A Review of Malignant Melanoma in a Tertiary Hospital in North Central Nigeria: A 10 Year Retrospective Study

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Abstract		Review Article

Background: Malignant melanoma is an aggressive skin cancer with a high risk of metastasis and mortality, particularly when diagnosed late. Although less common in people with darker skin, melanoma in sub-Saharan Africa is often characterized by delayed presentation contributing to poor outcomes.

Aim: This study aimed to describe the demographic characteristics, anatomic distribution, and temporal trends of malignant melanoma presentations in a tertiary hospital.

Methods: A retrospective review was conducted for 26 patients diagnosed with malignant melanoma between 2014 and 2023. Data on age, sex, anatomic site, and year of diagnosis were extracted from medical records. Statistical analysis was performed using SPSS version 23. Results were summarized using frequencies and percentages.

Results: A total of 26 patients with malignant melanoma were reviewed. Most patients were aged 55–69 years (42.3%), followed by those aged 40–54 years (34.6%). Only one patient (3.8%) was aged 25–39 years, while patients aged 70 years and above accounted for 19.2% of cases. Females slightly predominated, with 14 cases (53.8%), compared with 12 males (46.2%). Yearly distribution showed variability, with peak presentations in 2021 and 2022, each contributing five cases (19.2%). The lowest numbers were recorded in 2018, 2019, and 2023, with one case (3.8%) each. The most common anatomic site was the foot, accounting for 18 cases (69.2%). Other sites were less frequently affected, including the groin, scalp, and thigh (7.7% each), while the mons pubis and palm accounted for 3.8% each.

Conclusion: Malignant melanoma in this study predominantly affected middle-aged and older adults, showed a slight female predominance, and most commonly involved acral sites, particularly the foot. The observed temporal variability underscores the need for improved early detection and surveillance.

Keywords: Anatomic location, demographic characteristics, incidence, malignant melanoma.

Introduction

Malignant melanoma is one of the skin cancers with significant morbidity and mortality. It is responsible for the majority of skin cancer–related deaths despite accounting for only 1.7% of all global cancer diagnoses (Sung et al., 2021). In 2020, an estimated 324,635 new cases and 57,043 deaths from melanoma occurred worldwide, with incidence continuing to rise in many high-income countries due to ultraviolet (UV) radiation exposure and improved detection (Global Burden of Disease Skin Cancer Collaborators, 2022; Sung et al., 2021). However, the disease manifests differently across populations. In individuals with darker skin pigmentation, particularly those of African descent, the incidence is markedly lower (<1 per 100,000), yet outcomes are significantly worse due to late-stage diagnosis, limited public awareness, and systemic barriers to timely care (Bradford, 2009; Hu et al., 2020).

In sub-Saharan Africa (SSA), melanoma exhibits distinct clinicopathological features. Unlike in Caucasian populations where UV-associated cutaneous subtypes predominate, melanoma in SSA is overwhelmingly acral lentiginous, arising on non–sun-exposed sites such as the soles, palms, and nail beds (Newton et al., 2008; Khakwani et al., 2020). These locations are frequently overlooked by both patients and clinicians, contributing to delayed presentation and advanced disease at diagnosis. A systematic review by Khakwani et al. (2020) highlighted that over 60% of melanoma cases in Africa present late and is associated with poor survival.

Nigeria exemplifies the challenges of melanoma surveillance in low-resource settings. National cancer registries often lack comprehensive data, and existing studies highlight challenges such as low public awareness, limited diagnostic capabilities, and a healthcare system burdened by more prevalent infectious diseases (Jedy-Agba et al., 2016). Although skin cancers collectively represent a small proportion of malignancies in Nigeria, melanoma accounts for a disproportionate share of morbidity and mortality due to its aggressive biology and late detection (Ogunbiyi et al., 2020). Studies from southwestern Nigeria report that acral melanoma constitutes the vast majority of cases, with the foot being the most frequent site of involvement (Ezenwa et al., 2022; Olajide et al., 2016). Despite these insights, there remains a critical gap in epidemiological data from North Central Nigeria, a region with distinct ethnic, environmental, and healthcare access profiles.

The Federal Medical Centre (FMC) Makurdi serves as a key referral centre for Benue State and neighbouring regions in North Central Nigeria. Yet, there is paucity of published studies documenting the patterns of malignant melanoma at this institution. Given the known disparities in melanoma outcomes among Black populations and the absence of localized data, understanding the demographic profile (age, sex), anatomic distribution, and temporal trends of melanoma presentations is essential. Such information can guide targeted public health messaging, enhance clinical suspicion among primary care providers, and support advocacy for improved diagnostic pathology services in underserved areas.

This study is therefore justified by the need to generate context-specific evidence that reflects the realities of melanoma in a Nigerian tertiary health setting. By characterizing disease patterns in a region previously under-represented in the literature, the findings will contribute to the broader understanding of melanoma in sub-Saharan Africa and inform strategies for early detection and equitable cancer control.

Consequently, this study set out to describe the demographic characteristics, anatomic distribution, and temporal trends of malignant melanoma presentations at Federal Medical Centre, Makurdi, Benue State, and North Central Nigeria.

Materials and Methods

Study Setting:

The study was conducted at the Federal Medical Centre (FMC), Makurdi, Benue State, and North central Nigeria. It is a 400-bed tertiary healthcare facility. The hospital's Pathology Department,

staffed by three pathologists (including two anatomic pathologists), operates a histopathology laboratory that maintains a comprehensive histology register of all processed tissue specimens. The Medical Records Department archives detailed demographic and clinical information for all patients.

Study Design:

A retrospective descriptive study was carried out to specifically examine cases of malignant melanoma diagnosed between January 2014 and December 2023. Histopathological records of all skin malignancies during this period were retrieved from the histology register, and only cases confirmed as malignant melanoma were included in the final analysis.

Study Population:

The study population comprised all patients with a histologically confirmed diagnosis of malignant melanoma whose records were available in both the Histopathology and Medical Records Departments during the study period.

Inclusion Criteria:

Patients with a definitive histopathological diagnosis of malignant melanoma and complete records containing adequate demographic (age, sex), clinical (anatomic site), and diagnostic (year of diagnosis) information.

Exclusion Criteria:

Cases with missing, incomplete, or irretrievable records that precluded accurate data extraction were excluded.

Sampling Method and Sample Size:

Given the anticipated low incidence of malignant melanoma in this setting, a total enumeration (census) approach was employed; meaning all eligible and retrievable cases of malignant melanoma diagnosed between 2014 and 2023 were included in the study.

Data Collection Tool:

A structured data extraction form was developed to capture key variables: patient demographics (age, sex), tumor characteristics (anatomic site of involvement), and year of diagnosis. Notably, staging information was not consistently available and was therefore not analyzed.

Data Analysis:

Data were coded, entered, and analyzed using IBM SPSS Statistics version 23 (IBM Corp., Armonk, NY, USA). Categorical variables were summarized using frequencies and percentages. Results were presented in tables and graphical formats for clarity.

RESULTS

Table 1: Sociodemographic characteristics of the participants

Variable	Frequency, n=26	percentage
Age category in years		
25 -39	1	3.8
40 -54	9	34.6
55 – 69	11	42.3

70 -74	3	11.5
75 – 80	2	7.7
Sex		
Male	12	46.2
Female	14	53.8
Year		
2014	2	7.7
2015	3	11.5
2016	2	7.7
2017	3	11.5
2018	1	3.8
2019	1	3.8
2020	3	11.5
2021	5	19.2
2022	5	19.2
2023	1	3.8

A total of 26 patients with malignant melanoma were reviewed. Most patients were aged 55–69 years (42.3%), followed by those aged 40–54 years (34.6%), while only one patient (3.8%) was aged 25–39 years. Patients aged 70 years and above accounted for 19.2% of cases. Females slightly predominated, with 14 cases (53.8%) compared to 12 males (46.2%). Yearly distribution showed variability, with peak presentations in 2021 and 2022, each contributing five cases (19.2%). The lowest numbers were recorded in 2018, 2019, and 2023, with one case (3.8%) each.
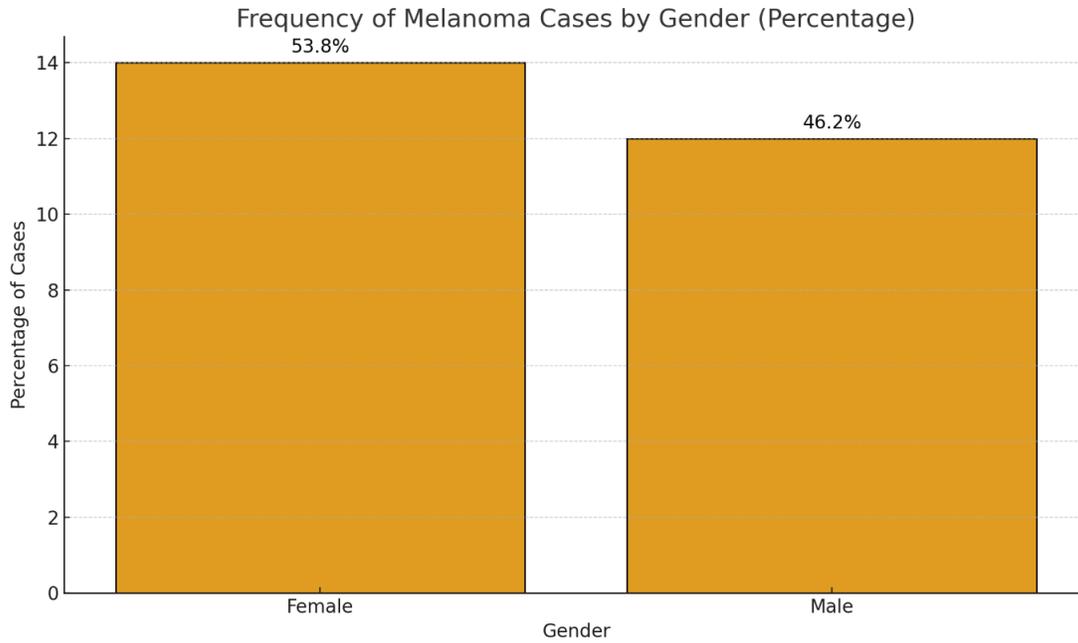
Figure 1: Frequency of melanoma cases by gender.

Melanoma cases in females made up 59.7% of the total, while males represented 40.3% of the cases.
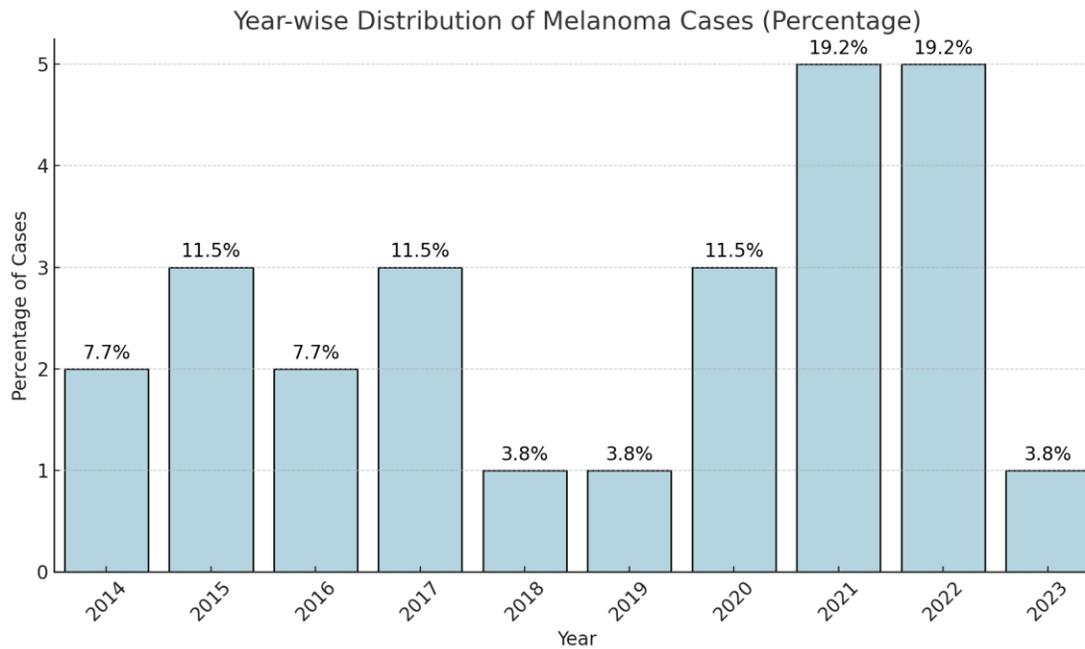

Figure 2: Year-wise distribution of malignant melanoma cases (percentages)

The lowest proportions of malignant melanoma were observed in 2018 and 2019 (3.8% each). A noticeable increase occurred from 2020, culminating in peak presentations in 2021 and 2022, each accounting for

19.2% of cases. This was followed by a decline in 2023. Overall, the chart demonstrates temporal variability with a marked surge in melanoma presentations in the later years of the study period.

Table 2: Frequency of melanoma cases by anatomical location

Anatomic Site	Frequency (n=26)	Percentage (%)
Foot	18	69.2
Groin	2	7.7
Mons pubis	1	3.8
Palm	1	3.8
Scalp	2	7.7
Thigh	2	7.7

Malignant melanoma most commonly involved the foot, accounting for 18 cases (69.2%). Other anatomic sites were much less frequently affected, including the groin, scalp, and thigh with two cases each (7.7%), while the mons pubis and palm each accounted for one case (3.8%).

Discussion

This study describes the demographic characteristics, anatomic distribution, and temporal trends of malignant melanoma among 26 patients diagnosed at Federal Medical Centre Makurdi between 2014 and 2023, a rare but clinically significant malignancy in North Central Nigeria. Our findings reveal the epidemiological profile consistent with some broader patterns across sub-Saharan Africa yet underrepresented in the Nigerian literature.

The majority of patients were aged 55–69 years (42.3%), followed by those aged 40–54 years (34.6%), with minimal representation in younger adults (only one case aged 25–39 years). This contrasts sharply with high-income countries, where melanoma incidence peaks earlier due to cumulative UV exposure (Sung et al., 2021). However, our age distribution aligns closely with Nigerian and African studies. Ezenwa et al. (2022) reported a mean diagnosis age of 58 years among melanoma patients in Ibadan, while Olajide et al. (2016) similarly observed most cases occurring in the fifth to seventh decades of life. This later presentation likely reflects both biological differences in melanoma pathogenesis among individuals with darker skin and systemic delays in care-seeking or referral, which are documented factors in low-resource settings (Jedy-Agba et al., 2016).

A slight female predominance was observed (53.8% females vs. 46.2% males), consistent with recent Nigerian reports. Ahmed et al. (2021) noted higher melanoma detection rates among women in Northern Nigeria, attributing this to greater healthcare utilization, particularly through reproductive health services and stronger social encouragement to seek medical attention. Fajemilehin and Oyediran (2016) further confirmed that women in rural southwestern Nigeria are significantly more likely than men to access formal healthcare. While global data often show male predominance in melanoma (Sung et al., 2021), the female preponderance in our study likely reflects behavioural and structural factors rather than true biological incidence differences. Importantly, this may mask a burden of undiagnosed or late-stage

disease in men, who tend to present later with poorer outcomes (Nigerian Journal of Dermatology, 2020).

The most striking finding is the overwhelming involvement of the foot, accounting for 69.2% of all cases. This is the hallmark of acral lentiginous melanoma (ALM), the dominant subtype in populations of African descent and not associated with UV radiation (Bradford, 2009; Khakwani et al., 2020). In Nigeria, multiple studies corroborate this pattern. For instance, Ogunbiyi et al. (2015) found the lower limb to be the most frequent site in Ibadan, Ayanlowo et al. (2018) reported over 60% of cases involving the lower extremities, and Olusanya and Ogun (2016) documented acral sites in 52% of melanomas in Lagos. More recently, Akinmoladun et al. (2021) emphasized that foot melanoma is increasingly recognized in Nigerian clinical practice.

The rarity of lesions on sun-exposed sites like the scalp (7.7%) further underscores the etiological divergence of melanoma in Black populations. Unlike Western guidelines that emphasize sun protection, public health messaging in Nigeria must prioritize education about melanoma on non-sun-exposed areas, particularly the soles, palms, and nail beds. As Bradford (2009) cautioned, ALM is frequently misdiagnosed as trauma, fungal infection, or ulceration, contributing to advanced-stage presentation. Our findings reinforce the need for dermatology training programs that emphasize recognition of acral melanoma and for community campaigns promoting foot self-examination.

Temporal analysis revealed marked variability, with peak presentations in 2021 and 2022 (five cases each year, 19.2% annually), following minimal activity in 2018–2019 (one case each year). The decline in 2023 (one case) may reflect data capture limitations at the study endpoint. Given the small absolute numbers, this fluctuation should be interpreted cautiously, but the clustering of cases in 2021–2022 likely signals improved diagnostic awareness rather than a true epidemic.

This trend parallels national developments in cancer surveillance. Around 2020–2021, Nigeria intensified efforts to strengthen its National System of Cancer Registries (NSCR), with tertiary hospitals receiving support for standardized documentation of malignancies (Ogunbiyi et al., 2020). Additionally, post-pandemic "catch-up" care may have contributed, as patients delayed during 2020–2021 sought evaluation for longstanding lesions (Jedy-Agba et al., 2016). While environmental factors such as rising UV radiation (NIMET, 2020) cannot be ruled out, they are unlikely to explain the sharp, short-term increase, especially given the predominance of acral (non-UV-related) melanoma.

These findings have implications for public health and clinical practice in Nigeria. First, melanoma control strategies must be context-specific: campaigns should move beyond UV-centric messaging to emphasize acral self-examination. Second, gender-sensitive outreach is needed to engage women earlier in the disease course. Third, the apparent rise in late-period cases buttresses the value of strengthening hospital-based cancer registries, a key recommendation of the NSCR (Ogunbiyi et al., 2020).

This study is limited by its retrospective design, single-centre scope, and small sample size (n=26), which constrain statistical power and generalizability. Staging and histologic subtyping data were unavailable, limiting prognostic interpretation. Nevertheless, it provides an insight on melanoma presentation in North Central Nigeria, a region previously under reported.

In conclusion, malignant melanoma at FMC Makurdi predominantly affects middle-aged and older adults, shows a slight female predominance, and overwhelmingly involves acral sites especially the foot. These patterns mirror the epidemiology of melanoma in Black populations across sub-Saharan Africa. The temporal surge in 2021–2022 likely reflects enhanced diagnostic vigilance, signalling an opportunity to build on recent gains in cancer awareness and registry development. Future multi-centre, prospective studies are needed to validate these trends and inform national melanoma control policies tailored to Nigeria's diverse population.

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