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Full Length Research paper

Determinants of dermatological disorders among school children in Sagamu, Nigeria

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Studies from developing countries conducted over a period of years in the past have reported high prevalence of skin disorders among school children, the spectrum of which has been highly variable. Our study aimed at describing the current pattern and determinants of dermatological disorders among urban primary school children in an African population. This was a descriptive cross-sectional study conducted in public primary schools in Sagamu local government area of Ogun State. A multi stage sampling technique was employed and data was collected by well trained health workers using an interviewer-administered questionnaire. Dermatological diagnosis was made mainly clinically by Physicians. Laboratory investigations were used to confirm difficult diagnoses. A total of 480 primary school children were recruited. The overall point prevalence of any skin disease was 39.6% (190/480) with 86.2% of those infected having one lesion, and 26 (13.8%) with two or more lesions. The prevalence of any skin disorder was 112 (48.1%) in males and 78 (31.6%) in females (X2= 13.632, p = 0.000). Infective dermatoses accounted for 83.7% of all skin disorders, with superficial fungal infections (dermatophytoses and pityriasis versicolor) accounting for 159 (74.1%). Determinants of acquisition of skin infection among school children were Male sex [OR=2.0, CI=1.36-2.94], previous skin infection [OR=2.09, C.I=1.42-3.06] and No of Siblings greater than 4 [OR=1.17, C.I=01.00-1.37] Number of Siblings greater than 4, previous skin infections and gender were significantly associated with skin disorders among the study population. These factors should be considered in screening for skin infection among young school children. Interventions that enhance good personal hygiene and family life education should be encouraged in developing countries in order to reduce the incidence of skin infection.

Keywords: Dermatological disorder, children, school, Nigeria.

INTRODUCTION

Several studies from developing countries conducted over a period of years in the past have reported high prevalence of skin disorders among school children, the pattern of which has been highly variable (Ogunbiyi et al., 2005; Figueroa et al., 1996). Infectious dermatoses were commonly observed, which included superficial fungal infections (tinea capitis and pityriasis versicolor) and scabies. Frequently observed non-infectious dermatoses

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were papular urticaria, angular cheilitis, melanocytic nevi, and tribal and therapeutic marks. Atopic eczema and viral warts were virtually absent. Infestations were the most prevalent followed by superficial fungal infections (Williams et al., 1995; Figueroa, 1996) . In a review of prevalence studies in children by WHO, the prevalence of skin diseases ranging from 21% to 87% has been documented (WHO, 2005).

Small-scale investigations targeting "high-risk" (ie, minority) or self- referred populations have attempted to define *Tenia* infection rates; however, little is known about the prevalence of these pathogens in the general pediatric population (Ghcanoum et al., 2003; Sharma et al., 1998). Elsewhere in the world, similar prevalence figures have been reported. In Turkey, Isil Inanir et al reported a prevalence of skin disorders of 77% among primary school children. Infectious dermatoses were frequently observed; pediculosis capitis, scabies, viral diseases and fungal infections [Isil Inanir et al 2005].A study done in rural Tanzania reported 55% of the school children as having one or more skin diseases (Ghcanoum et al., 2003), however, previous surveys in different rural Tanzanian communities among children and adults documented the prevalence of skin disorders of 35% and 27% respectively with infectious dermatoses comprising the bulk (Bocobo et al., 1965; Terreni, 1961). A more recent study from Iraq reported the overall prevalence of skin diseases among primary-school children of 40.9% and that this high prevalence may reflect the prevailing low socio-economic conditions (Williams et al., 2005).

Factors associated with skin disorder may include economic change, political and social violence, cultural disruptions, Dislocation from home by economic forces especially with the advent of global economic recession have been associated with great increase in varieties of skin disorders among school children [Isil Inanir et al., 2005; Sharma et al., 2001).The striking increase in infection prevalence and endemic nature of disease observed in young children at the time of transition from preschool to primary school indicates that there is an increased need for health care and management of deterioration in the quality of life.

This study aimed at describing the current pattern of dermatological disorders and its determinants among urban primary school children in a city of a sub Saharan African country. The work is important considering that skin diseases were associated with mortality rates of 20,000 in Sub-Saharan Africa in 2001 (Hay et al., 2006). This study will help to identify factors associated with skin disorders and the target group among these children. This will enhance screening at the community level leading to the reduction of the disease in the developing countries of the world.

METHODS

Study design

This was a descriptive cross-sectional study conducted in public primary schools in Sagamu local government area of Ogun State. A total of four hundred and eighty subjects were recruited into the study. Prevalence of 35% of prevalence of skin disorder among primary school children in Ibadan, Nigeria (2). A precision of 95% is desired with a power of 90%. The calculated sample size was 350 while this was increased to 524 (multiplied by 1.5) with response rate of 91.6%.

Sampling technique

A multi stage sampling technique was employed.

Stage 1: Four Primary schools were selected from 4 of the 15 wards in Sagamu LGA using random number tables.

Stage 2: A list of all public and private primary schools within the selected 4 wards was obtained from the Zonal Education Authority. Using the random sampling technique one school was selected in each ward in Sagamu LGA.

Step 3: The sample size was spread evenly across all the four schools selected. Twenty six subjects were selected in each class. The children were then recruited by a simple random technique at that class from various arms of the classes. School children were recruited regardless of the strict age-definition of the term 'child,' provided they were still in primary schools. Children that were selected and were not interested were not interviewed and were counted as non response.

Data Collection

The questionnaire: The study was conducted using a interviewer-administered questionnaire which was divided into three parts to collect the relevant information. These data were collected by 4 trained health workers. Section one contains the socio demographic data of the respondents while section two sought information on factors associated with dermatological disorders. The final section documented the result of the clinical examination conducted by the physicians. Recruited children were interviewed and examined in day light. Dermatological diagnosis was made mainly clinically by the consulting physicians. Laboratory investigations were used to confirm difficult diagnoses.

Table 1. Common Skin Infection among the School Children

Skin Infection	No Infected	%
Dermatophytosis	159	74.1
-Tenia Capitis	79	41.8
-Tenia Corporis	18	9.5
-Tenia Vesicolor	36	19.0
-T. Capitis& T. Corporis	23	12.2
-T. Carpitis & T. Vesicolor	3	0.6
Scabbies	2	1.1
Pediculosis	16	8.5
Non Infectious Skin Lesions	12	6.7

Data Analysis

Data was entered into a computer and counterchecked to ensure correctness of entries. Analysis was done using the Statistical Package for Social Sciences (SPSS) version 10.0. Chi-squared and Fisher's exact statistical tests were used to determine associations for categorical variables. A p-value of less than 0.05 was considered statistically significant.

A logistic regression model was produced with use and non-use of condom as outcome variable to identify associated factors. All explanatory variables that were associated with the outcome variable in bivariate analyses were entered into the model, all variables with a P-value of ≤0.05 were included in the logistic models. Predictor variables were restricted to outcome measures that were statistically significant. A p-value ≤ 0.05 or confidence limits which did not embrace unity (1) was considered as statistical significance.

Ethical clearance:

Ethical clearance was obtained from the Olabisi Onabanjo Teaching Hospital Ethics Board. Confidentiality on candidate's information was maintained. Permission of the State Ministry of Education and the Head teachers of the selected schools were obtained before the commencement of the study. Informed consent was also obtained from the parents of the participants before they were enrolled in the study. This consent forms was also used to obtain some of the information about the socio-dermographic characteristics of the parents.

RESULTS

A total of 480 primary school children were recruited. Of these, 233 (48.1%) were males. The age ranged from 5 to 16 years, (mean 9.4 ± 2.8 years). Incidence of skin infection was highest (41.7%) among the age group 8yrs-10yrs. The distribution of the socio-dermographic characteristics and skin infection is as shown in Table 2.

The overall point prevalence of any skin disease was 39.6% (190/480) with 86.2% of those infected having one lesion, and 26 (13.8%) with two or more lesions. The prevalence of any skin disorder was 112 (48.1%) in males and 78 (31.6%) in females (X2= 13.632, p = 0.000). Table 1 shows the prevalence of skin diseases and their distribution by sex and age-groups. Infective dermatoses accounted for 83.7% of all skin disorders, with superficial fungal infections (dermatophytoses and pityriasis versicolor) accounting for 159 (74.1%). Furthermore, infective dermatoses were more prevalent 90 (23.1%) among pupils aged 8-10 years (p = 0.344). Other relatively common infective dermatoses included scabbies 2 (1.1%) and pediculosis capitis 16 (8.5%).

There was a wide range of non-infective skin disorders namely atopic eczema, superficial non specific ulcers, acne vulgaris etc . Many of these conditions, however, were of very low prevalence. Non-infectious skin disorders occurred in 12 (6.3%) and commoner in children aged 8-10yrs 7 (58.3%, p = 0.0001).This is as shown in Table 1. Overwhelming majority of the children (92.5%) did not seek any medical care for their skin diseases while 137 (70.3%) practiced self medication.

Factors associated with skin disorders

Male subjects were significantly associated with skin disorders among the school children (48.1% vs 31.6%, p=0.000). Other factors were presence of previous infection (49.6% vs 30.1%, p=0.0001) and sharing of towels at home (45.9% vs 33.9%, p=0.018). Surprisingly, basal metabolic index [BMI] (p=0.759), Nutritional status

Table 2. Skin Infection and Socio-dermographic Characteristics

	Total No [%]	Had Skin Infection No [%]	P value
Age			
5-7 yrs	117 [24.4]	46 (39.3)	
8-10 yrs	223 [46.5]	93 (41.7)	0.703
11-13 yrs	120 [25.0]	45 (37.5)	
14-16 yrs	20 [4.2]	6 (30.0)	
Sex			
Male	233 [49.5]	112 (48.1)	0.00
Female	247[51.5]	78 (31.6)	
Father's Education			
Nil	67 [14.0]	33 (49.3)	
Primary	61 [12.7]	21 (34.4)	0.243
Secondary	99 [20.6]	46 (46.5)	
Tertiary	64 [13.3]	20 (31.3)	
Don't Know	189 [39.4]	70 (37.0)	
Mother's Education			
Nil	79 [10.5]	30 (38.0)	
Primary	57 [11.0]	27 (47.4)	0.341
Secondary	103 [21.5]	47 (45.6)	
Tertiary	45 [9.4]	16 (35.6)	
Don't Know	195 [40.7]	70 (35.9)	
Father's Occupation			
Unskilled	68 [14.2]	31 [45.6]	
Skilled	310 [94.8]	127 [41.0]	0.243
Professional	7 [1.5]	2 [28.6]	
Unemployed	95 [19.8]	30 [31.6]	
Mother's Occupation			
Unskilled	24 [5.0]	5 [20.8]	
Skilled	383 [79.9]	152 [39.7]	0.116
Professional	55 [11.5]	27 [49.1]	
Unemployed	18 [3.8]	6 [33.3]	
No of Siblings			
0-4	372 [77.5]	154 [41.4]	0.08
>4	108 [22.5]	36 [33.3]	

(p=0.269), No of siblings (p=0.08), parental education (p=0.341 for mother and p=0.166 for father) and occupation (p=0.243 for father and p=0.116 for mother) were not significantly associated with presence of skin disorders (Table 2 and 3).

In the multiple logistic regression model, three variables were found to be independently associated factors for skin disorders. Determinants of acquisition of skin infection among school children were Male sex [OR=2.0, CI=1.36-2.94] , had previous skin infection [OR=2.09, C.I=1.42-3.06] and No of Siblings greater than 4 [OR=1.17, C.I=01.00-1.37] (Table 4)

DISCUSSION

This study has shown the spectrum of skin diseases among school children in an urban setting in an African population. The point prevalence of skin disorder of 39.6% is still comparable to that of a previous study (35%) among school children in Ibadan, Nigeria (Ogunbiyi et al., 2005). Other previous studies from developing countries have reported almost similar figures varying between 35% and 80% and also reported infectious dermatoses as comprising majority of all skin disorders (Williams et al., 1995; Ghcanoum et al., 2003).

Table 3. Skin Infection and Health Indices

	No	Had Skin Infection	P value
Basal Metabolic Index			
<18	451 [94.0]	180 [39.9]	
18-25	27 [5.6]	9 [33.3]	0.759
>25	2 [0.4]	1 [50.0]	
Nutritional Status			
Underweight	119 [24.8]	46 [38.7]	
Normal Weight	353 [73.5]	143 [40.5]	0.269
Overweight	8 [1.7]	1 [50.0]	
Personal Hygiene			
Good	249	84 [33.9]	0.018
Bad	231	106 [45.9]	
Previous Skin Infection			
Yes	234 [48.8]	116 [49.6]	0.000
No	246 [51.2]	74 [30.1]	

Table 4. Determinants of Acquisition of Skin infections

	Adjusted OR [95% C.I]
Sex	
Male	2.0 [1.36-2.94]
Female	1.00
No of Siblings	
0-4	1.00
>4	1.17 [1.00-1.37]
Personal Hygiene	
Good	0.94 [0.76-1.17]
Bad	1.00
Previous Skin Infection	
Yes	2.09 [1.42-3.06]
No	1.00

In our study, infectious dermatoses similarly comprised majority (86.2%), and dermatophyte infections were the most frequent (74.1%). A Nigerian study (Ogunbiyi et al., 2005) conducted more than a decade ago reported the prevalence of tinea capitis, which was similar (15% vs 16.5) to ours. Studies in various parts of the world have also confirmed the high frequency of dermatophyte infection affecting mostly children aged 8-12 yrs and occurring mostly on the face and head (Terragni et al., 1991; Silva et al., 1995; Akpata et al., 1990). It is surprising therefore to find that the trend of infectious skin diseases is still similar to that described several decades ago.

The lower prevalence of scabies in this study (1.4%) is similar to several other studies conducted in preschool children, rural community, households and under-five children in refugee camps which have recorded wide prevalence variations (Terry et al., 2001; Sharma et al., 2001; Ciftci et al., 2006). Differences in socioeconomic standards, even within countries have been mentioned as some of the factors responsible for such great variations in prevalence (Terry et al., 2001). Majority of the school children in this study did not seek any form of treatment for their skin conditions. The low level of medical care seeking behavior has also been demonstrated among school children (Mgonda and Lutale, 2001). This attitude may be attributable to the assumption that skin diseases are not important since they do not constitute any metabolic disturbances and are mere cosmetic nuisance, not meriting any treatment.

The study show that basal metabolic index [BMI] and nutritional status were not significantly associated with skin disorders. These are important factors in the normal growth and development of children. Studies have shown that factors associated with acquisition of skin infection are not basically systemic [Di Silverio et al 1995; Silva et al 1995]. The fact that parental education and occupation were not significantly associated with skin disorders is in contrast with some studies (Di Silverio et al., 1995). This has however been reported in other similar studies (Silva

et al., 1995; Akpata et al., 1990). Though adequate care is essential and important in the prevention of infective skin disorders, other factors more important might have reduced the significance of parental influence in this environment. This may need to be further investigated.

The finding that male subjects are associated with skin infection at this age group may emphasise the dominant active role of this gender in the study population. This is strongly influenced by the cultural role of male dominance in the African population (Terry et al., 2001). Furthermore, previous infection number of siblings greater than 4 and sharing of towels at home being significantly associated with skin disorders among the school children shows the importance of personal hygiene, family planning and adequate care in the acquisition and development of skin disorders. This has been reported by several community based studies (WHO, 2005; Williams et al., 2005). Interventions such as health education during the Parent-Teachers Association meetings that enhance school children good personal hygiene, appropriate family planning and encourage parents to devote more time to the upkeep of their children should be encouraged in developing countries especially among the male children.

The study concludes that the trend and point prevalence of skin disorder is still similar to that of a previous study several decades ago. Number of Siblings greater than 4, previous skin infections and gender were significantly associated with skin disorders among the study population. These factors should be considered in screening for skin infection among young schoolchildren. Interventions that enhance good personal hygiene and family life education should be encouraged in developing countries in order to reduce the incidence of skin infection.

The results of this study should be interpreted cautiously. First, the study was conducted among primary school children. This setting may be too young to give an accurate data about their parents. The study was also limited in that it relied on self-report, and is therefore subject to reporting bias. The effect of social desirability bias and telescoping bias may be other potential limitations in this study. Our findings have implications for interventions among young school children in screening for skin infection among these age group.

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