



Prevalence and Pattern of Skin Diseases among School Age Children at the University of Port Harcourt Teaching Hospital, Nigeria: A Hospital Based Study

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Authors' contributions

This work was carried out in collaboration between both authors. Authors DDA and BAAH designed the study, performed the statistical analysis and wrote the protocol. Author DDA wrote the first draft of the manuscript. Author BAAH managed the statistical analyses of the study. Author DDA managed the literature searches. Both authors read and approved the final manuscript.

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ABSTRACT

Background: Skin diseases are common among school age children. In the absence of population based studies, data from hospital based studies could be a pointer to the enormity of the problem within the community.

Objective: To evaluate the prevalence and pattern of skin diseases among school age children at the University of Port Harcourt Teaching Hospital (UPTH).

Materials and Methods: This was a retrospective review of the records of all children aged 6-18 years seen at the dermatology clinic of the University of Port Harcourt Teaching Hospital from January 1, 2016 to December 31, 2019. Socio-demographic characteristics and diagnosis were obtained from the clinic register. Data was analyzed using SPSS version 20.0.

Results: Three hundred and forty- seven patients aged 6 -18 years were seen over the period under review. Males were 165 (47.55%) and females were 182 (52.45%). The mean age

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was 10.79±3.35 years. The overall prevalence of skin disease was 16.3%. The five most common diagnoses were Papular urticaria 10.35%, Scabies 10.08%, Atopic dermatitis 8.72% and Dermatophyte infections 8.17%. One hundred and two (29.4%) patients out of the 347 patients with skin diseases, had transmissible skin diseases of which scabies 37 (36.27%) was the commonest. The commonest Dermatophyte infection was Tinea corporis 15 (50.00%), followed by Tinea capitis 7 (23.33%).

Conclusion: School age children made up significant number of patients seen at the dermatology clinic at UPTH and almost a third of them had transmissible skin disease. An effective School Health Programme will curb the spread of transmissible skin disease within schools in Port Harcourt.

Keywords: Skin diseases; school age children; prevalence; dermatophyte infection.

1. INTRODUCTION

Skin diseases are a major cause of morbidity globally, affecting 20% to 30% of the general population at least once in their life time [1]. They are the 4th leading cause of non-fatal disease burden worldwide, [2] contributing 1.79% to the global burden of disease in 2013 [3]. Its burden is particularly great in the developing countries where there is overcrowding, poor living conditions and poor standards of hygiene [4]. In these countries, prevalence rates of 21% to 87% have been reported⁴ and school children bear the brunt of the disease because of their poor personal hygiene, sharing of beddings and overcrowding in the classrooms and hostels which support the spread of communicable skin diseases within the schools [5,6].

Skin diseases prevalence of 25.6%-70.5% have been reported among school children in some countries in Africa and Asia [6,7,8,9,10]. There is paucity of school based survey on skin diseases in Nigeria. Most of the studies found were done in Western and Eastern Nigeria with very few in South-South Nigeria and reports from these studies put the prevalence of skin diseases in Nigeria between 35% to 72.2% [11-15].

The pattern of skin diseases in any community is said to be influenced by genetic constitution, climate, socioeconomic status and hygiene standard [16]. Two population based studies in Mauritius and Egypt revealed acne, fungal infections, scabies and dermatitis as the prevalent skin diseases among school children [16,17]. The most prevalent transmissible skin disease reported amongst school children in India was Pediculosis capitis, whilst Pityriasis alba was the most common non-transmissible skin disease [8]. In Nigeria, Acne vulgaris, Pityriasis versicolor and Tinea capitis were the common skin disorders reported amongst school children in Ibadan and Calabar [11,15].

Surprisingly, not much has been done on the prevention and control of skin diseases in schools in Nigeria despite its high prevalence, [4] probably because they are rarely fatal and also because of the general lack of awareness of their impact on the health of school children in Nigeria. However, studies done outside Nigeria have shown that skin disorders can have negative impact on the children's self-esteem, self-perception, relationship with peers and academic performance because of the bullying and teasing by their peers [18,19]. Additionally, the cost of treatment of some skin diseases adds a huge financial burden on the families, sometimes limiting the uptake of treatment and resulting in complications [20]. These numerous problems associated with skin diseases make it pertinent for intervention programmes geared towards prevention and control to be instituted in schools. The first step in planning intervention is knowing the magnitude of the problem. Unfortunately, there is paucity of data on skin diseases amongst school children in Port Harcourt. In the absence of school surveys, hospital based data can be a pointer to the enormity of the problem within the communities. This study aimed to evaluate the prevalence and pattern of skin diseases among school age children seen at the dermatology clinic of the University of Port Harcourt Teaching Hospital and the data so generated would be used for advocacy for the development of policy document for the prevention and control of skin diseases in schools in Port Harcourt, Nigeria.

2. MATERIALS AND METHODS

2.1 Study Site

The University of Port Harcourt Teaching Hospital is located in Port Harcourt Metropolis in Rivers State, Southern Nigeria. The hospital is a referral centre for many primary and secondary health facilities within and outside the state. The dermatology clinic is one of the sub-specialty

clinics in the hospital. It is a weekly clinic run by Consultant dermatologists and resident doctors in the department of Internal Medicine. On the average, about 50 patients are seen on every consultation day, which is every Thursday. The clinic cares for patients of all ages as there is no Paediatric dermatology clinic in the hospital and patients with dermatological conditions are seen mostly on referral from within and outside the hospital.

2.2 Methods

This was a descriptive, retrospective cross-sectional study carried out at the dermatology clinic in the Department of Internal Medicine of the University of Port Harcourt Teaching Hospital. The study population was made up of all patients aged 6 to 18 years with dermatological conditions seen in the dermatology clinic from January 1, 2016 to December 31, 2019. Sociodemographic characteristics and diagnosis were obtained from the clinic register. Diagnosis was clinical and with laboratory investigations. Laboratory investigations done included skin scraping for mycology, skin snips for microfilaria, biopsy, histology and skin slit/smear for Acid Fast Bacillus (AFB).

2.3 Statistical Analysis

Data obtained was entered into a spreadsheet and analysed using SPSS version 20. Results are presented in percentages and tables. Chi-square test was used to test for association between two categorical variables and to determine the level of significance between variables. P-value < 0.05 was regarded as statistically significant.

3. RESULTS

Of the 2,132 patients seen at the dermatology clinic during the period under review, 347 were children aged 6 to 18 years, accounting for 16.3% of all dermatological consultations. The mean age was 10.79±3.35 years. One hundred and sixty-five (47.55%) were males and 182 (52.45%) were females with male to female ratio of 0.9:1. One hundred and fifty-two (43.80%) were 6-10 years of age; 111 (31.99%) were 11-15 years and 84 (24.21%) were ≥16 years of age. Three hundred and thirty three patients (95.97%) had single diagnosis, while 14 (4.03%) had multiple diagnosis.

Papular urticaria was the most common specific diagnosis among the patients 38 (10.35%), followed by Scabies 37 (10.08%) and Atopic dermatitis 32 (8.72%) (Table 1). One hundred and two (29.4%) patients out of the 347 patients with skin diseases, had transmissible skin diseases of which scabies 37 (36.27%) was the commonest, followed by Dermatophytes 30 (29.41%) and Pityriasis versicolor 19 (18.62%) (Table 2). Table 2 also showed that the commonest Dermatophyte infection amongst the patients was *Tinea corporis* 15 (50.00%), followed by *Tinea capitis* 7 (23.33%).

Table 3 showed no statistically significant association between gender and transmissible skin diseases (P=0.103). Transmissible skin diseases also had no significant association with age (p=0.587%), though the youngest age group (6-10 years) had the highest proportion of those with Dermatophyte infections.

4. DISCUSSION

We found skin diseases prevalence of 16.3% among the school age children, which is far lower than the 35- 72.3% reported in Nigeria [12,14,15] and 26.7-58.3% reported in countries in Africa, Middle East and Asia [6,7,21,22] The much lower prevalence rate of skin diseases observed in this study, compared to other studies, could be attributed to the fact that whilst the other studies were community based, this present study was hospital-based study, which can be affected by factors such as health seeking behaviour of the community, accessibility to health care and socioeconomic status [23] Therefore the data generated may not be a true reflection of the actual size of the problem within the community.

We observed a slight female preponderance in skin diseases among the children, which is similar to previous reports from Ethiopia and Iraq [7,22] but contrasts with the report of male preponderance in a study done in Western Nigeria, though this previous study involved only children with skin infections [12] We also observed a decline of skin diseases with age, which may be attributed to the better practice of personal hygiene by the older children. This is also similar to the reports of other researchers [7,22].

In our study, Papular urticaria was the most prevalent skin disease found, this was closely followed by scabies, atopic dermatitis and Dermatophyte infection. Other studies in Nigeria

and in other African countries reported similar findings, though the point prevalence of the diseases varies from one study to the other [7,11,12,14,15,24,25] Papular urticaria is a hypersensitivity reaction to bites from mosquitoes and other insects and presents as recurrent or chronic Papular rashes [26] The high prevalence of Papular urticaria in this study may be related to the intense mosquito bites in Port Harcourt and in other communities within Rivers State, Nigeria [27] An earlier hospital based study in Port Harcourt had similar findings [28].

Table 1. Dermatological diagnosis amongst the patients

Diagnosis (n=367) (Multiple diagnosis)	Frequency	Percentage
Papular urticaria	38	10.35
Scabies	37	10.08
Atopic dermatitis	32	8.72
Dermatophyte infection	30	8.17
Contact dermatitis	21	5.72
Pityriasis versicolor	19	5.18
Psoriasis	18	4.90
Warts	16	4.36
Acne	14	3.81
Vitiligo	14	3.81
Seborrheic dermatitis	11	3.00
Lichen Nitidus	9	2.45
Pityriasis Rosea	8	2.18
Fixed drug eruption	7	1.91
Alopecia	6	1.63
Keloids	6	1.63
Tinea versicolor	5	1.36
Keratoderma	4	1.09
Epidermal naevus	3	0.82
Molluscum contagiosum	3	0.82
Keratosis	2	0.54
Juvenile rheumatoid arthritis	2	0.54
Pompholyx	2	0.54
Post bleaching syndrome	2	0.54
PLC	2	0.54
Pruritus	2	0.54
Pseudofolliculitis barbae	2	0.54
Folliculitis	2	0.54
Flexural dermatitis	2	0.54
Filariasis	2	0.54
Epidemodysplasia verruciformis	2	0.54
ACD	2	0.54
Hypopigmentation	2	0.54
Ichthyosis	2	0.54
Xerosis	2	0.54
Naevus	2	0.54
Tuberous sclerosis	2	0.54
Angioedema	1	0.27
Chickenpox	1	0.27
Chronic lymphoedema	1	0.27
Dermatosis papulosa	1	0.27
Dyspigmentation	1	0.27
Epidemolysis bullosa	1	0.27
Erythroderma	1	0.27
Follicularis pilaris	1	0.27
Fox-Fordyle disease	1	0.27
Hyperkeratotic lesion	1	0.27

Diagnosis (n=367) (Multiple diagnosis)	Frequency	Percentage
Impetigo	1	0.27
Inflammatory dermatitis	1	0.27
Kaposi sarcoma	1	0.27
Lesion P cause	1	0.27
Lichen simplex	1	0.27
Linear verrucous naevus	1	0.27
Lupus panniculitis	1	0.27
Lymphangioma circumstription	1	0.27
Lymphogranuloma circumstription	1	0.27
Nonspecific dermatitis	1	0.27
Numular D	1	0.27
Onychomycosis	1	0.27
Pemphigoid lichen	1	0.27
Phrynoderma	1	0.27
PLEA	1	0.27
Post inflammatory hyperpigmentation	1	0.27
PPE	1	0.27
Scleroderma	1	0.27
Syringoma	1	0.27
Vasculitis	1	0.27
Vesicular eruption	1	0.27
Viral exanthem	1	0.27

Table 2. Transmissible Skin diseases among the patients

Transmissible diseases	Frequency	Percentage
Scabies	37	36.27
Dermatophytes	30	29.41
Pityriasis versicolor	19	18.63
Warts	16	16.68
Total	102	100
Dermatophyte infections		
Tinea corporis	15	50.00
Tinea capitis	7	23.33
Tinea pedis	3	10.00
Tinea incognito	2	6.67
Tinea manuum	2	6.67
Tinea cruris	1	3.33
Total	30	100

Table 3. Association between transmissible skin diseases and gender

Skin diseases	Gender (%)		Total (%)	χ^2 (p=value)
	Male	Female		
Transmissible skin diseases				
Scabies	25 (45.45)	12 (25.53)	37 (36.27)	6.18
Dermatophyte infection	13 (23.63)	17 (36.17)	30 (29.41)	(0.103)
Pityriasis versicolor	8 (14.55)	11 (23.40)	19 (18.63)	
Warts	9 (16.36)	7 (14.89)	16 (15.69)	
Total	55	47	102	

We noticed a high prevalence (29.39%) of transmissible skin diseases in this study, which is similar to the 27.2% reported by Amin et al in Saudi Arabia, [29] higher than the 8.8% reported by Khalifa et al among school children in Iraq,

[22] and much lower than the 61% reported in Kerala in India. [9] These differences may be as a result of variations in personal and environmental hygiene as well as degree of exposure to risk factors such as overcrowding.

Table 4. Association between transmissible skin diseases and age group

Skin infection	Age category in years			Total (%)	χ^2 (p-value)
	6-10	11-15	≥16		
Scabies	16 (36.36)	15 (41.67)	6 (27.27)	37 (36.27)	4.67
Dermatophytes infection	16 (36.36)	9 (25.00)	5 (22.73)	30 (29.41)	(0.587)
Warts	6 (13.64)	5 (13.89)	5 (22.73)	16 (15.69)	
Pityriasis vesicolor	6 (13.64)	7 (19.44)	6 (27.27)	19 (18.630)	
Total	44	36	22	102	

The commonest transmissible skin disease found in this study was scabies, which is a very common skin disease caused by the mite *Sarcoptes scabiei*. The disease is easily transmitted through skin to skin contact in overcrowded environment [30]. Our finding differs from that of other researches in Ethiopia, India and Saudi Arabia who reported *Pediculosis capitis* as the most common transmissible skin disease [6,9,29]. In these studies scabies was either not found or had a very low prevalence [9,29]. The explanations for these observed differences are the exclusion of *Pediculosis capitis* from this present study and the fact that the pattern of skin diseases vary in different geographical location, depending on the presence of poverty, overcrowding and personal and environmental hygiene [16].

Dermatophyte infections were the 4th most common skin diseases in this study, with *Tinea corporis* accounting for half of the Dermatophyte infections. This is at variance with the reports of some previous studies done within and outside Nigeria where *Tinea capitis* was reported as the most common Dermatophyte among school children [6,11,23,29]. The possible explanation for this observed difference is that most of these studies were done among primary school children, while the current study included older children of secondary school age and above. Other studies have also shown that *Tinea capitis* is commoner in younger children [31,32].

We observed a gradual, non-significant ($p=0.587$) decline in the prevalence of transmissible skin diseases with age, which may be as a result of improved personal hygiene and better health care practice among the older children which allowed a break in the transmission of the diseases. Gender had no positive association with transmissible skin diseases in this study ($p=0.103$), this corroborates the report of a previous study which had similar observation [22].

The high prevalence of skin diseases in this study is a reflection of the poor status of the School Health Programme in both primary and secondary schools. Routine inspection of the skin of school children by teachers and health personnel will lead to early detection and treatment of skin diseases so as to limit the spread of transmissible skin diseases within the schools.

5. CONCLUSION

The prevalence of skin diseases was high among school age children seen at the dermatology clinic of UPTH. Papular urticaria was the disease with the highest prevalence, followed by Scabies. Improved School Health Programme will help curb the burden of skin diseases in schools in Port Harcourt.

CONSENT

As per international standard, parental written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

Ethical approval for the study was given by the Ethics Committee of University of Port Harcourt Teaching Hospital.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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