








# Pattern of Skin Cancers in a Tertiary Medical Center in Southwest Nigeria

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## Abstract

**Background:** Skin cancers are the most common malignancies in the western world, and their incidence is increasing globally. However, the data about the pattern in sub-Saharan Africa are limited. This study evaluates the pattern of primary skin malignancies in a tertiary medical center located in a sub-urban area. **Methods:** The histo-pathological records of patients managed for malignancies from January 2012 to December 2020 were retrieved from the pathology department of a tertiary medical center in Ekiti State, Southwest Nigeria. All primary skin cancers seen within this study period were extracted from the records and then reviewed retrospectively. **Results:** The male-to-female ratio of primary skin malignancies was 1:1.06, and the mean age of patients was  $57.2 \pm 17$  years. All patients were black Africans who were mainly of the Yoruba ethnicity (97.2%). Squamous cell cancer had the highest frequency (34.7%), followed by melanoma

(27.8%), dermatofibrosarcoma (12.5%), and basal cell carcinoma (11.1%). The most commonly affected anatomic region is the lower limbs (50.6%).

**Conclusion:** The pattern of primary skin cancers seen in black Africans differ from that of Caucasians: however, larger community-based studies in our environment is recommended to provide more conclusive information about the pattern of skin cancers.

**Keywords:** Primary skin cancers, Skin malignancies, Blacks

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## Introduction

Skin cancers constitute a significant source of morbidity and mortality worldwide(1). They have been reported to

be the most common forms of malignancies in the European population, and the main etiological factor is

ultraviolet radiation cutaneous injury (2). Skin cancers are less common in the black African population than in the Caucasian population due to the high melanin content of the negroid skin, which protects them from ultraviolet radiation(3,4). The reported incidence of skin cancer in Africa varies from center to center and this is on the rise(5). The postulated reasons for this rise has been attributed to increasing exposure to ultraviolet radiation from depletion of the ozone layer, increased incidence of human immunodeficiency virus (HIV) infection and repetitive trauma and chronic irritation in scars(5).

In terms of histological type, basal cell carcinoma has the highest incidence among the European population, followed by squamous cell carcinoma and other forms of skin cancers(3). Melanoma represents a smaller proportion of cases, and it occupies a special status when skin malignancies are being studied because it is responsible for a larger proportion of the mortality from skin cancers(2). In black African population, melanoma appears to be the most frequently occurring skin cancer, but melanoma incidence is much lower than that in white populations(2,3).

The differences in the pathological characteristics of melanoma and other skin cancers has led most authors to classify skin cancers as either non-melanoma skin cancers (NMSCs) or melanoma skin cancers (MSCs)(3). MSCs have a tendency to metastasize early, and they do not respond well to chemotherapy and radiotherapy; hence, the main stay treatment remains surgical excision. Meanwhile, NMSCs have a lesser propensity to metastasize, and they respond to surgery, chemotherapy and radiotherapy well, but they might cause significant morbidity as well as mortality when left untreated(6).

When the anatomical sites of the skin malignancies were studied; the head and neck region and other sun-exposed areas of the body were the most frequent site of occurrence in Caucasians, whereas the lower limbs were the common site in black Africans. This may be due to the ultraviolet radiation skin damage in Caucasians,

whereas non-solar risk factor such as trauma is thought to be a cause in African blacks(3).

In studies done in Africa, in the findings on male-to-female ratio were not consistent (5,7,8,9). There is disparity in the epidemiological findings from various authors in Africa concerning the frequencies of the different histological variants of skin cancers (5,8,10). Patients tend to present late to the specialist, and follow-up is generally poor, as many patients do not return after surgical treatment (6,11). To the best of our knowledge, there has been no similar study on skin cancer within the study locality and the state. Additionally, this study will serve as a benchmark and provide baseline data for future research in the state as well as for systematic reviews in general. This study, therefore, aimed to investigate the histological pattern and anatomical distribution of skin cancers seen in a tertiary medical center in a sub-urban locality, thereby adding to evidence-based information on skin cancer in the region.

### Methods

This retrospective study was performed in a 300-bed multi-specialist, referral tertiary medical center that serves several local government areas, and receives referral from other peripheral health center and hospitals in Ekiti State, Southwest Nigeria. The medical centre has a pathology department with a staff of seven consultant pathologists, of whom two are anatomic pathologists. The department has a histopathology laboratory that serves the medical center, as well as receives specimens from other hospitals for histopathological review. The medical center also maintains a cancer registry. The histological slides are reviewed by the anatomic pathologists, who make the histological diagnosis of malignancies. Immunohistochemistry is not routinely done in the medical facility.

The histo-pathological record of patients managed for malignancies from January 2012 to December 2020 were retrieved from the Pathology Department of the medical center. All primary skin cancers seen within the study period were then extracted from the records to

determine the relative frequency of skin cancers. Relevant clinico-pathological data of primary skin cancers such as sociodemographic characteristics, location of the lesion, and histological variant were then collated and analyzed using SPSS version 20.0 (IBM Corp., Amork, NY, USA). Data were presented in frequency tables. Summary statistics such as mean and proportions were used to summarize quantitative and qualitative data, respectively.

Ethical approval for the study was sought and obtained from the Institutional ethical research and review committee of the medical center (Protocol number: ERC/2020/10/16/600A).

## Results

A total of 1,001 histologically confirmed malignancies were seen within the study period. The number (proportion) of skin cancers out of the total number of malignancies was 72 (7.2%). These 72 lesions were from 72 different patients.

Table 1. Socio-demographic characteristics (n=72)

Age		
<45 years	19	(26.4)
45-64 years	27	(37.5)
≥65 years	26	(36.1)
Mean age (years)	57.2±17.0	
Sex		
Male	35	(48.6)
Female	37	(51.4)
Tribe		
Yoruba	70	(97.2)
Others (Igbo, Hausa etc)	2	(2.8)

Values are presented as frequency (%) or mean±standard deviation

The mean age (± standard deviation) of the cases was 57.2±17.0 with 37.5% of them in the patients being in their middle age (45-64years). Primary skin cancer was similar between the sexes, with a male-to-female ratio of 1:1.06.

All the patients were black Africans, who were mainly from the Yoruba ethnic group (97.2%) (Table1).

Squamous cell cancer was the most common form of cancer (34.7%), followed by melanoma (27.8%), dermatofibrosarcoma (12.5%), and basal cell cancer (11.1%). Kaposi sarcoma was found in 4.2% of cases whereas other primary skin cancers constitute 9.7% of the cases. In terms of anatomical site, the foot (27.8%), thigh/legs (22.2%) and head (19.4%) were the most common location of lesion locations. The groin (1.4%) and neck (2.8%) were the least common sites. Other anatomical sites of cancers were the trunk (9.7%), upper limb (8.3%) and perineum (8.3%). (Table 2)

Table 2. Skin cancer characteristics(n=72)

Skin cancer type	
Squamous cell cancer	25 (34.7)
Melanoma	20 (27.8)
Dermatofibrosarcoma	9 (12.5)
Basal cell cancer	8 (11.1)
Kaposi sarcoma	3 (4.2)
Other primary skin cancers	7 (9.7)
Anatomical site of cancer	
Foot	20 (27.8)
Thigh/legs	16 (22.2)
Head	14 (19.4)
Trunk	7 (9.7)
Upper limb	6 (8.3)
Perineum	6 (8.3)
Neck	2 (2.8)
Groin	1 (1.4)

Values are presented as frequency (%)

Table 3 Showed the age and sex distribution of different cancers types. Squamous cell cancer was more common among the young (i.e., <45years) (36.0%) and middle aged (i.e 45-64years) (36.0%). Melanoma was seen mostly among the elderly (i.e., ≥65) (65.0%). All cases of kaposi sarcoma, 50.0% of basal cell cancer, and 44.5% of dermatofibrosarcoma were in the middle-aged. The distribution of melanoma and basal cell cancer did not show any sex preponderance. Squamous cell cancer (60.0%) and dermatofibrosarcoma (66.7%) were more common in the females. However, Kaposi sarcoma and other primary skin cancers were more common in the males.

Table 3. Age and sex distribution of cancer type

Skin cancer type	Age				Sex	
	<45	45-64	≥65	Mean age	Male	Female
Squamous cell cancer (n=25)	9 (36.0)	9 (36.0)	7 (28.0)	53.6±15.0	10 (40.0)	15 (60.0)
Melanoma (n=20)	2 (10.0)	5 (25.0)	13 (65.0)	68.5±16.9	10 (50.0)	10 (50.0)
Dermatofibrosarcoma (n=9)	3 (33.3)	4 (44.5)	2 (22.2)	54.7±13.7	3 (33.3)	6 (66.7)
Basal cell cancer (n=8)	2 (25.0)	4 (50.0)	2 (25.0)	52.3±13.7	4 (50.0)	4 (50.0)
Kaposi sarcoma (n=3)	0 (0.0)	3 (100.0)	0 (0.0)	55.7±6.4	3 (100.0)	0 (0.0)
Other primary skin cancers (n=7)	3 (42.8)	2 (28.6)	2 (28.6)	47.9±22.7	5 (71.4)	2 (28.6)

Values are presented as frequency (%) or mean±standard deviation

### Discussion

The proportion of skin malignancies in the cancer record was 7.2%. This frequency of primary skin cancers may be due to the availability of skin cancer specialists – two consultant plastic surgeons and a dermatologist, at the medical center. This finding is similar to the findings of studies conducted in Jos(12) and Calabar(7) but lower than the finding in Kano.(8) This variation in proportion of skin cancer may reflect some differences in demographic and environmental factors within the regions. Approximately a third of all neoplasms in Caucasians, 2% - 4% of all neoplasms in Asians, 1% - 2% of all neoplasms in blacks and Asian Indians were found to be skin cancers(13).

The male-to-female ratio in this study indicates a similar proportion of skin cancer among the sexes, which is different from the finding in another country(6). Although the authors in some areas in West Africa found a slightly higher female proportion(5,14), authors in North-west Nigeria found a slight male preponderance(8). The age distribution shows that more than two-thirds of the patients in this study were older than 44years, indicating that children and young adults were at lower risk of skin cancer. This findings is in keeping with the fact that cancers are more common in the older age groups, also; furthermore cumulative and intermittent skin damage resulting in skin cancer from long term exposure to solar ultraviolet radiation are contributory factors(2). Melanoma, in particular,

afflicted elderly patients, i.e., ≥ 65 years, accounting for 65% melanoma cases.

Squamous cell carcinoma (34.7%) was the most common skin malignancy in this research and this is consistent with the findings in Benue, Jos and Zaria (11,12,13). This is followed by melanoma (27.8%) and dermatofibrosarcoma protuberance (12.5%). However, it is in contrast to the reports from the United States where basal cell cancer is the most frequent histological variant of skin malignancy, but there appears to be a change in the trend with the ratio between basal cell and squamous cell carcinoma reducing from ratio of 4:1 to 2:1 or even 1:1 in some reports (15,16). The reason for the higher proportion of squamous cell carcinoma is unclear, but a previous study suggested that chronic cutaneous ulcers, poorly managed scars/burns wounds and chronic inflammatory conditions such as chronic osteomyelitis, which are common in black Africans, may account for the higher frequency of squamous cell cancers in the black race(14).

Melanoma was the second most common skin malignancy in this study, a finding similar to the results in Jos and Ife(5,12). However, this is different from the findings in Osogbo, where it is the most frequent skin malignancy(14). Studies done by other authors showed that it represents 1% to 8% of all skin cancers in blacks(13). According to the US Surveillance, Epidemiology, and End Results Program, data from average annual incidence rates of melanoma per 100,000 of the population is consistently higher in Caucasians than in Black Americans (17,18). The proportion of

melanoma in this study was higher than that found in blacks in the American studies. However, this is a hospital-based study while the American studies were community-based studies. Furthermore, the differences may be due to environmental factors or differences inherent in the study design or the classification criteria for determining black or white race in the American studies, considering that there are individuals of mixed races in the American community. Further studies will be needed to clarify this observation.

Dermatofibrosarcoma was the third most common skin malignancy encountered in this study, closely followed by basal cell cancer. Dermatofibrosarcoma was also found to be the third most common skin cancer in Osogbo(14). Basal cell cancer was found to be generally low in many African studies(5,6,14) than studies in most developed countries where it considered to be the most common form of skin cancer(19). The other forms of skin cancer observed in this study include Kaposi sarcoma and other primary skin cancers such as sweat gland cancer, cutaneous lymphomas and liposarcoma. The low incidence of Kaposi sarcoma in this study compared with the finding in some regions in Africa may reflect the differences in the regional prevalence of HIV infection, which is a major risk factor for the disease (7,11,12,20).

The anatomical distribution of the malignancies showed that the lower limb (foot, thigh, and leg) was the most affected site, followed by the head. The perineum included the skin of the anal verge and urogenital region which accounted for less than a tenth of the cases. The finding of skin cancer being more common in the lower limbs in black Africans in this study compared with the studies among Caucasians, in whom the sun-exposed areas such as the head and neck were more commonly affected, reiterates the role of other aetiopathogenic factors such as repetitive trauma from walking barefoot, chronic leg ulcers, and inflammation (14,21).

The limitation of the study is the relatively small sample size as well as being a hospital-based study. It is hoped that future studies will improve on these limitations so as to improve the quality of care given to patients with skin cancer in our environment.

## Conclusion

This study revealed that squamous cell carcinoma is the most common skin malignancy; the lower limb is the most common site and individuals in the middle age as well as the elderly are at higher risk of the disease.

## Author contributions

AIS lead in writing the original draft. All other authors contributed to editing and reviewing the manuscript.

## Declaration of interests

The authors declare no conflict of interest.

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