Clinicopathological Characteristics of Melanoma Patients in North Sumatra, Indonesia, 2024–2026

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Abstract. Melanoma is an aggressive skin malignancy with high mortality when diagnosed at an advanced stage. Epidemiological data on melanoma in North Sumatra remain limited, highlighting the need for regional clinicopathological profiling. This study aimed to describe the clinicopathological characteristics of patients with melanoma at a provincial referral hospital in North Sumatra from 2024 to 2026. This was a descriptive study design. Data were retrospectively collected from the medical records of all patients with histopathologically confirmed melanoma at a provincial referral general hospital in Medan, North Sumatra, between June 2024 and June 2026. The variables assessed included age, sex, occupation, anatomical tumor location, and histopathological subtype. Data were analyzed descriptively using frequency distribution and presented in tabular and narrative forms. A total of 30 patients were included. Most patients were female, predominantly in the 50–59-year age group. The most frequently observed occupations were housewife and farmer. The foot was the most common anatomical site of tumor, and superficial spreading melanoma was the predominant histopathological subtype. The clinicopathological profile of melanoma patients in this provincial referral hospital is characterized by female predominance, older age group, and acral distribution. These findings provide essential baseline data to strengthen early detection strategies and optimize clinical management of melanoma in tertiary healthcare settings.

Keywords: Melanoma, clinicopathological profile, referral hospital, skin cancer, North Sumatra.

1 Introduction

Melanoma is a highly aggressive skin malignancy and a leading cause of skin cancer mortality. Although its incidence is lower than that of basal cell and squamous cell

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F. Maulina and S. Wahyuni (eds.), *Proceedings of the 3rd Malikussaleh International Conference on Health and Disaster Medicine (MICOHEDMED 2026)*, Advances in Health Sciences Research 97,
https://doi.org/10.2991/978-94-6239-836-8_20

carcinoma, melanoma is characterized by strong invasiveness, rapid metastatic potential, and poor prognosis when detection is delayed [1-3]. Global Burden of Disease data from 1990 to 2023 indicate a continuous increase in melanoma prevalence, with a surge of over 250% in low- and middle-income regions, including East Asia and Andean Latin America, and a projected increase in melanoma-related disability-adjusted life years (DALYs) from 2 million in 2025 to over 3.3 million by 2050 [4-8].

Epidemiological patterns of melanoma exhibit substantial variation across geographic regions and ethnic groups. In high-income countries such as Australia, New Zealand, and North America, the disease burden is highest among fair-skinned populations and is strongly associated with intermittent high-intensity ultraviolet (UV) exposure and a history of sunburn. In contrast, among Asian, Hispanic, and African populations, the overall incidence is lower; however, acral lentiginous melanoma constitutes the predominant subtype, accounting for 40% to 58% of all melanomas in Asia compared with only 0.8% to 3% in Europe and North America [9-11]. Unlike UV-driven superficial spreading melanoma, acral melanoma develops on glabrous skin of the palms, soles, and nail apparatus, is seldom associated with precursor nevi, demonstrates a lower tumor mutational burden, and more frequently harbors KIT, CDK4, or CCND1 alterations rather than BRAF mutations [12-13]. Its pathogenesis is considered multifactorial, with chronic mechanical stress, pressure, and repetitive trauma hypothesized as contributory factors in weight-bearing areas, particularly the sole.In Indonesia, a tropical archipelago characterized by high ambient UV indices and a predominantly Fitzpatrick phototype IV–V population, epidemiological data on melanoma remain limited and geographically fragmented [14-16].

A provincial tertiary referral hospital in Medan, North Sumatra, functions as a major referral center for cutaneous malignancies in multiple districts and municipalities. Nevertheless, comprehensive data delineating patient profiles in recent years are limited. Detailed information on demographic characteristics, occupational background as a surrogate for cumulative sun exposure, anatomical distribution with particular emphasis on acral sites, and histopathological subtypes is essential to comprehend the local disease burden, identify vulnerable groups and inform resource allocation.

Therefore, the present study aimed to determine the clinicopathological profile of patients with histopathologically confirmed melanoma managed at a provincial referral hospital in Medan between June 2024 and June 2026. Specifically, this study aimed to describe the distribution of cases according to age, sex, occupation, tumor location, and histopathological subtypes. The findings are anticipated to provide baseline evidence to support hospital management in planning risk-adapted early detection programs, strengthening diagnostic services, including dermoscopy, and serving as a reference for healthcare professionals and future multicenter investigations on melanoma control in Indonesia.

2 Methods

This descriptive retrospective study was conducted at Haji Adam Malik Central General Hospital, Medan. The study population comprised all patients with histopathologically confirmed melanoma diagnosed from June 2024 to June 2026. Total sampling was applied; 30 records meeting inclusion criteria (complete data on age, sex, occupation, site, and subtype per WHO 4th edition) were included. Ethics was approved by Health Research Ethics Committee, Universitas Sumatera Utara (Number 169/KEPK/USU/2026). Informed consent waived for anonymized secondary data. Confidentiality maintained per Declaration of Helsinki.

Data were retrospectively collected from medical records and pathology reports between February and March 2026 using a validated standardized form. The variables were cross-checked by two researchers. Analysis was descriptive using frequency and percentage (SPSS v26.0).

3 Results

A total of 30 patients with histopathologically confirmed melanoma met the inclusion criteria between June 2024 and June 2026. By sex, 16 patients (53.3%) were women and 14 (46.7%) were men. Most patients were aged 50–59 years (n=8), followed by 60–69 years (n=7), 40–49 and 70–79 years (n=5 each), 80–89 years (n=2), and 0–10, 11–19, and 20–29 years (n=1 each). No cases were found in the 30–39-year group.

Regarding occupation, housewives comprised the largest group (n=13, 43.3%), followed by farmers (n=10, 33.3%), private employees (n=5), and students (n=2).The foot was the most frequent tumor site (n=9, 30.0%), followed by the face and thigh (n=4 each), eyelid, head, and upper arm (n=2 each), and scalp, finger, cheek, heel, vulva, back, and ankle (n=1 each).For histopathological subtype, superficial spreading melanoma predominated (n=19, 63.3%), while nodular melanoma accounted for 11 cases (36.7%). Only descriptive frequency analysis was performed in accordance with the study objective.

Table 1. Clinicopathological Characteristics of Melanoma Patients (n=30).

Characteristic	n = 30	Percent
Men	14	46,7
Women	16	53,3
Age Category		
0-10	1	3,3
11-19	1	3,3
20-29	1	3,3
40-49	5	16,7
50-59	8	26,7
60-69	7	23,3
70-79	5	16,7
80-89	2	6,7
Occupation		

Housewife	13	43.3
Farmer	10	33.3
Private Employee	5	16.7
Student	2	6.7
Tumor Location		
Foot	9	30.0
Face	4	13.3
Thigh	4	13.3
Eyelid	2	6.7
Head	2	6.7
Upper Arm	2	6.7
Scalp	1	3.3
Finger	1	3,3
Cheek	1	3,3
Heel	1	3,3
Vulva	1	3,3
Back	1	3,3
Ankle	1	3,3
Histopathological Subtype		
Superficial Spreading Melanoma	19	63,3
Nodular	11	36,7

4 Discussion

The main purpose of this study was to describe the profile of melanoma patients treated at Haji Adam Malik General Hospital Medan from June 2024 to June 2026. This study is important because epidemiological data on melanoma in North Sumatra remain limited, while early understanding of patient characteristics can support hospital planning for early detection and management of melanoma. A total of 30 patients met the inclusion criteria. The findings showed that most patients were female (53.3%), and the largest age group was 50–59 years (26.7%), followed by 60–69 years (23.3%). In terms of occupation, housewives and farmers were the dominant groups (43.3% and 33.3 %, respectively). The most common tumor location was the foot (30.0%), followed by the face and thigh (13.3%). The most frequent histopathological subtype was superficial spreading melanoma (63.3%), followed by nodular melanoma (36.7%). These results address the research objective of describing the distribution of melanoma patients based on demographic and clinical characteristics [22].

When compared with previous literature, the predominance of female patients is consistent with studies in several Asian populations where women tend to seek medical care earlier. However, some Western studies report a higher proportion of males, possibly due to differences in sun exposure patterns and health-seeking behavior. The peak age group in this study (50–59 years) aligns with the theory that cumulative ultraviolet exposure over time is a major risk factor for melanoma. The presence of patients in the pediatric and young adult groups, although small, indicates that melanoma is not exclusive to older adults and should not be overlooked in younger populations [23]. The high proportion of housewives and farmers suggests a potential link to outdoor activities and prolonged sun exposure, particularly among farmers. This finding is similar to reports

from tropical countries, where outdoor occupations are associated with increased melanoma risk. Regarding tumor location, the predominance of the foot differs from Caucasian populations, where the trunk and back are more commonly reported. The high frequency of melanoma on the foot, heel, and ankle in this study may reflect a higher prevalence of acral lentiginous melanoma, which is known to be more common in Asian and darker skin populations [24-25]. This pattern emphasizes the need for targeted education on the examination of acral sites. The predominance of superficial spreading melanoma is consistent with global data. However, the relatively high proportion of nodular melanoma (36.7%) may indicate late diagnosis, as nodular melanoma is often associated with rapid growth and thicker tumors at presentation. This possibility should be explored further with data on Breslow thickness and clinical stage in future studies [26-27].

From a managerial perspective, these findings have several implications for Haji Adam Malik General Hospital. First, educational programs on sun protection and self-skin examination should target high-risk groups, particularly women aged 50 years and above, farmers, and housewives. Second, clinicians should maintain a high index of suspicion for melanoma on acral sites, such as the foot, and should consider dermoscopy training for early detection. Third, the hospital may benefit from establishing a melanoma registry to monitor trends and outcomes over time.

This study has several limitations. First, the use of secondary data from a single center limits the generalizability of the findings to the broader population of North Sumatra. Second, incomplete data on clinical stage, Breslow thickness, and treatment outcomes prevented the analysis of prognostic factors. Third, the small sample size may not capture the full spectrum of melanoma subtypes in this region. These factors may influence both the internal and external validity of the findings. For future research, multicenter studies with larger sample sizes are recommended to obtain a more representative profile of melanoma in Indonesia. Future studies should also include an analysis of clinical stage, histopathological thickness, and survival outcomes to better understand prognostic factors. In addition, qualitative research on patient delay and health-seeking behavior among farmers and housewives may provide insights into barriers to early diagnosis. Investigation into genetic and UV exposure patterns specific to Indonesian populations may also clarify risk factors for acral melanoma.

5 Conclusion

In conclusion, this study provides baseline data on the profile of melanoma patients at Haji Adam Malik General Hospital, Medan. The findings highlight the importance of early detection efforts focused on older women, outdoor workers, and acral sites. These results contribute to the local evidence base and can inform clinical and public health strategies for melanoma control in North Sumatra. The findings highlight the importance of early detection programs targeting older women and individuals with outdoor occupations, with special attention to acral sites such as the foot. For advanced researchers, it is suggested that future studies be conducted with a multicenter design and a larger sample size, and include data on clinical stage, Breslow thickness, and

patient outcomes. For general readers, regular skin self-examination and consultation with a dermatologist when suspicious skin lesions are found are recommended for early detection of melanoma.

Acknowledgments. The authors thank the director and staff of the Medical Records and Anatomical Pathology units of the provincial referral hospital in Medan for supporting data collection.

Disclosure of Interests. The authors declare no conflicts of interest.

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