

Prevalence of Skin Disorders in School Children in Ibadan, Nigeria

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Abstract: Although skin diseases are common in children, there are very few population-based studies in West Africa. Recently, there has been considerable emphasis on hygiene and socio-economic impact on the incidence of allergic disorders in children. We determined the prevalence of skin diseases in a public primary school in Ibadan (southwest Nigeria). A questionnaire for assessing factors associated with the prevalence of diseases was completed, and a complete physical examination was carried out on 1066 students. The study included 529 (49.6%) boys and 537 (50.4%) girls with a mean age of 8.8 ± 2.5 years. The mean family size of the subjects was 6.7 ± 2.3 while the mean number of rooms in their homes was 2.6 ± 1.45 . Infectious dermatosis was commonly observed. Of 375 children with a skin lesion, 162 (15.2%) had dermatophytosis, most often tinea capitis, 50 (4.7%) had pityriasis versicolor, and 50 (4.7%) had scabies. Other dermatoses observed included papular urticaria in 35 (3.3%) and angular cheilitis in 27 (2.5%) children. One or more melanocytic nevi were found in 40 (3.8%) children while 138 (12.9%) and 77 (7.25%) had tribal and scarification marks, respectively. Atopic eczema and viral warts were virtually absent. We concluded that fungal infections and scabies were the most common skin diseases in our study population, whereas allergic illnesses were nearly absent.

Although skin disorders are commonly observed in children, there are few population-based studies on this subject. Reports from developed countries show that skin disorders account for 6% to 24% (1,2) of all visits to pediatric clinics and for 9.8% of patients attending a university health center (3).

We know that hospital-based studies are influenced by factors such as social class, accessibility to medical services, educational and cultural background, hence the need for population-based studies. Most of the available

studies in school children in our environment have been on dermatophytoses and ectoparasites.

Of particular interest to us was the observation that allergic skin disorders seemed to occur more frequently in children from the middle and upper social classes (3,4). We felt that the accessibility of health facilities to these groups may have been responsible for this finding, and that this observation does not necessarily mean there was an absolute higher prevalence of these disorders. We decided to study the prevalence of skin diseases in

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school children in a public (nonfee-paying) primary school situated in a densely populated area of Ibadan, in southwest Nigeria, and to explore possible socio-economic conditions that might be associated with acquisition of the prevalent skin disorders.

In view of the increasing numbers of HIV and hepatitis B (5,6) infections in Nigerians, we also looked at the magnitude of practices of scarification and tribal marking, which have been linked with these infections in children, with a possible view of changing those practices in the community.

MATERIALS AND METHODS

The study was a cross-sectional survey carried out in a public primary school in Ibadan, Nigeria. The school is located in a high-density area. (It was assumed that the children attending the school would live within the same area.) Permission was obtained from the Ministry of Education and the headmasters and teachers. Written informed consent was obtained from the guardians and parents and verbal consent from the students.

An interview-administered questionnaire was used to obtain information on family size, type of housing, presence of pets in the home, sharing of clothing, and previous medication.

The children were then interviewed individually in a private room. One dermatologist and three registrars in the dermatology unit carried out the physical examinations.

Students were referred to the skin clinic when necessary.

Data was entered and analyzed using EPI INFO version 6.04.

Chi-squared, Fishers exact, and student's *t*-tests were used for analysis as appropriate. Level of significance was set at $p = 0.05$.

RESULTS

A total of 1066 students were interviewed and examined, 529 (49.6%) of whom are boys. The age range was from 4 to 15 years, with a mean age of 8.6 ± 2.5 years. The mean family size was 6.7 ± 2.3 . The mean number of rooms in the students' homes was 2.6 ± 1.45 . About 58% of the children had pets at home, including dogs, cats, rabbits, and chickens. About 46.1% of the students shared clothing with their siblings.

A total of 375 (35.2%) students had skin disorders (some students had more than one) (Table 1).

Of the 162 students who had dermatophyte infections, 155 (14.5%) had tinea capitis, 12 (1.1%) had tinea corporis, two (0.2%) had tinea pedis, and one had tinea unguium.

TABLE 1. Prevalence of Skin Disorders in Schoolchildren in Ibadan, Nigeria

Skin disorder	No. = 375	% = 35
T. capitis	155	14.5
T. corporis	12	1.1
T. pedis	2	0.2
T. unguium	1	0.1
P. versicolor	50	4.7
Angular cheilitis	27	2.5
Papular urticaria	35	3.3
Nevi (melanocytic)	40	3.8
Scabies	50	4.7
Tribal marks	138	12.9
Scarification marks	77	7.2

Another 50 (4.7%) of the students had pityriasis versicolor, while 50 (4.7%) had scabies, 35 (3.3%) had papular urticaria, and 27 (2.5%) had angular cheilitis.

One or more melanocytic nevi were present on 40 (3.8%) of the children.

One hundred and thirty-eight (12.9%) students had tribal marks while 77 (7.2%) had scarification marks.

Table 2 shows the relationship between the variables associated with dermatophyte infection, scabies, and pityriasis versicolor and some of the respondents' environmental characteristics. The family size, presence of pets in the home, and sharing of articles of clothing were found to be associated with dermatophyte infection ($p < 0.001$, $p < 0.024$, and $p < 0.034$), respectively. Although the students with dermatophyte infections had fewer rooms in their homes, this was not found to be statistically significant ($p = 0.114$).

Large family size and fewer rooms were found to be associated with scabies ($p < 0.00026$ and $p < 0.034$) whereas sharing of clothing and having pets were not associated with the prevalence of this infection.

TABLE 2. Associated Factors for Prevalence of Dermatophytes, Scabies, and Pityriasis Versicolor

	Yes	No	p-value
Dermatophyte			
Mean family size	6.711 ± 2.878	6.630 ± 2.260	0.001
No. of rooms	2.432 ± 1.453	2.627 ± 1.449	0.11
Pets	107 (66%)	511 (56.5%)	0.02
Share clothing	87 (53.7%)	404 (44.7%)	0.03
Scabies			
Mean family size	7.953 ± 2.878	6.659 ± 2.244	0.001
No. of rooms	2.140 ± 1.207	2.617 ± 1.458	0.03
Pets	27 (51.2%)	591 (57.8%)	0.51
Share clothing	22 (54.2%)	469 (45.8%)	0.49
Pityriasis versicolor			
Family size	7.840 ± 2.867	6.655 ± 2.241	0.001
Bedrooms	2.180 ± 1.004	2.618 ± 1.467	0.037

$p < 0.05$.

DISCUSSION

There are very few epidemiologic studies on prevalence of skin disorders in school children in Nigeria. Earlier studies have reported on the prevalence of dermatophytoses in children. However, based on findings from the few studies available from other African countries, infections, infestations, and dermatitis seem to be the predominant problems in children (7–9).

Our study population was predominantly children from a low socio-economic class. The students had large families and few rooms in their homes.

Fungal skin infections, scabies, papular urticaria, and angular cheilitis were the most prevalent conditions in this study population. A total of 27.9% (297) students had some form of infection or infestation. This is a lower figure than that found in an Ethiopian study, in which 80.4% (112) of students had some form of skin disorder, with infestations and fungal infections being the most common findings (7).

Dermatophyte infections were the most common finding in our study, most of which presented as tinea capitis (14.5%). This is similar to a report from a Nigerian health center (3). Tinea capitis has been reported as a common finding in school children in other developing countries (3,7,10–12) and in immigrant populations in developed countries (13). We speculate that some reasons for the high incidence of tinea capitis in our area include inadequate treatment, lack of drugs, poverty, ignorance, and the presence of individuals with asymptomatic infection who may spread it. In the past, “dermabrasion” with an abrasive leaf was used to clear tinea capitis. (The leaf is applied as an abrasive to smooth infected areas of the scalp, and results in bleeding.) We think this curtailed the spread of the infection because of factors in the serum that inhibited dermatophyte growth, which were released during the process (14). However, because of the likelihood of scarring, the practice became unpopular.

Socio-economic factors such as high household density, and the sharing of clothing, which were found also to be associated with spread of infection in this study, occur commonly in developing countries. The presence of pets in the home was also found to be contributory, although we did not culture the fungi to confirm that they were zoophilic.

Scabies was found in 4.7% of our study students. A prevalence of 2% to 17% (3,7–9) has been previously documented. The lesions were secondarily infected and some students volunteered that other members of their families had similar problems. High population density and fewer bedrooms, which promote body contact, were significant contributors to the spread of the illness. The

presence of pets and sharing of clothes were not associated with the prevalence of scabies, confirming that fomites may not play a significant role in the spread of this infection. Acute glomerulonephritis has been associated with secondary bacterial infections in children with scabies (15), therefore proper management and prevention of spread, especially in schools, should be instituted.

Pityriasis versicolor was found in 4.0% of the students, most were between the ages of 5 to 10 years. A tropical climate encourages the growth of *Malassezia*. This may be responsible for the earlier age of onset in the tropics when compared with that reported from temperate regions (16).

Thirty-five (3.3%) students had papular urticaria, a hypersensitivity reaction to insect bites. Our personal observation in the clinics had been that higher incidence of this occurred in children of higher socio-economic class.

The presence of angular cheilitis in some of the students may have been the result of nutritional deficiencies, although infection could not be ruled out.

Primary bacterial infections, especially impetigo, were virtually absent. We felt this may have been resulting from the absence of neonates and infants in this study, as it occurs commonly in this age group. The availability of antibiotics over the counter and the use of medicated germicidal soaps may also have contributed to the absence of primary bacterial infection, however, this must be confirmed.

Pediculosis was absent in our study population, unlike in reports of findings from other parts of the country (17,18). We were not surprised, as most of the students had shaven heads.

Common warts were also absent in our study population. This is difficult to explain, as warts are usually more common in children of school age. It appears however, from data derived by other studies in Africa, that warts are less common in African children as compared to White people (9,19).

It was also of interest to us that none of the children had features or histories suggestive of atopic eczema. An earlier study done in school children in Nigeria had reported a 26.1% prevalence of atopic eczema, although there was no emphasis on socio-economic factors (20) and hospital-based studies in the same environment had reported much lower figures of 5.8% to 7.1% (3,4). We had noticed that although allergic disorders were increasing, they were less common in these low socio-economic class children and had attributed this to different health care seeking habits. Our present study confirms the low incidence in the low socio-economic class and supports the findings of others that allergic diseases are fewer in the lower socio-economic group (21,22). Various reasons

have been adduced, including early introduction of cow milk supplementation (23), difference in hygienic situations at home, infections in childhood, use of antibiotics, and possibly BCG vaccination (24–26). Most children born in this country are vaccinated at birth with BCG, irrespective of the socio-economic status of the parents. More studies are needed to identify the possible type of infections or nutrition that protects children from possible allergic disorders.

One or more melanocytic nevi were found on 40 (3.8%) of the students. There are no documented studies in this environment with regards to melanocytic nevi. Studies done elsewhere have reported a prevalence of between 3.6% to 50% (27–29). Our figure is lower than that previously documented. However, we know that the prevalence of melanocytic nevi varies in different races and that Black people appear to have fewer melanocytic nevi compared to White people (30).

It was interesting that as many as 138 (12.9%) students had tribal marks, while another 77 (7.2%) had received scarification marks for various reasons. Tribal marks were common decades ago and were used to identify a person's tribe at sight, as they were usually located on the face.

Herbalists or native doctors usually inflict scarification marks on various parts of the body. The location of the scarification may point to the area of discomfort. They are also believed to protect individuals from "witchcraft."

Because of the high incidence of blood-borne illnesses in our environment, efforts to educate parents are needed to discourage these practices, as they have been associated with the transmission of HIV and hepatitis B and C viruses (31,32).

More importantly, neonatal and childhood infection with hepatitis viruses have been associated with the earlier onset of primary liver cell cancer as seen in Nigeria. We did not investigate our subjects for HIV infection or hepatitis as it was not the focus of our study.

In conclusion, we found that cutaneous disorders such as fungal infections, scabies, and angular cheilitis occur commonly in Nigerian school children in low socio-economic areas and that atopic eczema was virtually absent. We also observed that harmful practices such as tribal and scarification marks are still carried out on children in our community. Antenatal clinics and immunization centers in these areas may be ideal places to educate parents about the possible health complications for their children of these traditions.

We recommend that skin examinations be performed in schools so as to limit the spread of fungal infections and scabies. Teachers and school nurses should be trained to recognize these disorders, and the school nurse should

be taught the first line management of these conditions. Efforts should be made to educate families of infected students about things they can do to prevent these disorders.

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