

Review Article

## Dermatologic Practice Review of Common Skin Diseases in Nigeria

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### ABSTRACT

**Objective:** Dermatology is a relatively novel medical specialty in Nigeria, requiring a needs assessment to ensure optimal provision of dermatologic care to the general public. While several authors have catalogued the pattern of skin diseases in their respective regions of practice, none can be said to provide a panoramic representation of the general pattern in Nigeria. This article reviews and synthesizes findings from existing studies on the pattern of skin diseases in Nigeria published from January 2000 to December 2016, with the aim of presenting a unified data on the common dermatoses in Nigeria.

**Methods:** Electronic and hand searches of articles reporting on the general pattern of skin diseases in Nigeria, published between the years 2000 and 2016 was performed. Eleven articles met the criteria for inclusion, two of which were merged into one, as they were products of a single survey. Thus ten studies were systematically reviewed and analysed.

**Results:** A cumulative total of 16,151 patients were seen, among which one hundred and twenty two (122) specific diagnoses were assessed. The ten leading dermatoses in descending order of relative frequencies were: atopic dermatitis, tinea, acne, contact dermatitis, urticaria, seborrheic dermatitis, pityriasis versicolor, vitiligo, human papilloma virus infections, and adverse cutaneous drug reactions. Dermatitis/Eczema formed the most common group (28.36%), closely followed by infections (25.34%). Atopic dermatitis, acne, and contact dermatitis were more prevalent in the north, with tinea and vitiligo more common in the south, and these were all statistically significant.

**Conclusion:** A vast array of dermatoses present to the dermatologist in Nigeria, ten of which account for half the frequency of consultations, and most of which are treatable. This information allows for strategic planning and targeted training and provision of requisite manpower needs in a resource challenged country such as Nigeria, particularly as regards community dermatology.

**Key words:** Skin diseases, Common dermatoses, Nigeria.

### INTRODUCTION

Nigeria is a developing tropical country located in the western part of sub-Saharan Africa. With about 100 specialist dermatologists servicing a country population of 177 million people, the ratio of dermatologist to patients is 1:1,770,000.

<sup>[1,2]</sup> Skin diseases are often not considered

priority areas in health systems planning, due in part to the infrequent mortality, and also to the lack of awareness of the burden of skin diseases in public health terms. The latter can only be created by studies that assess the impact of skin diseases on the population. To appreciate this impact, the

spectrum of skin diseases must be known, and the common ones identified.

Dermatology in Nigeria is still in its formative years, a period which often involves ascertaining the existing dermatologic needs of the populace. Thus there have been a number of hospital-based surveys that detail the frequency and pattern of skin diseases in different regions of the country. However, Nigeria is an amalgam of persons from disparate tribes, cultures, religions, climatic, genetic, educational and socioeconomic backgrounds, which are known spatial determinants of the prevalence and pattern of skin diseases. It is therefore desirable to provide a unified data base of the current pattern of skin diseases. The requisite tool for determining this remains an epidemiologic survey, but due to the enormous challenges involved, the pattern of skin diseases is often culled from the predominant dermatologic morbidities seen in outpatient and inpatient hospital settings. Skin diseases are abundant and diverse, accounting for about one third of outpatient medical consultations in one Nigerian health facility. [3]

As a tropical country in sub-Saharan Africa with an estimated population of 177 million people, Nigeria is the 7<sup>th</sup> most populous country in the world, and the largest homogenous black nation - one in every six African is Nigerian, [2] thus a consolidated data on the pattern of skin diseases in this huge, black population has important implications at various levels: Globally, the observed increase in cross-continental emigration from Africa, which results in the concomitant transmigration of diseases, (dermatoses in this context) and the eventual changes in disease pattern in destination countries requires that the astute clinician be conversant with diseases far removed from his/her region of practice; at a regional level, a guarded assumption can be made regarding other regional sub-Saharan countries lacking available data, particularly those in neighbouring countries, with similar socioeconomic and climatic conditions; and at a local level it provides a

national data for targeted public health interventions, specifically for preventable transmissible dermatoses. It can, in addition, assist the government in formulating equitable health policies that will provide quality and accessible health services for the generality of the populace. This is against the backdrop that presently, priority is given to conditions associated with high mortality, resulting in the neglect of skin disorders which are mostly associated with low mortality but high physical and psychological morbidity.

## **MATERIALS AND METHODS**

This is an in-depth review of studies published between January 2000 and December 2016, and reporting on the hospital prevalence and patterns of skin diseases in Nigeria. We carried out electronic searches of articles using specific combinations of selected search terms such as: skin, dermatologic, cutaneous, diseases, conditions, disorders, prevalence, spectrum, incidence, pattern, epidemiology, hospital, clinic and Nigeria.

The following were criteria for inclusion: the surveys should include all skin diseases encountered by the investigator, not limited to specific types; they should be inclusive of all ages and genders (any survey conducted at the same time, same location, and same authors, but published in separate journals, based on age or gender distinctions, was merged, and regarded as one study); studies should be conducted, and diagnoses made by specialist dermatologists (to ascertain a high degree of diagnostic accuracy). Sexually transmitted infections were excluded.

Eleven articles [3,4-13] met the criteria for inclusion, two of which were conducted at the same time, same location and by the same investigators, but published in separate journals, based on age distinctions (paediatrics and adult). [10,11] The surveys were spread across ten cities in Nigeria, three of which were in the Northern part of the country, [3,4,12] while the remaining were south-based. [5-11,13]

Although the surveys were conducted by specialist dermatologists in tertiary health facilities, patients also included self-referrals (due to the flexible referral system in Nigeria).

To allow ease of inter-study comparison, the total number of patients, rather than the total number of diseases was the common denominator used in calculating the relative frequency; this produced a multiple response data. This method was also employed where necessary, to modify the stated prevalence in some of the articles cited in the discussion section. All diagnoses were included, except those grouped under 'miscellaneous'/'others' in the various studies. To allow for a wieldy data, some dermatoses were grouped, especially when they had similar aetiologies (e.g. all forms of viral warts, were merged and designated human papillomavirus infection; pyoderma was an umbrella term for all bacterial infections, except that caused by mycobacterium; adverse cutaneous drug reactions encompassed all drug-induced dermatoses, including fixed drug eruption, which was also recorded as a single disease entity, to highlight its preponderance). The myriad skin disorders encountered were broadly categorized into nine specific groups, and the rest were included under a miscellaneous group using the WHO International classification of disease version 10 (ICD-10),<sup>[14]</sup> and that employed in Dermatology by Bologna JL et al.<sup>[15]</sup> Comparison was made between surveys from Northern and Southern Nigeria.

### Statistical Analysis

Data was synthesized and captured in Microsoft excel spreadsheet, and analysed with Stata 12 statistical package to compare spatial differences in dermatological presentations using chi

square test. Results were reported via tables, frequencies and percentages, and a p-value  $\leq 0.05$  was considered statistically significant

### RESULTS

A cumulative of 16,151 patients was obtained in the ten studies included in this survey. Nine thousand, seven hundred and six patients (9706), accounting for two thirds of the total review population was from the south, while the rest (6445) were recruited from the north. (Figure I is a map of Nigeria showing the spatial distribution of the studies). A total of 122 different types of dermatoses were synthesized from all reported conditions. (Table I shows the distribution of skin disorders, and includes the respective contribution of each of the studies to the review).

The ten most common disorders in decreasing order of frequency are: atopic dermatitis (8.19%), Tinea (8.12%), acne (6.46%), contact dermatitis (4.26%), urticaria (4.18%), seborrheic dermatitis (3.56%), pityriasis versicolor (3.45%), vitiligo (3.33%), human papilloma virus infections (3.02%), and adverse cutaneous drug reactions (2.92%). These accounted for 50.41% of all skin disorders. Among the gamut of diseases considered, twenty seven had a prevalence of greater than one percent as seen in [Table 1](#), these accounted for approximately 80% of the total dermatoses.

Regional (North and South) comparison of the twenty most common dermatoses showed a higher prevalence of atopic dermatitis, acne, contact dermatitis, pyoderma, popular urticaria, lichen simplex chronicus, candidiasis, and scabies in the north, while tinea, vitiligo, pityriasis rosea, lichen planus, and keloids were more prevalent in the south, as shown in [table 2](#) below.

**Table 1. Relative frequencies (%) of dermatoses in the 10 Studies**

S/N	Skin Diseases	Yahya, H (n=5537)	Onayemi et al (n=746)	Nnoruka, E (n=2871)	Ogunbiyi et al (n=1091)	Ukonu and Eze (n=755)	Altraide et al (n=1333)	Henshaw and Olasode (n=1307)	Oninla et al (n=1454)	Okoro and Sani (n=162)	Akinboro et al (n=895)	Total (n=16,151)
1	Atopic Dermatitis	14.86	1.21	4.84	5.87	6.09	2.85	5.05	3.23	11.11	8.04	8.19
2	Tinea	6.56	16.22	9.27	4.49	4.24	9	8.72	13.14	2.47	5.7	8.12
3	Acne/Acneiform eruptions	7.68	6.17	6.69	2.75	5.03	4.58	5.66	8.73	9.26	4.02	6.46
4	Contact Dermatitis	6.27	2.68	5.29	0.73	7.42	0.15	3.75	2.48	1.85	1.68	4.26
5	Urticaria	3.88	4.42	2.26	4.95	2.91	6.53	3.6	3.71	3.09	10.39	4.18
6	Seborrheic Dermatitis	3	4.83	5.05	2.93	0.79	-	6.27	3.37	3.09	6.03	3.56
7	Pityriasis Versicolor	2.58	8.04	1.67	4.49	2.38	5.4	5.59	4.33	1.23	3.24	3.45
8	Vitiligo	2.17	3.35	3.17	4.67	3.18	5.33	4.06	3.51	5.56	4.8	3.33
9	Human Papiloma Virus	3.18	3.49	0.98	2.02	4.5	3.08	4.13	4.13	3.7	4.58	3.02
10	AdverseCutaneous Drug reactions	3.09	1.47	1.11	2.29	5.3	5.78	2.68	3.09	-	4.02	2.92
11	PityriasisRosea	2.26	1.88	4.14	1.56	3.18	3.6	4.44	3.03	1.23	2.23	2.92
12	Pyoderma	3.47	3.75	2.93	0.92	2.38	0.98	2.45	4.81	-	1.34	2.84
13	Lichen Planus	1.26	2.28	4.81	3.39	3.18	4.58	1.15	3.3	3.09	4.47	2.82
14	Papularurticaria	3.86	-	1.25	1.1	1.59	3.68	2.37	3.65	-	4.13	2.75
15	Lichen Simplex Chronicus	3.23	4.69	2.68	0.92	0.53	2.25	0.99	1.58	4.94	1.12	2.41
16	Candidiasis	3.02	5.9	0.14	1.92	0.53	1.05	5.13	2.06	-	0.45	2.2
17	Pruritus	0.54	1.47	5.89	4.22	1.85	-	1.68	2.34	3.09	-	2.05
18	Scabies	1.54	6.3	1.92	4.12	1.06	0.53	1.61	0.76	-	0.22	1.74
19	Rheumatologic dermatology	0.94	2.41	1.5	2.57	1.72	2.85	0.92	1.03	2.47	2.91	1.54
20	Keloids	0.76	1.21	3.69	1.47	2.12	-	0.77	2.48	1.85	1.12	1.54
21	Acne keloidalisnuchae	0.56	2.28	3.59	2.93	1.59	-	0.92	1.24	0.62	2.23	1.52
22	Psoriasis	1.37	1.88	0.56	0.92	2.78	2.03	1.61	1.99	3.7	1.12	1.42
23	Fixed drug reaction	1.55	-	0.66	2.29	1.85	-	2.07	2.2	-	2.79	1.41
24	Alopecia	0.78	-	1.29	3.39	1.19	1.73	1.07	1.65	1.23	2.01	1.28
25	Pruritic Papular Eruptions	1.95	-	1.39	-	1.32	2.33	0.69	-	1.85	-	1.24
26	Hand Foot Eczema	2.35	-	-	1.37	-	2.18	1.68	-	0.62	-	1.22
27	Varicella zoster virus	0.9	2.55	1.11	0.55	2.91	0.98	1.15	1.31	1.23	1.12	1.16
28	Post Inflammatory Hyperpigmentation	0.58	-	1.81	-	-	1.73	0.84	1.17	-	2.23	0.96
29	keratoderma	0.85	3.89	-	1.92	0.53	-	1.15	1.17	-	1.34	0.9
30	discoid Eczema	1.55	-	1.5	-	-	0.08	-	-	1.23	0.11	0.82
31	Onchdermatitis	0.13	-	1.43	1.1	0.79	0.68	0.84	2.82	-	0.45	0.81
32	PseudofolliculitisBarbae	0.36	-	3.41	-	1.06	-	-	0.21	-	-	0.8
33	molluscumcontagiosum	0.9	1.88	1.01	0.37	0.79	0.68	-	0.48	0.62	0.22	0.76
34	Neurocutaneous disorders	0.33	-	0.66	0.92	1.99	1.2	0.84	0.28	0.62	1.12	0.64
35	Scalp Folliculitis	1.66	-	-	-	-	-	-	-	0.62	-	0.58
36	HSV	0.6	-	0.98	0.18	0.79	-	1.15	0.14	-	0.56	0.56
37	Naevi	0.74	-	-	1.19	1.32	-	0.54	0.89	-	0.78	0.56
38	Pompholyx	0.38	-	1.11	-	0.53	0.68	0.38	-	-	1.23	0.51
39	Leprosy	-	-	0.59	1.19	1.32	1.13	0.54	1.1	-	0.22	0.5

40	Bullous Dermatitis	0.29	-	1.11	-		0.3	0.54	0.48	2.47	0.67	0.47
41	Kaposi Sarcoma	0.51	-	0.31	-	1.85	0.23	1.07		2.47	0.22	0.46
42	Follicular Hyperkeratosis	0.4	-	-	-	1.32	0.6	0.84	1.38	-	-	0.44
43	Cosmetic Dermatitis	-	-	1.64	-	-	-	1.15	-	-	0.67	0.42
44	Icthyosis	0.47	-	-	1.1	0.26	-	0.84	0.34	1.23	0.56	0.39
45	Folliculitis	0.42	-	-	-	-	1.58	1.22		1.23	-	0.38
46	Syringoma	0.76	-	-	-	0.4	-	0.46	0.55	-	0.34	0.38
47	Exogenous Ochronosis	0.14	-	1.36	-	-	-	0.77	0.14	-	-	0.37
48	Dermatosis Papulosa nigra	0.63	-	-	-	0.26	-	0.69	-	-	1.34	0.36
49	Photo Dermatitis	0.79	-	-	-	1.06	-	-	-	0.62	0.22	0.34
50	Exfoliative Dermatitis	-	-	-	-	0.79	1.88	0.46	-	1.23	1.68	0.33
51	Pityriasis Alba	0.81	-	-	-	-	-	0.61	-	-	0.11	0.33
52	Melasma	0.09	-	1.08	-	-	0.3	0.54	-	3.09	-	0.32
53	Albinism	0.09	-	1.36	0.27	0.53	-	-	-	-	-	0.32
54	Post-Inflammatory hypopigmentation	0.65	-	-	-	0.26	-	0.84	-	-	-	0.3
55	Miliaria	0.33	-	-	-	0.26	-	-	1.51	-	0.56	0.29
56	Xerosis	0.2	-	-	-	-	-	0.31	0.76	1.23	0.34	0.19
57	Seborrheic keratosis	0.22	-	-	-	-	-	0.38	0.76	-	0.11	0.18
58	Lymphoedema	-	-	-	-	0.79	-	0.31	0.89	-	0.45	0.17
59	erythema multiforme	0.22	-	0.31	-	-	-	0.08	0.14	-	-	0.15
60	Chronic Ulcers	0.02	0.8	-	-	0.4	-	-	0.34	-	1.01	0.15
61	Stasis dermatitis	-	-	-	0.37	0.53	-	0.92	-	-	0.34	0.14
62	Idiopathic Guttate Hypomelanosis	0.18	-	-	-	0.26	-	0.38	0.34	-	0.11	0.14
63	Granuloma annulare	0.11	-	-	-	-	-	1.22	-	-	-	0.14
64	Nipple dermatitis	-	-	0.18	-	-	-	0.26	-	0.38	0.34	-
65	Lichen nitidus	-	-	0.11	-	-	-	-	-	1.22	-	-
66	Non melanoma skin cancer	-	-	0.18	-	-	-	0.26	-	0.38	0.34	-
67	Nutritional Dermatitis	0.07	0.67	-	-	-	-	-	0.34	-	-	0.09
68	Nodular Prurigo	-	-	-	-	0.13	-	-	0.28	2.47	0.34	0.07
69	Pityriasis Lichenoides chronica	-	-	-	-	-	-	0.92	-	-	-	0.07
70	Peripheral neuropathy	-	-	-	-	-	-	-	-	-	1.23	0.07
71	Actinic keratosis	-	-	-	-	0.53	-	0.38	0.07	-	-	0.06
72	Cutaneous cyst	-	-	-	-	-	-	0.31	0.34	-	0.11	0.06
73	Cutaneous larva migrans	0.07	-	-	-	-	-	0.31	-	-	-	0.05
74	Adenoma sebaceum	-	-	-	-	1.06	-	-	-	-	-	0.05
75	Striae distensae	0.07	-	-	-	0.26	-	-	0.14	-	-	0.05
76	Measles		-	-	-	-	0.23	-	0.34	-	-	0.05
77	Acanthosis nigricans	0.07	-	-	-	0.13	-	-	0.14	-	-	0.04
78	Callus/Corns	0.02	-	-	-	-	-	-	0.14	-	0.45	0.04
79	Lipoma	-	-	-	-	0.13	-	0.38	-	-	-	0.04
80	Pyogenic granuloma	-	-	-	-	-	-	0.23	-	-	0.34	0.04
81	Hyperhidrosis	0.02	-	-	-	-	-	-	0.28	-	0.11	0.04
82	Loiasis	-	-	-	-	-	-	-	0.34	-	-	0.03

83	Steven Johnson syndrome	-	-	-	-	-	-	-	-	-	0.56	0.03
84	Facial hypomelanosis	-	-	-	0.46	-	-	-	-	-	-	0.03
85	Cutaneous sarcoidosis	0.07	-	-	-	-	-	-	-	-	0.11	0.03
86	Lentigenes	-	-	-	-	-	-	-	-	1.23	0.22	0.02
87	Cutaneous lymphomas	-	-	-	-	-	-	0.15	-	-	0.22	0.02
88	Haemangioma	-	-	-	-	-	-	0.31	-	-	-	0.02
89	Dermatofibroma	-	-	-	-	-	-	-	0.28	-	-	0.02
90	Achrocodon	-	-	-	-	-	-	-	0.28	-	-	0.02
91	Polymorphic light eruption	-	-	-	-	-	-	-	-	-	0.45	0.02
92	Madura foot	-	-	-	-	-	-	-	0.21	-	-	0.02
93	Nursing Mother dermatitis	-	-	-	-	-	0.23	-	-	-	-	0.02
94	Melanoma	-	-	-	-	0.13	-	-	0.14	-	-	0.02
95	Apthous ulcers	0.04	-	-	-	0.13	-	-	-	-	-	0.02
96	Post herpetic neuralgia	-	-	-	-	0.4	-	-	-	-	-	0.02
97	Pyoderma gangrenosum	0.04	-	-	-	0.13	-	-	-	-	-	0.02
98	Psychodermatoses	-	-	-	-	0.13	-	-	0.14	-	-	0.02
99	Xanthelasma	-	-	-	-	-	-	-	0.14	-	0.11	0.02
100	Tungiasis	-	-	-	-	0.26	-	-	-	-	-	0.01
101	Dermatophytid	-	-	-	-	-	-	-	-	-	0.22	0.01
102	Pityriasisrubra pilaris	-	-	0.07	-	-	-	-	-	-	-	0.01
103	Bromhidrosis	0.04	-	-	-	-	-	-	-	-	-	0.01
104	Piebaldism	-	-	-	-	0.26	-	-	-	-	-	0.01
105	Porokeratosis	-	-	-	-	-	-	-	-	1.23	-	0.01
106	Aplasia cutis	0.02	-	-	-	0.13	-	-	-	-	-	0.01
107	Juvenile xanthogranuloma	0.04	-	-	-	-	-	-	-	-	-	0.01
108	Porphyricutaneatarda	0.04	-	-	-	-	-	-	-	-	-	0.01
109	Cutaneous Leishmaniasis	-	-	-	-	0.13	-	-	-	-	-	0.01
110	Invasive microsporosis	-	-	-	-	-	-	-	-	0.62	-	0.01
111	Localized African trypanosomiasis-	-	-	-	-	-	-	-	-	-	0.11	0.01
112	perioral dermatitis	-	-	-	-	-	-	-	-	0.62	-	0.01
113	Parapsoriasis	-	-	-	-	-	-	-	0.07	-	-	0.01
114	Erythema nodosum	0.02	-	-	-	-	-	-	-	-	-	0.01
115	Vasculitis	0.02	-	-	-	-	-	-	-	-	-	0.01
116	Median canalicular dystrophy	0.02	-	-	-	-	-	-	-	-	-	0.01
117	Nail pigmentation	0.02	-	-	-	-	-	-	-	-	-	0.01
118	Onychogryphosis	-	-	-	-	-	-	-	-	-	0.11	0.01
119	Hidradenitis suppurativa-	-	-	-	-	-	-	-	-	0.62	-	0.01
120	Fibrosarcoma	-	-	-	-	-	-	-	-	-	0.11	0.01
121	Trichoepithelioma	-	-	-	-	-	-	-	-	-	0.11	0.01
122	Xanthomas	-	-	-	-	-	-	0.08	-	-	-	0.01

**Table II. Regional comparison of twenty most common dermatoses**

Dermatosis	Total (%)	Northern Nigeria (%)	Southern Nigeria (%)	p-value
Atopic dermatitis	1322 (8.19)	850 (13.19)	472 (4.86)	0.001
Tinea	1311 (8.12)	488 (7.57)	823 (8.48)	0.039
Acne	1044 (6.46)	486 (7.54)	558 (5.75)	0.001
Contact dermatitis	688 (4.26)	370 (5.74)	318 (3.28)	0.001
Urticaria	675 (4.18)	253 (3.93)	422 (4.35)	0.189
Seborrheic dermatitis	575 (3.56)	207 (3.21)	368 (3.79)	0.052
Pityriasis versicolor	557 (3.45)	205 (3.18)	352 (3.63)	0.128
Vitiligo	538 (3.33)	154 (2.39)	384 (3.96)	0.001
Human papilloma virus infection	488 (3.02)	208 (3.23)	280 (2.88)	0.213
Adverse cutaneous drug reaction	472 (2.92)	182 (2.82)	290 (2.99)	0.545
Pityriasisrosea	471 (2.92)	141 (2.19)	330 (3.40)	0.001
Pyoderma	459 (2.84)	220 (3.41)	239 (2.46)	0.001
Lichen planus	455 (2.82)	92 (1.43)	363 (3.74)	0.001
Papularurticaria	444 (2.75)	214 (3.32)	230 (2.37)	0.001
Lichen simplex chronicus	389 (2.41)	222 (3.44)	167 (1.72)	0.001
Candidiasis	355 (2.20)	211 (3.27)	144 (1.48)	0.001
Pruritus sine materia	331 (2.05)	46 (0.71)	285 (2.94)	0.001
Scabies	281 (1.74)	132 (2.05)	149 (1.54)	0.015
Rheumatologic dermatology	249 (1.54)	74 (1.15)	175 (1.80)	0.001
Keloids	248 (1.54)	54 (0.84)	194 (2.00)	0.001

All diseases were broadly categorized into specific groups, namely: dermatitis, infections/infestations, disorder of skin appendage, urticaria/erythema/drug reactions, papulosquamous disorders, pigmentary disorders, neoplasms/hypertrophic disorders, rheumatologic dermatology, bullous disorders, and a miscellaneous group. Table 3 shows these categories in descending order of

frequencies, in addition to their regional distribution. The first three categories were more preponderant in the north, however, only dermatitis/eczema was statistically significant with living in Northern Nigeria, with a p-value 0.001. The rest of the groups as seen in Table 3 were statistically significant with living in Southern Nigeria, with a p-value <0.001.

**Table III. Distribution of dermatoses by categories**

Categories of Dermatoses	Total frequency (%)	North frequency (%)	South frequency (%)	p-value
Dermatitis/Eczema	4580 (28.36)	2357 (36.57)	2223 (22.90)	0.001
Infections/Infestations	4092 (25.34)	1645 (25.52)	2447 (25.21)	0.739
Disorders of skin appendage	1922 (11.90)	787 (12.21)	1135 (11.69)	0.320
Urticaria/Erythema/Drug reaction	1533 (9.49)	543 (8.43)	990 (10.20)	0.001
Papulosquamous disorders	1185 (7.34)	329 (5.10)	856 (8.82)	0.001
Pigmentary disorders	877 (5.43)	249 (3.86)	628 (6.47)	0.001
Neoplasms/hypertrophic disorders	638 (3.95)	199 (3.09)	439 (4.52)	0.001
Rheumatologic dermatology	249 (1.54)	74 (1.15)	175 (1.80)	0.001
Bullous disorders	76 (0.47)	20 (0.31)	56 (0.58)	0.015
Miscellaneous	486 (3.01)	176 (2.73)	310 (3.19)	0.092

## DISCUSSION

This study synthesizes the published findings by several dermatologists on the spectrum of dermatoses presenting in specialist skin clinics across Nigeria. The presentation pattern of patients to the various tiers of healthcare delivery in Nigeria is not as strict as obtains in Europe and America; particularly in the field of dermatology, which has few specialists, and is not taught in a number of medical schools, resulting in a deficiency in knowledge base among medical

practitioners. Self-referrals thus present at specialist clinics situated in tertiary health institutions, which also offer services across the other two tiers of healthcare delivery.

Comparative surveys of skin diseases are bedeviled by the degree of the diagnostic discordance between specialists and the varying method of disease categorization. This is exclusive of other traditional determinants of skin diseases which we had earlier alluded to in our introduction. A study by Ribas et al [16] comparing the agreement between

dermatological diagnoses made by live examination and digital images, showed a diagnostic concordance of 83.3% between the two dermatologists who undertook live examinations.

### **Atopic dermatitis**

Atopic dermatitis (AD), a predominantly childhood disorder that manifests as a result of immune-genetic and environmental interactions, emerged as the most common dermatosis in this review. This is not unexpected, as the trend in Nigeria has been a progressive rise over time, [4,6,17,18] proportional to the rapid industrialization and release of pollutants and aeroallergens into the atmosphere from newly sited factories and industries. It was more commonly seen in the arid north, than in the humid south. While some studies have observed a decreased susceptibility to atopic dermatitis in regions with higher sun exposure, humidity and temperature, [19,20] others have noticed increased flares in regions of high temperatures, sun exposure, and humidity. [21,22] Although our analysis did not set out to establish the role of climate on the prevalence, or severity of AD – as it is not designed to do that - it is pertinent to note that AD appeared to be more common in arid regions, which have high temperature/ low relative humidity such as Kaduna: 34°C/41%; Jos: 31°C/45%, than in those with high temperatures, and high relative humidity, e.g. Port Harcourt: 31°C/80%; Ile-Ife: 31°C/81%. [23] In Ghana, [24] a neighbouring West African country, atopic dermatitis was also the most common dermatosis, with a similar hospital prevalence of 8.4%, comparable to that recorded by Dlova et al [25] in black South Africans (7.2%).

A lower prevalence of 3.79% was obtained in Ethiopia, an East African country, [26] but this remained higher than that seen in two North African countries, Egypt [27] and Tunisia [28] (less than 1%). Atopic dermatitis appears to have an increased prevalence in persons of black African extraction. In an American study an increased risk of developing AD within the

first six months of life was seen in children born to black and Asian mothers, when compared to their white counterparts; [29] In Australia, Mars and Marks observed an increased risk of AD in black children compared to their white peers. [30] The foregoing underscores the contributions of several factors in the prevalence of AD and other skin diseases in general.

### **Dermatophytosis**

This was the second most common dermatoses with a relative frequency matching that of AD. Fungal infections are prevalent in dermatoeconomic studies in Africa, and other developing economies, and tinea infection is often the most common. [27,28,31,32]

The constant narrative in the discussion on the preponderance of skin infections in the developing world, particularly in Africa, is that poor socioeconomic conditions have a greater role to play than the climate. [33] While this view has its strong selling point, evidenced by the decreasing prevalence of dermatophytosis over time, matching the improvement in socioeconomic conditions. The role of climate cannot be underemphasized, Kimball AB [34] posits that ultraviolet (UV) exposure may be the most significant factor affecting skin health globally, and the tropical climate is known to favour the growth and proliferation of microorganisms, including dermatophytes [35,36] Race may also play a role in the acquisition of tinea infections. To support this is the result of a survey which evaluated data from the National Ambulatory Medical Care Survey in America (1993-2009), and found Dermatophytosis of the scalp and beard to be among the five leading dermatologic diagnoses across all physician specialties in African-Americans, but not in Asians, Pacific Islanders, Caucasians or Hispanics. [37]

Other factors often overlooked, but which might be responsible for the high frequency of tinea include the common practice of using topical steroids for skin lightening purposes, which predisposes to

infection by dermatophytes; [38,39] and the preponderance of subsistence and/or commercial farming among Nigerians – 78% of Nigerians are engaged in some form of farming, [40] an occupation which predisposes to infections with dermatophytes. [41,42]

### **Acne**

This is a global condition seen predominantly in adolescents. A rising trend in frequency has been observed by successive authors, working in same locations, but at different time periods. [4,6,17,18] In one of the surveys which preceded a subsequent survey by three decades, there was no mention of acne vulgaris, however, it was observed to be the second most common condition in the latter. The changing socioeconomic landscape, with its attendant drift towards urbanization and westernization - particularly the adoption of the western diet with its high fat, high sugar content, which has been implicated as a risk factor for acne [43] – may be a major contributory factor. In addition, the widespread unregulated sale and use of topical corticosteroids in the treatment of sundry skin disorders, and particularly for skin lightening purposes also plays a significant role as observed by Dlova et al, [25] among blacks in Durban, South Africa. Many acne sufferers perceive that hot weather and sweating aggravates their condition, and more patients were observed to have exacerbations in the summer than in winter. [44-46] this perception is corroborated by a study which showed a 10% increase in sebum excretion with every 1% rise in temperature, which may explain the possibility of summer exacerbations. [47]

### **Contact dermatitis**

This was the fourth most common condition, comprising irritant contact dermatitis (the most predominant) and allergic contact dermatitis. Its high prevalence may not be unrelated to that of atopic dermatitis, as individuals with atopic dermatitis are often susceptible to irritants and allergens.

### **Urticaria**

Is a distressing allergic disorder that severely impacts the quality of life of patients. [48] A similar prevalence of 4.61% was also obtained in Ghana, [49] but a much higher value (7.04%) was reported in Egypt. [27] It affects all races and sexes, but is often stated to be one of the most common dermatoses in developing countries.

### **Seborrheic dermatitis and Pityriasis versicolor**

The prevalence of seborrheic dermatitis (SD) appears to mirror that of pityriasis versicolor (PV). Both are linked to colonization by *Malassezia* yeast. The organism has a yet to be determined role in the aetiology of the former, but is a definite cause of the latter. Seborrheic dermatitis (SD) is one of the common skin manifestations of Human Immunodeficiency virus (HIV) infection, thus some have reasoned that its high prevalence in studies in sub-Saharan Africa must be due to HIV being endemic. However, in the study by Henshaw and Olasode [9] HIV associated SD accounted for only 4.87% of the total number of SD in the study, while there was no single case of HIV associated SD in the study by Ukonu and Eze. [8] The warm and humid climate of the tropics causes PV to thrive, and there may be a genetic component in its pathogenesis, as it also ranks among the ten most common conditions in blacks in the United States [50] and in the United Kingdom. [51]

### **Vitiligo**

This was the 8<sup>th</sup> most common dermatoses, and the most common pigmentary disorder. A slightly higher prevalence was seen in Ghana (4.16%), [24] while a lower value of 2.2% was recorded in Egypt. [27] The frequency in South Africa [25] where the most frequent dyschromia was melasma, was less than 1%. Vitiligo is also relatively uncommon among blacks in the US, although it tied with keloids as the eighth most common reason for dermatologic visits to a hospital in New York (repeat visits were included in the survey). [52] Other forms of dyschromias are

a lot more common. [52,53] It was not mentioned among skin disorders seen in black patients in the UK, whereas post-inflammatory pigmentation was among the 10 most common conditions. [51]

### **Human papilloma virus**

Human papilloma virus associated skin disorders, particularly common warts are known to be more common in Caucasians than in Blacks or Asians. [37,54] Our analysis shows that HPV is common in Nigeria. It also formed one of the ten most common dermatologic conditions in Ghana, with a prevalence of 4.35%. It was the fifth most common dermatoses in a survey by Hartshorne in Johannesburg, South Africa, [55] accounting for a prevalence of 3.7% among black patients. It remains among the frequently recurring dermatoses reported in black patients throughout the 20<sup>th</sup> century till date. [54]

### **Adverse cutaneous drug reaction**

This was the 10<sup>th</sup> most frequent condition encountered, with fixed drug eruption (FDE) at the top of the list, and accounting for 48.3% of the conditions in the group. A slightly higher prevalence of 3.81% was seen in Kumasi, Ghana, [49] with fixed drug eruption also being the most common type encountered. Studies in Tunisia [28] and South Africa [25] however reveal a much lower prevalence of less than 1%. The high prevalence of ACDR in this review may be on account of poor drug regulation and enforcement in Nigeria. [56,57] The literature is also replete with adverse effects of potent steroids obtained over the counter and used as skin bleaching agents. [58-60]

### **Regional comparison**

A cursory look at the individual studies showed marked similarities in the types, but slight variations in the order of frequency of skin diseases, however, when subjected to statistical analysis, there are significant differences between the relative frequencies of some skin diseases in the Northern and Southern parts of the country as depicted in Table 2. Among skin

conditions with prevalence greater than 1%, atopic dermatitis, acne, contact dermatitis, bacterial infections, popular urticaria, lichen simplex chronicus, candidiasis and scabies were more common in the North, and these were all statistically significant ( $p < 0.05$ ). The same held true for dermatophytosis, vitiligo, pityriasisrosea, lichen planus, pruritus and keloids, in the South. Showing that inflammatory dermatoses and infections/infestations represent the main reasons why people access dermatological care in the North, while the picture is mixed in the South, tending more towards dermatoses causing cosmetic concerns, such as vitiligo, pityriasisrosea and keloids; and those of undetermined aetiology like lichen planus and pruritus.

The myriad skin disorders encountered were broadly categorized into nine specific groups, and the rest were included under a miscellaneous group. The predominant group was dermatitis/eczemas, closely followed by infections/infestations. This lends support to the narrative that in the 21<sup>st</sup> century, presentations to dermatologists for the management of the former has met, and in some cases superseded that of the latter. [4,5] Apart from infections/infestations, and disorders of skin appendage, which showed no significant regional differences, all other groups, except dermatitis/eczema were significantly more common in the South, showing that the dermatologic presentations in the South are a lot more varied than in the North.

We observed that conditions which have been frequently reported over time, in blacks of different ethnicities living in temperate countries, including acne, eczema, seborrheic dermatitis, fungal infections, urticaria, contact dermatitis and infections from HPV, [53] were all captured among the ten most common dermatoses in Nigeria, making a strong case for race as a major factor in the development of skin diseases.

### **Limitations**

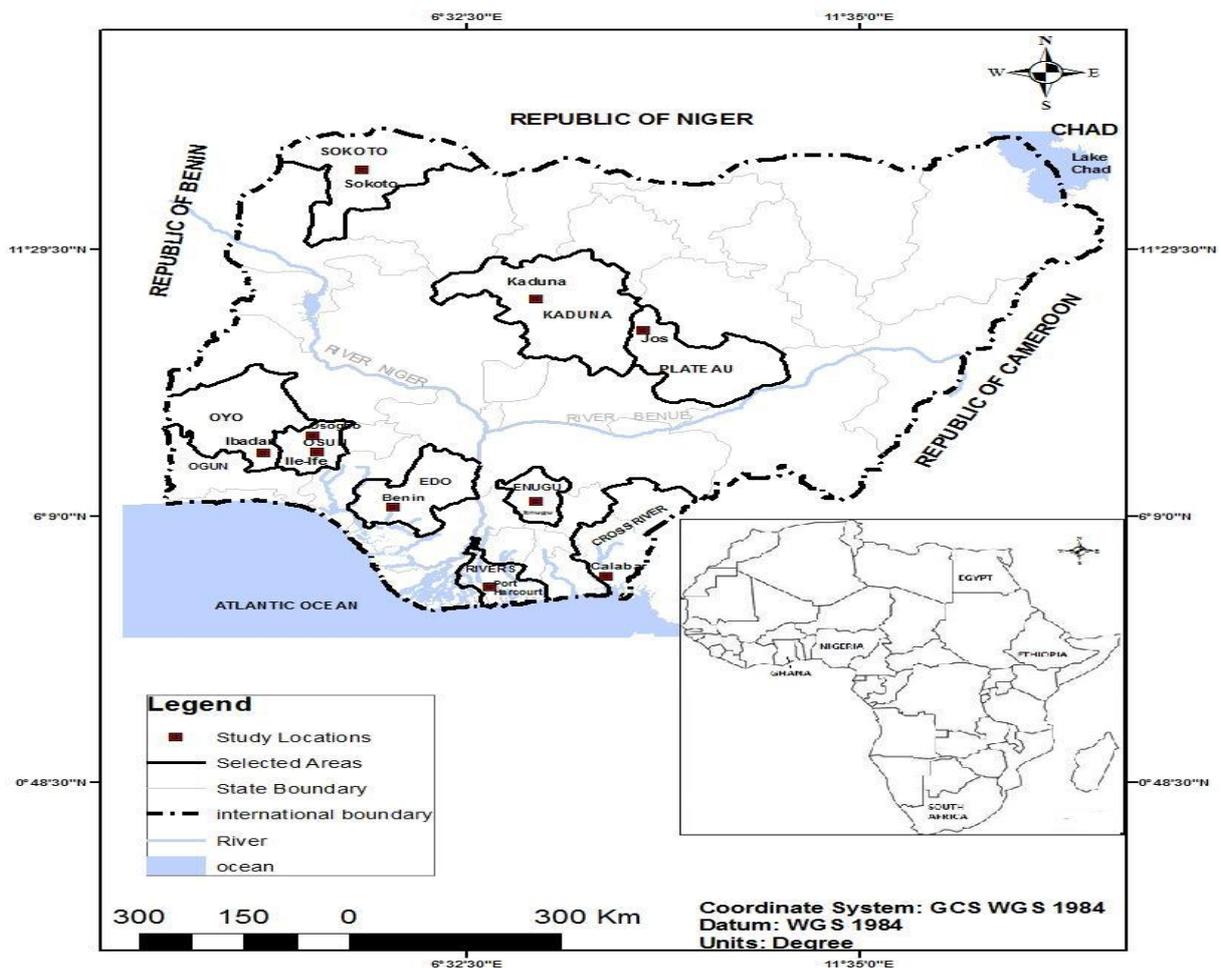
Reviewed articles were all observational studies, which cannot

determine causality. This study is an underestimation of the distribution of skin diseases in Nigeria, because many unnamed conditions subsumed under the ‘miscellaneous’/‘others’ group, while appearing insignificant in individual surveys, become significant when pooled and analysed, as has been done in this review.

## CONCLUSION

A wide range of dermatoses exist in Nigeria, but only a handful account for half

the total number of dermatologic consultations, and most are treatable. Climatic, racial and socioeconomic factors are important determinants of the pattern and distribution of skin diseases in the country. The observed disparities in the spatial distribution of skin diseases make for targeted training of various cadres of health care personnel in the management of specific skin disorders. This will assist in the equitable distribution of dermatologic care to underserved communities.



Source: Culled from Nigeria Data (2010)  
 Figure 1. Map of Nigeria showing the spatial distribution of study locations.

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