

Original Article**Histological Spectrum of Skin Diseases in Tertiary Care Center of Eastern Nepal****Manish Pradhan^{1*}, Anjan Rai¹, Sunita Karki¹, Niraj Khadka², Srijana K.C.¹**¹Department of Dermatology, Nobel Medical College Teaching Hospital, Biratnagar, Nepal²Department of Dermatology, Purbanchal University Gothgaun, Morang, NepalArticle Received: 25th May, 2025; Accepted: 27th July, 2025; Published: 31st July, 2025**DOI: <https://doi.org/10.3126/jonmc.v14i1.83257>****Abstract****Background**

Skin diseases are common in developing countries, with their patterns differing significantly across nations and even within various regions of the same country. Histological diagnosis serves as an essential tool for clinicians, guiding accurate patient management and enabling the selection of the most effective clinical interventions.

Materials and Methods

This retrospective descriptive study was conducted at the Department of Dermatology, Nobel Medical College and Teaching Hospital, Biratnagar, Nepal, to evaluate the histological spectrum of skin diseases over one year (March 2022–February 2023) after approval of institutional review committee of Nobel Medical College and Teaching Hospital. A total of 200 skin biopsy samples were analyzed using hematoxylin and eosin staining, with special stains used as necessary.


Results

The majority of patients were male (63.5%) with a mean age of 39.13 years. The most commonly used biopsy technique was punch biopsy (48%), and the lower limb was the most frequent biopsy site (36.5%). Non-neoplastic lesions were predominant (84.5%), with infectious dermatoses—primarily Hansen's disease—being the most common (47.5%). Papulosquamous disorders, eczema, immunobullous diseases, and connective tissue disorders each accounted for 6.5–13% of non-neoplastic cases. Neoplastic conditions comprised 15.5% of cases, with basal cell carcinoma being the most frequent tumor.

Conclusion

Non-neoplastic lesions, particularly infectious dermatoses such as Hansen's disease, were predominant, accounting for the majority of cases. Other non-neoplastic conditions, including papulosquamous disorders, eczema, and immunobullous diseases, were less frequent but still significant. Neoplastic conditions, primarily basal cell carcinoma, comprised a smaller proportion of the total cases.

Keywords: *Skin Diseases, Biopsy, Histological Techniques, Leprosy, Retrospective Studies*

	<p>©Authors retain copyright and grant the journal right of first publication. Licensed under Creative Commons Attribution License CC - BY 4.0 which permits others to use, distribute and reproduce in any medium, provided the original work is properly cited.</p>	<p>*Corresponding Author: Dr. Manish Pradhan Associate Professor Email: dmanishpradhan1@gmail.com ORCID: https://orcid.org/0000-0001-6817-4160</p>
---	---	--

Citation

Pradhan M, Rai A, Karki S, Khadka N, K.C. S. Histological Spectrum of Skin Diseases in Tertiary Care Center of Eastern Nepal, JoNMC. 14:1 (2025) 37-41. DOI: <https://doi.org/10.3126/jonmc.v14i1.83257>



Introduction

Dermatology is a visual specialty, and most skin diseases are diagnosed on the basis of history and clinical examination. Biopsy and histopathological examination is the standard diagnostic procedure that helps connect clinical diagnosis to microscopic findings [1, 2]. Skin biopsy is not required for most skin diseases. It is performed when there is clinical confusion or when histopathological confirmation significantly influences management and treatment outcomes [2, 3, 5].

Furthermore, there is a wide range of skin diseases and their histopathology also varies with clinical diversity. Therefore, it is likely that the histological diagnosis may not always match the clinical diagnosis [3, 4, 6]. Diagnosis of some skin diseases can be challenging, both clinically and histopathologically. There remains a possibility that, even after clinical evaluation and histopathological examination, the diagnostic dilemma may not be resolved [4, 5, 6]. This study was conducted with the aim of identifying the histopathological patterns of skin diseases [1, 3, 11]. Biopsy and histopathology is done because histopathological diagnosis supports in definitive diagnosis of the disease and helps in specific treatment of the skin diseases.

Material and Methods

This is a retrospective descriptive hospital-based study performed at the Department of Dermatology at Nobel Medical College and Teaching Hospital. This study was conducted from March 2022 to February 2023 over a period of 1 year. Ethical approval was obtained from the Institutional Ethical Review committee of Nobel medical college and teaching hospital- biratnagar, Nepal. Data were collected through a retrospective review of the charts and histopathological reports of patients whose skin biopsies were examined at the clinical pathology laboratory. Biopsies with missing data and uncertain diagnoses were excluded. Sample size was calculated using the formula $n = z^2 \times p \times q / e^2$. 200 sample was included in the study by convenient sampling method.

The aim of our study was to determine the histological spectrum of various skin lesions that are common in eastern part of our country along with age, gender and site wise distribution. Based on the records available in the record section 230 biopsy report was taken. Out of that 30 biopsy had inclusive report and clinical correlation was advised in that cases, so that was excluded from the study. 200 skin biopsy samples were analyzed.

Biopsy techniques included punch biopsy,

incisional biopsy, and excisional biopsy, depending on the need. Hematoxylin and eosin (H and E) staining were used on all samples as usual. When necessary, special stains such as Ziehl-Neelsen (ZN) and periodic Acid-Schiff (PAS) stains were used. The demographic information, such as age and gender, was recorded. Other information was also noted, such as the biopsy site, provisional clinical diagnosis, histopathological diagnosis, and any stain other than H and E stain were also recorded.

Analysis of the data was performed using SPSS version 21.0. The variables were summarized using mean, percentage, and range.

Results

Out of 200 biopsies, 127 (63.5%) were male and 73(36.5%) were from female, with male to female ratio being 1.74:1. The age of the patients ranged from 16 to 78 years and the mean age was 39.13 ± 25.86 years and the majority of the patients belong to age group of 31 to 40 years.

Among the type of biopsy included in this study most common biopsy technique used was punch type (n=96,48%) followed by incisional type (n=74,37%) and least common was excisional type (n=30, 15%) as shown in table 1.

Table 1: Type of biopsy technique

Type of Biopsy	Total	Percentage
Incisional	74	37%
Excisional	30	15%
Punch	96	48%
Total	200	100%

The site of biopsy in descending order was lower limb (36.5%), trunk (26%), upper limb (19.5%), face (7%), scalp (5.5%), ear (2.5%), neck (2.5%) and genitalia (0.5%) as shown in table 2.

Table 2: Biopsy site

Site	Total	Percentage
Scalp	11	5.5%
Ear	5	2.5%
Face	14	7%
Neck	5	2.5%
Trunk and abdomen	52	26%
Upper extremities	39	19.5%
Lower extremities	73	36.5%
Genitalia	1	0.5%
Total	200	100%

Most common biopsy finding was non-neoplastic diseases (n=169, 84.5%) as shown in table 3, followed by neoplastic diseases (n=31, 15.5%) as shown in table 4.



Table 3: Non-Neoplastic Diseases

Non-Neoplastic Disease	Total	Percentage
Infectious dermatosis	95	47.5%
Papulosquamous disorder	26	13%
Eczema	13	6.5%
Immunobullous disorder	13	6.5%
Connective tissue disorder	13	6.5%
Others	9	4.5%
Total	169	84.5%

Table 4: Neoplastic Diseases

Neoplastic Disorder	Total	Percentage
BCC	17	8.5%
Melanocytic nevus	6	3%
Kerato Acanthoma	3	1.5%
Dermatofibroma	2	1%
Seborrheic Keratosis	1	0.5%
Malignant melanoma	1	0.5%
SCC	1	0.5%
Total	31	15.5%

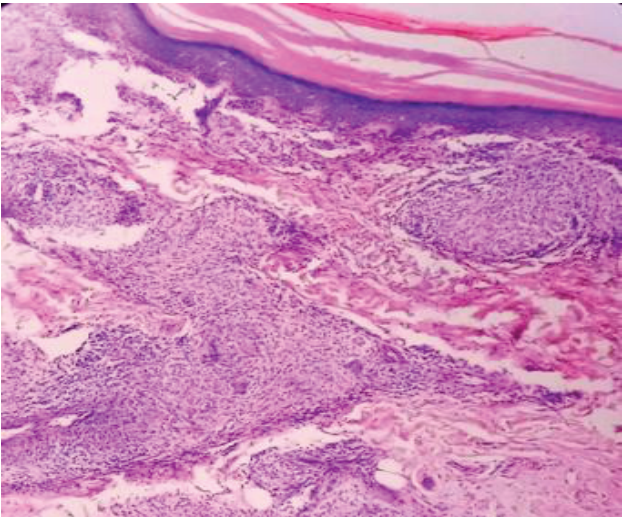


Figure 1: Tuberculoid Leprosy with well formed granuloma

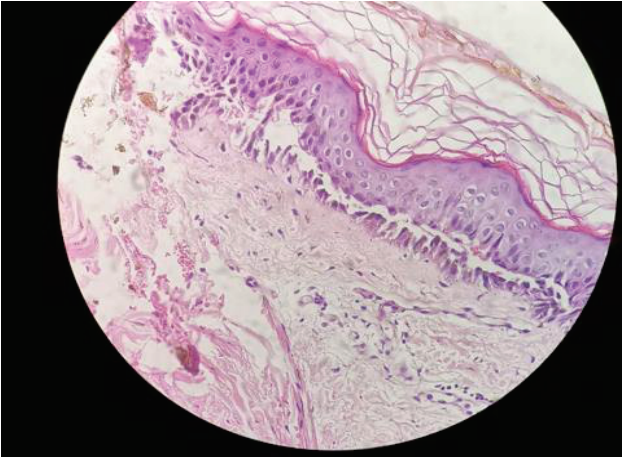


Figure 2: Pemphigus Vulgaris with intraepidermal blister

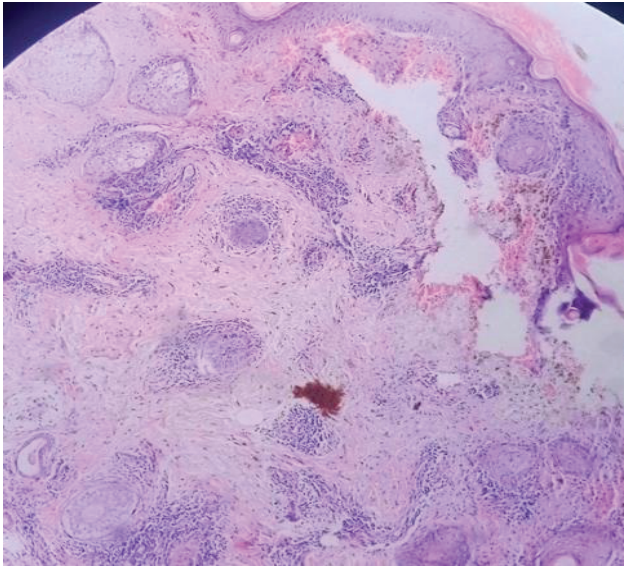


Figure 3: DLE showing follicular plug and lymphocytic perivascular and periadnexal Infiltrate

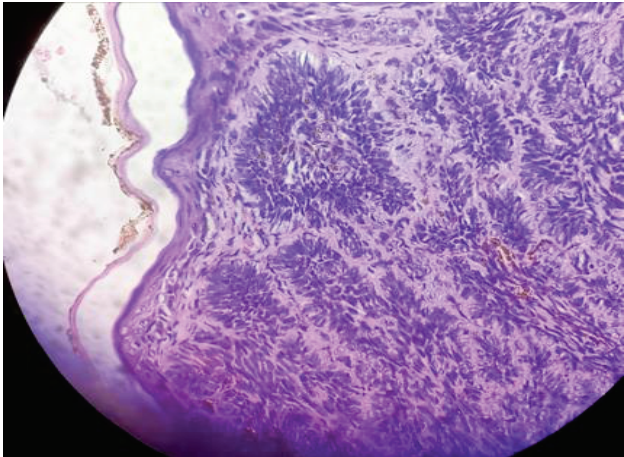


Figure 4: Basal Cell Carcinomashowing nests of basoid cells in palisading pattern with scanty cytoplasm and retraction artifact.



Figure 5: Seborrheic Keratosis showing clonal nests and horn pseudocyst

Discussion

In our study, we found male predominance with a male-to-female ratio of 1.74:1. Similar findings were reported by Dayal et al. and Kumar V et al., while Chalise et al. [2] and Bezbaruah R et al. reported female predominance. Adhikari et al. [1] did not find any gender-wise predominance in their study. The age of patients in our study ranged from 16 to 78 years, with a mean age of 39.13 ± 25.86 years. The majority of patients were in the 31–40-year age group, which is consistent with findings by Adhikari et al. [1]. However, Chalise et al. [2] found the highest frequency in the 41–50-year group, while Bezbaruah R et al. and Abubaker SD et al. reported the peak frequency in the 21–30-year age group.

We found that the most common biopsy site was the lower limb (36.5%), followed by the trunk (26%), upper limb (19.5%), face (7%), scalp (5.5%), ear (2.5%), neck (2.5%), and genitalia (0.5%). Similarly, Singh A et al. reported the lower limb as the most frequent site (43%), followed by the head and neck (24%) and upper limb (17%). In contrast, Bezbaruah R et al. noted that the most common site was the head and neck. In this study, non-neoplastic lesions accounted for 84.5%, which was higher than neoplastic lesions at 15.5%. Chalise et al. [2] also reported a higher proportion of non-neoplastic lesions (67.7%). However, Bezbaruah R et al., Abubaker SD et al., and Sushma et al. reported neoplastic lesions as a major entity in their studies. The higher prevalence of non-neoplastic conditions in our findings may be due to the lower incidence of skin cancers in this region, possibly influenced by skin type and climatic conditions.

Among non-neoplastic conditions, infective dermatoses were most common in our study, with leprosy making up nearly half the cases (48%), alongside a few cases of lupus vulgaris, deep mycosis, and dermatophytosis. Similarly, Singh A et al. reported infectious diseases in 22.52% of cases, including Hansen's disease (16.92%) and cutaneous tuberculosis (3.72%). Chalise et al. [2] and Agrawal et al. also identified leprosy as the most common infectious skin condition. This may reflect the high prevalence of leprosy in our region, where many patients undergo biopsy due to stigma and for government treatment documentation. Patients with leprosy tend to consent more readily to biopsy, compared to others, in a context where biopsy acceptance can be challenging in a developing country like Nepal.

We found only 3 cases of fungal infection (1.5%)

2 of dermatophytosis and 1 of deep mycosis. Despite dermatophytosis being common in our setting, only 2 cases (0.5%) were seen histologically. This may be because clinical diagnosis and KOH mount are generally sufficient, and biopsies are rarely used. In contrast, Adhikari et al. (1) reported fungal infections as the most common microbial disease (35.3%), followed by leprosy (23.5%). In our study, we recorded 21 cases of psoriasis (10.5%) and 5 cases of lichen planus (2.5%). We also observed 13 immunobullous cases (6.5%) 12 cases of pemphigus vulgaris (6%) and 1 case of bullous pemphigoid (0.5%). Among connective tissue disorders (13 cases, 6.5%), discoid lupus erythematosus (8 cases, 4%) and plaque morphea (5 cases, 2.5%) were found.

Singh A et al. reported psoriasiform reactions as the second most common group (9.77%), with psoriasis vulgaris being the most common (5.92%). Other groups included spongiotic dermatitis (9.18%), lichenoid dermatitis (9.03%), and immunobullous disorders (8.29%). We observed 15.5% neoplastic conditions, with basal cell carcinoma (BCC) being the most common (8.5%), followed by melanocytic nevus (3%). Similarly, Adhikari et al. [1] reported neoplastic lesions in 19.7%, with BCC as the most common tumor. Chalise et al. [2] found a higher neoplastic proportion (27.8%), but with nevus as the most frequent tumor, followed by seborrheic keratosis and squamous cell carcinoma (SCC). In contrast, Bezbaruah R et al., Abubaker SD et al., and Sushma et al. reported a predominance of neoplastic skin diseases in their respective studies.

Conclusion

A wide spectrum of skin diseases was observed in our study, with infectious dermatoses emerging as the most prevalent overall. Among the non-neoplastic conditions, papulosquamous disorders constituted the second most common category. Basal cell carcinoma was identified as the most frequent neoplastic skin disease.

Acknowledgement

We would like to extend our sincere gratitude to the Pathology Department for their invaluable support and contributions throughout the duration of this study. We also wish to express our heartfelt thanks to the study population, whose participation made this research possible.

Conflict of interest: None



References

- [1] Adhikari RC, Shah M, Jha AK, Histopathological spectrum of skin diseases in a tertiary skin health and referral centre, *Journal of Pathology of Nepal*. 9:1 (2019) 1434–40. DOI:10.3126/jpn.v9i1.23172.
- [2] Chalise S, Dhakhwa R, Pradhan SB, Histopathological study of skin lesions in a tertiary care hospital: a descriptive cross-sectional study, *JNMA J Nepal Med Assoc*. 58:224 (2020) 218–22. DOI:10.31729/jnma.4799. PMID: 32417857.
- [3] Gupta P, Karuna V, Grover K, Rath M, Verma N, The histopathological spectrum of skin diseases with emphasis on clinicopathological correlation: a prospective study, *IP J Diagn Pathol Oncol*. 3:2 (2018) 91–95. DOI:10.18231/2581-3706.2018.0020.
- [4] Al-Saif FM, Binsufayan SA, Alhussain AH, Alkaff TM, Alshaikh HM, Aldosari MS, et al. Clinicopathological concordance in the diagnosis of skin diseases: a retrospective analysis of 5000 histopathology reports, *Ann Saudi Med*. 39:6 (2019) 388–94. DOI:10.5144/0256-4947.2019.388. PMID:31804136.
- [5] Jha HK, Pokharel A, The histopathological spectrum and clinico-pathological concordance in 85 cases of skin biopsy: a single centre experience, *Nepal J Dermatol Venereol Leprol*. 19:1 (2021) 20–24. DOI:10.3126/njdvl.v19i1.33534.
- [6] Umarji S, Ravikumar G, Antony M, Tirumalae R, Comparison of clinical diagnosis with histopathology in inflammatory skin diseases: a retrospective study of 455 cases, *Egypt J Dermatol Venereol*. 38:1 (2018) 37–41. DOI:10.4103/ejdv.ejdv_62_16
- [7] Al-Zoman AY, Al-Asmari AK, Pattern of skin disease at Riyadh Military Hospital, *Egypt Dermatol Online J*. 4:2 (2008) 4–14. DOI:10.4103/0256-4947.72263.
- [8] Aman S, Nadeem M, Mahmood K, Ghafoor MB, Pattern of skin diseases among patients attending a tertiary care hospital in Lahore, Pakistan, *J Taibah Univ Med Sci*, 12:5 (2017) 392–6. DOI:10.1016/j.jtumed.2017.04.007. PMID:31435269.
- [9] Das KK, Pattern of dermatological diseases in Gauhati Medical College and Hospital Guwahati, *Indian J Dermatol Venereol Leprol*. 69:1 (2003) 16–18. PMID: 17642815.
- [10] Jaiswal AK, Singh G, Pattern of skin diseases in Kashmir region of India, *Indian J Dermatol Venereol Leprol*. 65 (1999) 258–60. PMID:20921679.
- [11] Vijayasankar S, Mathew LR, Alavandhar E, Vijayalakshmi CS, Histopathological study of non-neoplastic skin lesions in a tertiary care center, *Trop J Pathol Microbiol*. 6:6 (2020) 395–400. DOI:10.17511/jopm.2020.i06.05.

