

Pattern of pediatric skin disorders in Murtala Muhammad Specialist Hospital Kano, Nigeria

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Summary. *Background:* Skin disorders are very common in children with a wide variety being seen among them. The spectrum of skin disorders seen in children vary from region to region. *Aim of the work:* The objective of the study was to determine the pattern of skin disorders among children in Pediatric dermatology clinic of Murtala Muhammad Specialist Hospital, Kano, Nigeria. *Methods:* A descriptive cross-sectional study was employed. Subjects were consecutively recruited. Using a semi-structured questionnaire, demographic history of the subjects and history of skin disorders were obtained from all the subjects and detailed physical examination was carried out with particular emphasis on skin lesion examination. Data obtained was analyzed using SPSS version 24. *Results:* A total of 338 subjects were recruited. One hundred and seventy-three (51.2%) were males and 165 (48.8%) were females. Thirty-five (35) specific types of skin disorders were observed. the commonest category of skin disorders seen was infection and infestations (47%), followed by inflammatory skin disorders (36.9%) of the subjects. Tinea capitis was the commonest type of skin disorder observed among 15.5% of the subjects followed by atopic eczema (13.0%). Tinea capitis was significantly commoner among male children aged 6-10 years ($p<0.01$) and Miliaria was significantly commoner among children aged less than 2years ($p=0.04$). *Conclusion:* Wide spectrum of skin disorders was seen among children in this environment with infections and infestations being the commonest category of skin disorders observed. (www.actabiomedica.it)

Key words: pattern, skin disorders, children

Introduction

Skin disorders are very common in children. The incidence among children was reported to be between 9 to 34% (1). The spectrum of the skin disorders seen in children is wide and vary from place to place as well as at different times of the year (2-3). More than 30% of cases seen in many dermatology clinics are children aged less than 15years (1, 4). Skin disorders constitute about 20-30% of children seen by paediatricians (5). Some of the skin disorders are pointers to other very important systemic diseases (6). The range of skin disorders in children is wider compared to that in adults. The modalities of treatment, presentation of the skin diseases as well as the prognosis in children is vast compared to what is obtained in adults (7). Skin dis-

eases are significant public health problems and have negative impact on the children ,their families and the community as a whole. They reduce quality of life and impose psychological and financial burden on families and communities due to the fact that they are mostly chronic and are on the skin which is visible to other people (8). Accurate and timely diagnosis and treatment of skin disorders among children will therefore significantly improve not only the life of the child but also that of the family and the community.

Hussein et al (9) conducted a study among children between 2008-2013 to determine the pattern of skin diseases in pediatrics dermatology clinic at King Hussein Medical Centre, they found preschool children to be more affected than other children and infections and infestations were the most common skin

disorders (35.3%), then followed by eczema (30.1%) and hypersensitivity reactions (6.5%).

Also a study by Olusola et al (10) among children attending dermatology clinic in Lagos, Nigeria reported females to be more affected than males, infections were the most common categories accounting for (26.1%) followed by eczematous conditions (24.9%), infestations (13.6%), papulo-squamous disorders (8.0%) and bullous disorders (3.7%). Infants and adolescents were most affected by infections in their study.

Emodi et al (11), in Port Harcourt Nigeria reported children less than 5 years to be more affected by skin disorders, constituting 70.24% of children with skin diseases. Pyoderma was the commonest skin disorder (29.81%) followed by scabies (13.55%).

The above studies show how the pattern of skin disorders vary in different places and among different genders.

The aim of this study is to determine the pattern of skin disorders in pediatric dermatology specialty clinic of Murtala Muhammad Specialist Hospital, Kano.

Methods

This was a Descriptive cross sectional study. This study was conducted between May and October 2016. All new subjects who were children between the ages of 0 and 14 years attending the Pediatric dermatology specialist clinic were considered for recruitment provided they were willing to participate in the study. Murtala Muhammad Specialist Hospital Kano is one of the largest medical facilities in Africa. It is reputed to admit the highest number of in-patients in Sub-Saharan Africa (12). Pediatric dermatology specialty clinic was established in Murtala Muhammad specialist hospital in the year 2015. It handles all children under the age of 14 years referred to pediatric dermatologist from primary physicians and other pediatric sub-specialists. The parents of eligible children were approached and the study was explained to them in detail. Signed informed consent was obtained from the caregiver/parent and an assent also sought from the children who were old enough to understand the explanation. A semi - structured questionnaire was administered and responses filled in immediately. This

was used to obtain socio-demographic information like the age and gender as well as clinical history including drug history.

A complete physical examination in a well lit room after proper exposure of each child was carried out by the investigator to detect all skin disorders. Areas examined included the hair, scalp, face, trunk, nails, oral mucosa, genitalia, and extremities. A chaperon was present during the examination especially for older children. A picture of each lesion was taken. The diagnosis was mainly clinical.

Ethical clearance

Ethical clearance for the study was obtained from the Hospital Research and Ethics Committee of Murtala Muhammad Specialist Hospital, Kano, Nigeria.

Individual informed consent was also obtained from the respective care-givers and assent were applicable to the child after a clear explanation of the study to them.

Statistical analysis

The data from the questionnaire was entered into a statistical package for the social sciences (IBM SPSS Statistics for Windows, Version 24.0). The data was presented in frequency tables and charts. Differences between proportions of categorical variables were evaluated using the Chi-square test or the Fisher exact test (where necessary) and level of significance was placed at p value < 0.05 .

Results

During the 6 months period the total number of new patients seen in the pediatric specialist dermatology clinic was 338. On average about 90 children are seen daily in the dermatology clinic of general outpatient department of the hospital as obtained from the records. On average 30-35 paediatric dermatology cases are referred to the pediatric dermatology specialist clinic weekly. The age range of the patients seen

was 0 to 14years. There were 173 (51.2%) male and 165 (48.8%) female children with male to female ratio of 1.05:1, with a median age of 3.5years. The largest number of patients are those aged less than 2years accounting for 127 (37.6%) of the patients. This is shown in Table 1 and 2.

Infections and infestations was the commonest category of skin disorder seen accounting for 48.2% of cases followed by inflammatory skin disorders (39.3%).

A total of 35 specific skin diseases were observed. Tinea capitis was the most frequent skin infection observed among 51 (15.1%) of the children, followed by eczema 44 (13.0%), Miliaria 38 (11.2%) and papular urticaria 23 (6.8%). Two subjects had more than one skin disorder. This is illustrated in Table 3.

Tinea capitis was found to be significantly commoner among children aged 6-10 years. While Miliaria was significantly commoner among children less than 2 years. This is shown in Table 4.

Tinea capitis was significantly commoner among male children (p=0.01). There was no significant difference in the occurrence of eczema, miliaria, papular urticaria and impetigo among different genders. This is shown in Table 5.

Discussion

In our study, majority of the children studied had infections and infestations (48.2%) followed by inflammatory skin disorders (39.3%). This is similar to

Table 1. Age distribution

Age group (years)	Number of cases (percentage)
<2	127 (37.6)
2-5+	95 (28.1)
6 -10+	102 (30.2)
>10	14 (4.1)
Total	338 (100)

Table 2. Sex distribution of study population

Sex	Number of cases (percentage)
Male	173 (51.2)
Female	165 (48.8)
Total	338 (100)

Table 3. Distribution of skin diseases into specific groups

Skin disease	Percentage
Infections and infestations	
Fungal	
Tinea capitis	15.5
Candidiasis	2.7
Tinea corporis	0.9
Tinea manum	0.3
Tinea unguium	0.3
Viral	
Viral warts	4.1
Chicken pox	3.0
Molluscum contagiosum	2.7
Herpes zoster	0.6
Bacterial	
Impetigo	6.5
folliculitis	4.4
Furuncle	3.0
Ecthyma	0.9
Cellulitis	0.3
Parasitic	
Scabies	1.8
Inflammatory	
Atopic eczema	13.0
Papular urticarial	6.8
Seborrheic dermatitis	3.6
Pityriasis alba	3.0
Pityriasis rosea	2.7
Juvenile keratoderma	1.8
Infantile acropustulosis	0.9
Acute urticaria	0.6
Mouth ulcers	0.6
Lichen planus	0.3
Lichen nitidis	0.3
Lichen striatus	0.3
Contact dermatitis	3.0
Others	
Cutaneous drug reaction	3.0
Hemangioma	1.2
Portwine stain	0.3
Alopecia areata	0.3
syringoma	0.3
Miliaria	11.2
Vitiligo	0.6

Table 4. Most common skin disorders and age

Skin lesion	Age group				χ^2	P- value
	< 2 years n (%)	2-5 years n (%)	6-10 years n (%)	>10 years n (%)		
Tinea capitis	4 (3.1)	16 (16.8)	29 (28.4)	2 (14.3)	28.54	<0.001*
Atopic Eczema	17 (13.4%)	14 (14.7)	8 (7.8)	4 (28.6)	5.75	0.12
Miliaria	21 (16.5)	11 (11.6)	6 (5.9)	0 (0.0)	8.28	0.04*
Papular urticaria	5 (3.9)	8 (8.4)	6 (5.9)	1 (7.1)	2.00	0.57

n- number of subjects, % - percentage, χ^2 - chi-square. * Significant, > greater than, < less than

Table 5. Common skin diseases and gender

Skin lesion	Gender		χ^2	p-value
	Male n (%)	Female n (%)		
Tinea capitis	35 (20.2)	16 (9.7)	7.32	0.01*
Atopic eczema	18 (10.4)	25 (15.2)	1.71	0.19
Miliaria	15 (8.7)	23(13.9)	2.35	0.13
Papular urticaria	13 (7.5)	7 (4.2)	1.62	0.20
impetigo	13 (7.5)	9 (5.5)	0.59	0.44

n- number of subjects, % - percentage, χ^2 - chi-square, * significant

findings by Hussein et al in Jordan (9), Balai et al in India (2), Mostapha et al in Egypt (13) and Olusola et al in Lagos, Nigeria (10). The findings differ from that of Casanovo et al in Spain (14) and Laughter et al in US (15) where inflammatory skin disorders were the commonest skin disorders found among children. The high prevalence of skin infections and infestations observed in this study may be as a result of overcrowding especially among many people living within Kano city, low socioeconomic status of the parents, poor education among parents and poor hygiene (16). These factors were found to be associated with increased risk of developing skin diseases among children in other parts of Nigeria (17, 18).

In this study, Tinea capitis was found to be the commonest specific skin disorder observed among 15.1% of the children followed by eczema (13.1%). Tinea capitis was the commonest skin disorder among children in other studies (10, 19- 20). This finding may be as result of environmental conditions in Northern part of Nigeria at the period of the study which was

hot and humid (21). Hot and humid environment was reported to increase fungal skin infections (18).

In our study, skin disorders was more prevalent (37.6%) in children less than 2 years, followed by those children aged 6-10 years (30.2%). This is similar to findings by Hussein et al in Jordan (13) and Olusola et al in Lagos (10), who observed skin disorders to be more common among pre-school children and school aged children. This finding may be as a result of poor hygiene among care givers of children and also spread of skin infections which is common among school children due to overcrowding and poor environmental school conditions. Increased parental concern about their children skin condition which can be disfiguring, may be the reason for high prevalence of skin disorders among children less than 2 years observed in this study.

In this study males were the most commonly affected by skin disorders compared with females. Tinea capitis was significantly associated with male gender ($p < 0.01$). This finding is similar to the findings of Hussein et al (9) who reported male children (51.1%) to be

more affected by skin disorders than female children (48.5%) in their study to determine the pattern of skin disorders among paediatric patients attending pediatric dermatology clinic at King Hussein medical centre and Queen Rania Abdullah Hospital for children. Gunee et al (22) in India also reported male children to be more affected (56.6%) by skin disorders than female children (43.4%). The findings in this study differ from that of Lakshmi et al (23) in India who observed more female school children (54.24%) to have more skin disorder than male children (45.15%). The difference between this study and that of Lakshmi et al (23) may be because this study is a hospital based study and Lakshmi et al study was community based study. However, Samson et al (24) in a prospective hospital based cross sectional study among paediatric patients in Northern Tanzania found no significant difference in the occurrence of skin disorders among different genders.

The finding of males being more affected in this study may be as a result large number of male children who are being sent to attend traditional Islamic schools (Almajiri) in Kano metropolis who live in overcrowded environment with poor hygiene (25). Sharing of shaving materials among boys and at barbing saloons is also a common practice which could have contributed to the larger number of males with *Tinea capitis*.

The five most common skin disorders observed in this study include *Tinea capitis*, eczema, Miliaria, papular urticaria and impetigo.

Tinea capitis was the commonest disorder of skin observed among 15.5% of the children studied which was significantly commoner among male children aged 6-10years. This finding is similar to that reported in other studies conducted in Nigeria (17, 26). The finding of *Tinea capitis* as the commonest skin disorder among children in this study is a pointer to poor living conditions, overcrowding among children in this environment which increased risk of developing skin diseases. It may also be as a result of sharing of shaving materials among children which promote spread of infection (27-28).

Various forms of *Tinea capitis* were observed including the inflammatory and the non-inflammatory types. The most common non-inflammatory types observed include; the seborrheic or diffuse dandruff type and the Grey patch type characterized by circum-

scribed patchy and scaly area of hair loss. The most common inflammatory types observed were the Kerion type which appears as a boggy, elevated, purulent, inflamed plaques and nodules and the diffused pustular type (scattered pustules with areas of hair loss that are scaly).

Atopic eczema was the second commonest skin disorder observed among 13% of subjects studied. It was found to be commoner among girls less than 2 years of age. This is in contrast to the findings by Kam et al (29). in China who reported eczema to be the commonest skin disorder accounting for 33% of skin disorders observed in children and was found to be commoner in boys. Also in Lagos, Nigeria, Adeolu et al (30) reported eczema to be the commonest skin disorder observed among 27% of subjects studied. The observed predominance of *Tinea capitis* in this study which is an infective skin disorder may be related to the recent religious conflict (Boko haram) that affected mostly the North Western part of the country. Internally displaced people who moved to neighboring states including Kano state living in unhygienic, overcrowded environments resulting in increased transmission of infections (31). This may have resulted in inflammatory skin disorders such as atopic eczema not been the commonest but second to *Tinea capitis* which is an infective skin disease.

Miliaria

Miliaria was observed to be 3rd most common skin disorder in this study observed among 11.2% of children studied. It was found to be commoner among female children (13.9%) and among those less than 2years. The occurrence of miliaria as the 3rd commonest skin disorder in this study may be related to the environmental conditions of the study area as well as the period of the year when the study was conducted (May-October) during which the weather is intensely hot (21). Humidity and change in temperature can also increase the incidence of skin colonisation and infection by some bacterial and fungal agents. Hence certain skin diseases appear to be more prevalent in some climates and almost non-existent in others (32).

The cultural practices of women in this environment of putting children less than 2 years on their back

and covering them with clothing as well as poor environmental conditions with poorly ventilated houses may all have contributed to our observed findings.

Papular urticaria was the 4th commonest skin disorder observed in this study accounting for 6.8% of all cases. It was commoner among children aged 2-5 years (8.4%) and commoner among male children (7.5%). Oninla et al (26) in Ile-Ife, and Olusola et al (10) in Lagos, Nigeria, reported papular urticaria as the second commonest skin disorder in children in contrast to what was obtained in this study. The season during which this study was conducted included rainy periods when there were a lot of insects in the environment due to stagnated drainages and weeds that are not properly cleared resulting in increased insects' bites. This increased insects' bites predispose the children to developing papular urticaria (21). Male children are more affected as the female children are usually more protected from the bites especially during the day as they wear more covering due to the cultural practice of the people in this environment. The spectrum of skin diseases seen in a particular environment is said to be determined by genetics, climate, socio-economic status, hygiene, customs and availability of quality medical care (33-34).

Impetigo was the 5th common skin disorder (6.5%) observed in children in this study. Most commonly observed in male (7.5%) children less than 2 years. In a prospective study of 10,000 pediatric patients in Kuwait (35) impetigo accounted for 3% of the skin disorders observed and was the 7th in terms of occurrence and the fourth commonest skin disorder among children aged 0-2 years. The observed finding in this study may be related to ease of spread of infection from direct contact with the secretions obtained from broken skin of the infected area to another site. This is due to the hot weather condition in Northern part of Nigeria and frequent cleaning of sweat by the mothers and the children themselves which facilitate transmission of infection (21).

Conclusion

In conclusion, this study revealed that there is wide spectrum of skin disorders seen among children

in this environment and infective skin disorders are the commonest skin disorders among children in this environment. The study also showed that *Tinea capitis* is very common in children among the infective skin disorders in this environment. Improved training of primary care physicians on how to diagnose and treat this wide spectrum of skin disorders will help in reducing the spread of these diseases and reduce the bulk of patients referred to a specialist. This study provides baseline information for future epidemiological and clinical research.

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Conflict of interest: Each author declares that he or she has no commercial associations (e.g. consultancies, stock ownership, equity interest, patent/licensing arrangement etc.) that might pose a conflict of interest in connection with the submitted article

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