant).

Preventive Strategies for Tinea Capitis

Exploring the preventive methods adopted by the mothers for TC, five categories emerged for local methods of preventing TC which are: neatness of the child; adequate nutrition; prevention from contacting *Jatropha* plant; separation of child's sponge and towels; and dermatol cream and soap application. Although these responses were given by few of the women, majority of them mentioned that they did not have any means of preventing their children from contracting TC.

I cannot prevent other children from playing with the infected child. I can't isolate the infected child. What I used to do to prevent other children from contamination is to apply Dermatol cream on their heads (Ife Participant).

I do not allow them to share sponge with my girl because my two boys have the infection on their head (Benin Participant).

*The local way of preventing the child is to prevent them from coming in contact with *Jatropha* plant ('ewelapapa') which is by monitoring them closely, but for me, I am a business woman, I don't have time to watch over them (Ife Participant).*

Local Management of Tinea Capitis

Many substances and herbal products of which their efficacy in managing TC has not been confirmed in literature were mentioned by the women. Six categories emerged under local products being used for managing TC. They are the use of: soap (black soap); herbal leaves (candle bush leave - *Senna Alata*, bitter leaves, sandpaper leaves, pumpkin - *cucurbita pepo*, cotton leaves); herbal concoction ('Gbogbonise' - concoction that the manufacturer claims to cure many diseases simultaneously); herbal cream (Cacatin cream), kitchen cobwebs stained with charcoal; and toothpaste (Maclean, Close-up). Their responses also indicated how these products were used.

I am not using any traditional medicine but, the local way I use for the treatment is that I scrape the hair with blade, sometimes use sandpaper ('ewe epin') and apply Maclean tooth paste on it (Ife Participant).

I scrape the head until it bleeds then I apply Close-up toothpaste, hot 'amala' (yam flour) and soap (Ife Participant).

I use bitter leaf. At first, I scrape the hair, then squeeze the bitter leaf and mix it with lime juice and then, it will be applied on the head (Ife Participant).

I wash the hair with bitter leaf after scraping the hair. After washing the hair with bitter leaf, I apply cobwebs stained with charcoal from the kitchen then, mixed it with lime juice and apply" (Benin Participant).

When one cooks in the kitchen, the charcoal on the wall is scraped and mixed with salt then it will be applied on the child's hair.

This method is applied to TC that is not in the blood (Ife Participant).

I do pluck cotton leave from the farm, sometimes 'ewe epin' (sandpaper leaf), squeeze them, and use them to wash the area affected with tinea capitis and then apply medicated soap bought by his Aunt (Ife Participant).

I do pluck a leave from a tree. The tree is called Aroghamiasol (Candle bush tree) and it is found in a compound on the next street. The leaves sleep at night. I squeeze and apply on the head. At times, we used 'gbogbonise' sold by Yoruba people at Ring road market (Benin Participant).

Orthodox Management of Tinea Capitis

Interview reports on the orthodox management of TC showed that, two categories of medication (antibacterial and antifungal) were reported to be administered to the children but, some of them reported they never administered any medication as the infection is not a serious one. The drugs reported to be used by the women are: Tribact A triple action cream; Ampiclox; tetracycline; Fulcin tablets; and Abf 3 in one cream. Their responses further showed that the drugs were not accurately administered to the children.

I do not know any orthodox medicine and it is not a serious disease that one should go to the hospital for. (Ife Participant).

I used Ampiclox, 1 capsule daily for 5 days (Ife Participant).

Fulcin 1 tab daily for 7 days. When the health workers came for community outreach they gave me Abf 3 cream which I am applying on the head. (Ife Participant).

I don't have any idea about English method for the treatment of TC. I am his grandmother when his mother visited us she brought tetracycline for him and it wasn't effective. (Ife, Participant).

I gave him Ampliclox, 1 capsule for 5 days. Now I am using Tribact A cream on his head (Benin Participant).

When I lodged complaint to the chemist, he prescribed Fulcin, 1 tablet daily. I am yet to purchase it oh. Last year when I took him to see the eye doctor because of his sight, I complained to the doctor and he prescribed Fulcin and I gave him for 5 days (Ife Participant).

DISCUSSION

This study has been able to show that, mothers of infected school children have different perceptions of causes and prognosis of TC, and they also use inappropriate different methods to manage the infection. This can explain the reasons for the chronicity of TC among school children. Analysing the reports of the women on perceived causes, it is evident that they had understanding of the risk factors and transmission of the organism responsible for TC but, did not have the knowledge of the class of organism responsible for the infection. For example, the women might not have the scientific proof for associating cockroach or Jathropha plant to TC but, cockroaches have been noted to play a supplementary role in the spread of diseases. They carry diverse pathogenic and non-pathogenic bacteria flora, protozoa, helminthes, fungi and viruses.^[30] Jathropha plant on the other hand has been noted to contain endophtytic fungi.^[31]

Other previous studies have also shown that many people do not know the cause of TC. For example, the Nok community in the Northern part of Nigeria attributes the cause of TC to presence of spider in homes.^[32] Similarly, it is possible to attribute cause of TC to worm, which is otherwise known as ringworm, to worm infestation.^[33] The different perception of cause of TC is supported by scholars positions that, interpretation of illnesses is different from society to society, culture to culture and person to person.^[17, 34,] This

interpretation will consequently influence the health seeking behavior.

Some mothers in this study perceived TC to be normal in children, while some considered it a serious disease condition. Those that considered TC as normal in children might not, of a necessity seek for the treatment of this condition. This can explain why many school children have TC as chronic skin condition and many parents or guidance do not take them to the hospitals for expert management. It is also possible that those that considered TC as a serious health condition might likely seek orthodox or local management for it and some of them can end up adopting incorrect management for the infection. Considering TC as normal in children, calls for concern for health care workers. When mothers or guardians of infected children perceive TC as normal, then, there is the likelihood that they will not border accessing the right channel for managing the condition, thereby perpetuating the contagious skin condition among school children.

It is appreciated that the mothers had good understanding of prevention of TC which include; ensuring hygiene of the child; providing adequate nutrition; and separating bathing materials of infected child. However, preventing the children from coming in contact with *Jatropha* plant is still connected with the perception that *Jatropha* plant causes TC. It is important to state here that, *Jatropha* plant as a means of contracting TC, should be explored by medicinal researchers so that appropriate education can be given on the relationship of the plant with TC infection.

Various substances were mentioned by the mothers for locally managing the skin condition, ranging from herbs to concoction, soap and creams. This is similar to the study that revealed the use of topical plants for treating TC by Sokoto students in Nigeria.^[35] It's been reported that the use of medicinal plants differ from community to community, and from ethnicity to ethnicity.^[36] Some of the substances used by the women have also been documented in

previous studies to have medicinal properties. For example, sandpaper was reported as antifungal agent,^[37, 38] bitter leaf, as exceptional, powerful antibacterial and antifungal plant^[39] toothpaste as antifungal agent against fungi like *Microsporiumcanis*, *Aspergillusniger* and *Candida albicans*,^[40] and *Cucurbita Pepo* as hypoglycemic, antioxidant, anticancer, antimicrobial, anti-inflammatory, anti-diabetic, and antiulcer agent.^[41] Also, black soap was reported as a substance that has more inhibitory effects on all pathogens including *Candida Albicans* compared to other antiseptic soaps.^[42] Previous study in Nigeria has also documented that mothers use candle bush leave (*Senna Alata*) to treat their children infected with TC.^[43, 44] However, literature on the medical usefulness of cobwebs and kitchen chacao is scarce while 'gbobgonise' has been evaluated to cause hepatic damage when ingested^[45] and they concluded that such concoction may result in hepatic damage. These our findings corroborated the findings of a study conducted in Botswana in which they discovered that, parents use substances like potash, liquid charcoal and brake fluid for the treatment of skin conditions of their children.^[18]

Despite the administration of these substances by the mothers for management of TC, the skin condition is still prevalent among school children. The prescription values of these substances in order to have the expected therapeutic effect on TC is not known, and it is also possible for the mothers to apply the substances in excess which might be dangerous to the health of the children. As of today in Nigeria, systemic and topical administrations ofazole drugs are still the recommended management line for TC and these drugs are available in many pharmacy shops and hospitals. The children are therefore, expected to be taken to these outlets by their mothers for proper management. The findings from this study are challenging to community and school health personnel who are in a position to discourage the use

of harmful substances or scientifically unproven substances in the management of TC. They can health educate mothers in schools, at the infant welfare clinic, and other related health care outlets where mothers can be reached.

The use of Ampiclox for treating TC showed that some of the participants lack knowledge of the causative organism and management of the condition. Even the anti-fungi medication (Fulcin) that some mothers administered to their children was incorrectly administered. In Nigeria, the recommended treatment for dermatophyte infections in children 1 month-18years is the topical application of any of the azole such as Ketoconazole 2% to be applied twice daily and the tablets is administered 3mg/kg (maximum 50mg) daily for 2-4 weeks.^[22] On the other hand, Tribact A triple action cream and Abf 3 in one cream, are topical medication that act as both antibacterial and antifungal agents however, none of the mothers mentioned that the creams were applied alongside systemic administration of an antifungal agent. The findings from this study showed that the drugs were purchased without prescription hence, the inappropriate drugs, incorrect dosages and doses for managing the TC. Among the mothers in this study, there were some that mentioned that they did not use any local or orthodox means to manage the TC. This group of mothers must have been those who perceived TC to be a normal occurrence in children. It is important for the mothers to be educated and informed appropriately that TC is a disease condition that should be treated using appropriate drugs. They should also be sensitized on seeking health care from formal health care settings. It is also important for schools to have equipped school health offices so that infections like TC can be treated by school health personnel such as school nurses, and mothers of infected children can also be reached for preventive education.

CONCLUSION

The study concluded that many mothers of infected school children have poor perception of the cause and prognosis of TC, and they also did not manage the infection according to the laid down conventional therapeutic methods. This study contributed to a body of knowledge on factors contributing to the chronicity of TC among school children most importantly in Sub-Sahara Africa, including Nigeria. Reducing the prevalence of TC among school Children in this region calls for determining perceptions of mothers and their management strategies. This will provide information on wrong perception and incorrect management of TC which will serve as basis for culturally relevant health education for the reduction of TC among school children. Globally, community health personnel might be in a position to care for children with TC who may come from different cultural environment. They can assess the perception of causes and prognosis of TC, as well as the home management from the client, and correct any wrong perception and management that may arise from the assessment.

Limitation of the Study

The study was conducted in South-West and South-South Nigeria hence, did not cover the entire country. It is expected that perceptions and management of TC may differ in other regions of the country due to the multi-ethnicity nature of the country hence; the findings cannot be generalized to the entire country.

Conflict of Interest: The authors declared no conflict of interest for this study

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