*Journal of Pakistan Association of Dermatologists*. 2024; **34(4 Suppl):**S39-S45.

**Original Article**

# Frequency of various dermatoses requiring histopathological evaluation for definitive diagnosis

**Hina Ehsan[1], Saadiya Siddiqui[2], Hira Aslam[1], Saima Dustgir, Ramla Kazmi[3], Faria Altaf[1], Hira Tariq[1], Shahbaz Aman[1]**

[1] Department of Dermatology, SIMS/ Services Hospital, Lahore.
[2] Department of Dermatology, Ammerudin Medical College/ PGMI/ Lahore General Hospital, Lahore.
[3] Department of Dermatology, Sahara Medical College, Narowal.

## Abstract

***Objective*** To assess the frequency of different dermatoses in patients undergoing biopsy for a definitive diagnosis at a tertiary care hospital.

***Methods*** A total of 352 patients of both genders (who required biopsy for definitive diagnosis), 12 to 70 years of age were included. Patients with previous history of radiotherapy and chemotherapy were excluded. Biopsy was performed after taking consent from the patient or the guardian. Detailed examination of skin was performed for each patient, histopathological evaluation was done and recorded on predesigned proforma (attached). Frequency of various dermatoses were recorded as per-operational definition.

***Results*** Frequency of eczema dermatitis was found in 115 (32.67%) patients, papulosquamous disorders like psoriasis in 27 (7.67%), Infectious skin diseases like leishmania in 22 (38.54%), drug reaction in 18 (5.11%) and others diagnosis in 170 (48.30%) patients.

***Conclusion*** This study concluded that there should be early recognition and management of these disease in order to improve the quality of life of these particular patients.

***Key words***
Dermatoses; Psoriasis; Dermatitis; Histopathology; Dermatopathology.

## Introduction

Nearly 900 million people are affected by dermatologic diseases globally at a given point in time.[1] Skin diseases constitute very common problems with which patients come to health care settings. It is very important to know the prevalence of various skin diseases in a region as most of these diseases are preventable.[2,3] Many skin lesions can be manifestation of serious genetic and metabolic diseases. Therefore, skin abnormalities can be an important clue of patient's internal diseases. A dermatologist plays a key role in the diagnosis and treatment of these disorders.[4]

Skin diseases are seen at all stages of life. They are distressing in various ways and have a profound effect on individuals and the community. They may also cause significant morbidity due to disfigurement, intractable itch, transmissibility, disability and even death.[2]

In a community, burden of skin diseases is frequently underestimated. In developing countries prevalence of skin diseases is reported from 20 to 50% which is more than in developed countries.[3] Skin diseases vary from mild to severe disorders (purpura fulminans,

***Manuscript:*** Received on: April 17, 2024
Revised on November 26, 2024
Accepted on: December 10, 2024
**Address for correspondence**
Dr. Saadiya Siddiqui, Assistant Professor,
Department of Dermatology,
PGMI/ AMC/ Lahore General Hospital, Lahore.
Email: saadiyas7@gmail.com

toxic skin necrolysis and Stevens Johnson syndrome). Due to different genetics, hygiene standards, ecological factors and social settings these diseases vary in different regions of the world. Different patterns of diseases also depend upon gender, age and ethnicity.[5] Early identification and treatment of cutaneous disorders are beneficial for the patients and for society to stop the spread of communicable diseases. Good nutrition, environmental sanitation and community awareness can reduce the frequency of these disorders significantly.

In a study done in Haiti, prevalence of infectious and inflammatory disorders was estimated to be 74.2%.[6] In one more study, out of the total biopsies done, 44.5% were found to be malignant.[7] In another study in Ghana estimated infections and dermatitis to be the leading cause of dermatological problems on biopsy.[8]

Another research carried out at the Dermatology Department of King Edward Medical University/ Mayo Hospital Lahore in 2017 had reported the incidence of eczema in 31.07%, infections including sexually transmitted diseases in 28.16%, acne in 11.03%, drug reactions in 6.74%, urticaria in 4.06% and pigmentary disorder in 3.82%. Bullous diseases were seen in 1.66% and connective tissue disorders in 0.90% of the cases.[5]

An audit of patients with different cutaneous diseases on basis of clinical ground and investigation showed eczema in 25%, scabies in 15.4%, fungal infection in 12.6%, lichen planus in 1.3%, viral infection in 1.7% and psoriasis in 2.1%. Similar study conducted at Hamdard University depicted frequency of cutaneous disorders in children age between 1 to 15 years.[9,10]

In some instances the clinical picture is misleading and a definitive diagnosis is required by biopsy. Biopsy is inexpensive and simple procedure which helps in the diagnosis and management of a disease where the clinical picture might be misleading. Skin biopsy has nearly a diagnostic accuracy of 97.2%.[6] Skin biopsy is the removal of a piece of skin for the purpose of diagnostic examination. This may help to diagnose diseases such as skin cancer infection etc. There are several types of skin biopsies including: shave biopsy (which superficially removes skin abnormality with a thin layer of surrounding normal tissues), punch biopsy (which takes a core of lesion), excisional biopsy (which is generally larger and deeper which removes entire lesion or growth) and incisional biopsy (which takes a portion of lesion or growth). Skin biopsies are essential to establish a diagnosis in several cutaneous diseases.[11]

This study was designed to estimate the frequency of various dermatoses confirmed by skin biopsy for definitive diagnosis presenting to a tertiary care hospital. It will be helpful in determining the disease burden of undiagnosed skin lesions in the community. It will also assist health care providers in making accurate diagnosis and plan their management accordingly and also for the administrators to make proper policies regarding availability of resources for histopathological evaluation of these diseases. We will set our priorities according to frequency of each disease group as histopathological resources and expertise is not freely available everywhere. The study will determine type of dermatoses having high percentage and consensus between probable clinical diagnosis and definitive histopathological diagnosis.

## Methods

This descriptive, cross-sectional study was carried out in the dermatology department of Services Hospital, Lahore, after receiving approval from the hospital's ethical review

committee. A non-probability, consecutive sampling method was used, and the sample size was set at 352, based on a 95% confidence level, a 1.5% margin of error, and an expected psoriasis prevalence of 2.1%.[9] Patients presenting to the outpatient and inpatient Department of Dermatology whose definitive diagnosis could not be made on clinical presentation were included Patients of either gender ages between 12-70 years, willing to participate in the research and consented for skin biopsy for establishing definitive diagnosis for their dermatological condition difficult to diagnose only on clinical grounds to initiate definitive treatment. While patients who refused for biopsy or had previous history of radiotherapy and chemotherapy were excluded. Biopsy was performed after taking consent from the patient or the guardian. Detailed examination of skin was performed for each patient, histopathological evaluation was done by examining tissue specimen of an undiagnosed case under a microscope by using different stain or techniques to enhance diagnostic accuracy of a disease or to remove the probability of error. Different diseases were assessed after dividing into many groups depending on their histopathology; **Eczema dermatitis**: shows spongiosis and dermal oedema**. Papulosquamous disorders like psoriasis**: shows psriasiform hyperplasia, elongated rete ridges and supra papillary thinning. **Infectious skin diseases like Leishmania**: shows chronic infiltrate of macrophages and plasma cell with amastigote in macrophages. **Drug reactions**: like erythema multiforme show interface dermatitis with widespread epidermal necrosis and recorded on predesigned proforma. Frequency of various dermatoses were recorded as per-operational definition. Data was analyzed using SPSS version 20.0. Descriptive statistics were used to calculate the mean and standard deviation for age and BMI, while frequencies and percentages were determined for categorical variables such as gender and different skin conditions (eczema dermatitis, papulosquamous disorders, infectious skin diseases, drug reactions, and others). Stratification was used to control for effect modifiers like age, gender, and BMI, and the chi-square test was applied post-stratification, with a p-value $\leq 0.05$ considered statistically significant.

## Results

The age range of participants in this study was from 12 to 70 years, with a mean age of 44.81±12.41 years. Most patients, 227 (64.49%), were between the ages of 41 and 70, as shown in **Table 1**. Among the 352 patients, 234 (66.48%) were male and 118 (33.52%) were female, resulting in a male-to-female ratio of 1.6:1, as indicated in **Table 1**. Eczema dermatitis was the most common diagnosis, affecting 115 (32.67%) patients, followed by papulosquamous disorders like psoriasis in 27 (7.67%), infectious skin diseases such as leishmania in 22 (6.25%), drug reactions in 18 (5.11%), and other diagnoses in 170 (48.30%) patients, as shown in **Table 2**. The stratification of diagnoses by age group and gender is presented in **Tables 3** and **4**, respectively.

## Discussion

In dermatology, skin biopsy is an important surgical procedure that plays a critical role in

**Table 1** Distribution of patients according to age and gender (n=352).

| *Variable* | *Number of Patients* | *Percentage%* |
|---|---|---|
| Age (in years) | | |
| 12-40 | 127 | 35.51 |
| 41-70 | 252 | 64.49 |
| total | 327 | 100.0 |
| Mean± SD | 44.81±12.41 years | |
| Sex | | |
| Male | 234 | 66.48 |
| female | 118 | 33.52 |

**Table 2** Frequency of various dermatoses in patients requiring biopsy for definitive diagnosis.

| *Diagnosis* | *Frequency* | *Percentage%* |
|---|---|---|
| Eczema dermatitis | 115 | 32.67 |
| Papulosquamous disorders like psoriasis | 27 | 7.67 |
| Infectious skin diseases like leishmania | 22 | 6.25 |
| Drug reactions | 18 | 5.11 |
| Others | 170 | 48.30 |

**Table 3** Stratification of diagnosis with respect to age groups.

| | *12-40 years (n=125)* | *41-70 years (n=227)* | *P-value* |
|---|---|---|---|
| Eczema dermatitis | | | |
| Yes | 46 (36.80%) | 69 (30.40%) | 0.220 |
| No | 79 (63.20%) | 158 (69.60%) | |
| Papulosquamous disorders like psoriasis | | | |
| Yes | 04 (3.20%) | 23 (10.13%) | 0.019 |
| No | 121 (96.8%) | 204 (89.87%) | |
| Infectious skin diseases like Leishmania | | | |
| Yes | 08 (6.40%) | 14 (6.17%) | 0.931 |
| No | 117 (93.6%) | 213 (93.83%) | |
| Drug reactions | | | |
| Yes | 01 (0.80%) | 17 (7.49%) | 0.006 |
| No | 124 (99.2%) | 210 (92.5%) | |
| Others | | | |
| Yes | 66 (52.80%) | 104 (45.81%) | 0.209 |
| No | 59 (47.20%) | 123 (54.19%) | |

confirming clinical diagnoses, ruling out various differential diagnoses, and addressing cases that do not respond to treatment. Although it is an invasive procedure, it requires a well-equipped operating theatre for proper execution. The purpose of the biopsy is to collect tissue samples for routine histopathology, immunohistochemistry, direct immunofluorescence (DIF), PCR testing, and electron microscopy. Common specimens obtained include skin, nail matrix, mucous membranes, and hair follicles. The type of biopsy performed depends on the lesion and its location. However, skin biopsy and histopathology are time-consuming processes, which can be inconvenient for patients as it typically takes at least 3 working days to receive a report, followed by a second visit at least 7 days later for stitch removal.[13,14]

We conducted this study to assess the frequency (percentage) of different dermatoses in patients who required a biopsy for a definitive diagnosis. The average age of the patients who underwent the biopsy was 44.81±12.41 years. In a comparable study on skin biopsies, the mean age was 54.58±0.26 years, with a median age of 57 years.[15] The patients in that study were older than those in our study. Regarding gender distribution, the difference was not significant, although males slightly outnumbered females. Of the patients in our study, 234 (66.48%) were male and 118 (33.52%) were female, giving a male-to-female ratio of 1.6:1. In contrast, a study by Korftis *et al*. involving 5,941 patients found that 48.2% were male and 51.8% were female, with females outnumbering males. This finding differed from our results. Another similar study conducted in India reported a male-to-female ratio of 1.16:1, with the majority (36%) of patients undergoing skin biopsy in the 16-30 age group.[16] Their findings were consistent with ours. This gender distribution aligns with previous studies conducted in Saudi Arabia by Al Shobaili[12] (58.5% males and 41.5% females), Hofny *et al*.[17] from Egypt (58.9% males and 41.1% females), and studies from India by Celine *et al;*[18] Singh *et al;*[19] and Rao *et al*.[17] (58.8% males and 41.12% females, 60.8% males and 39.2% females, and 63.41% males and 36.59% females, respectively). In contrast to our finding of male predominance, several studies in Saudi Arabia, including those by Alghanmi *et al*.[18] from King Abdulaziz University Hospital, Jeddah, Al-Zoman and Al-Asmari[20] from Riyadh Military Hospital, and Alshammrie *et al*.[21] from King Khalid Hospital, Hail, reported a higher prevalence in females. Similar trends have been observed worldwide, with studies from Symvoulakis *et al*.[22] in a Mediterranean island, El-Khateeb *et al*.[23] in Egypt, Bilgili *et al*.[24] in Turkey, and Sevensson *et al*. in Europe all showing a higher incidence of skin diseases in females. These studies

**Table 4** Stratification of diagnosis with respect to gender.

| | *Male (n=234)* | *Female (n=118)* | *P-value* |
|---|---|---|---|
| Eczema dermatitis | | | |
| Yes | 80 (34.19%) | 35 (29.66%) | 0.393 |
| No | 154 (65.81%) | 83 (70.34%) | |
| Papulosquamous disorders like psoriasis | | | |
| Yes | 11 (4.70%) | 16 (13.56%) | 0.003 |
| No | 223 (95.30%) | 102 (86.44%) | |
| Infectious skin diseases like leishmania | | | |
| Yes | 21 (8.97%) | 01 (0.85%) | 0.003 |
| No | 213 (91.03%) | 117 (99.15%) | |
| Drug reactions | | | |
| Yes | 11 (4.70%) | 07 (5.93%) | 0.493 |
| No | 223 (95.30%) | 101 (94.07%) | |
| Others | | | |
| Yes | 111 (47.44%) | 59 (50.0%) | 0.649 |
| No | 123 (52.56%) | 59 (50.0%) | |

suggest that the higher female prevalence may be due to greater awareness among women about skin problems, largely for cosmetic reasons, as well as women's generally higher sensitivity to health-related concerns.

In present research, frequency of eczema was found in 115 (32.67%) patients, papulosquamous disorders like psoriasis in 27 (7.67%), Infectious skin diseases like leishmania in 22 (38.54%), drug reaction in 18 (5.11%) and others diagnosis in 170 (48.30%) patients. In a study conducted at Mayo hospital in 2017,had reported incidence of eczema in 31.07%, infections including sexually transmitted diseases in 28.16%, acne in 11.03%, drug reactions in 6.74%, urticaria in 4.06% and pigmentary disorder in 3.82%. Bullous diseases were seen in 1.66% and connective tissue disorders in 0.90% of the cases.[5]

Malik *et al*. had found on 2216 biopsies that the most common types of dermatoses included cutaneous malignancies (18%), lichenoid diseases (14.57%), psoriasis and its subtypes (6.85%), and eczema or dermatitis (3%).[25] Another research conducted in Greece, involving 6816 patients who underwent biopsies, revealed that the most frequent clinical diagnoses were cutaneous malignancies (19.28%), papulosquamous diseases (12.13%), nevi (10.51%), dermatitis (8.4%), and miscellaneous conditions, which made up 22.49% of all dermatoses.[26] An audit of patients with different cutaneous diseases on basis of clinical ground and investigation showed eczema in 25%, scabies in 15.4%, fungal infection in 12.6%, lichen planus in 1.3%, viral infection in 1.7% and psoriasis in 2.1%. Similar study conducted at Hamdard University depicted frequency of cutaneous disorders in children age between 1 to 15 years.[9,10]

In this study, eczema was the most common skin disorder, affecting 32.67% of patients, which aligns with findings from other studies.[27,28] The high prevalence of eczema in the community may be attributed to exposure to occupational allergens and chemicals, lack of protective measures, use of artificial jewelry in females, and footwear allergies due to the hot and humid climate. Drug eruptions made up 5.11% of skin disorders in this study, which is higher than the 2.3% reported in Greece.[28] This higher percentage could be due to widespread drug abuse, unregulated treatment practices, and poor drug policies in the local context, whereas the lower figure in Greece may reflect a preference for seeking emergency or medical outpatient care over dermatology.

## Conclusion

This study concluded that frequency of eczema dermatitis was found in 32.67% patients, papulosquamous disorders like psoriasis in 7.67%, Infectious skin diseases like leishmania in 38.54%, drug reaction in 5.11% and others diagnosis in 48.30% patients. So, we recommend that there should be early recognition and management of these disease in order to improve the quality of life of these particular patients.

***Declaration of patient consent*** The authors certify that they have obtained all appropriate patient consent.

***Financial support and sponsorship*** None.

***Conflict of interest*** Authors declared no conflict of interest.

***Authors' contribution***

**HA,SA**: Substantial contribution to study design, acquisition of data, manuscript writing, has given final approval of the version to be published.

**SS**: Substantial contribution to study design, acquisition of data, has given final approval of the version to be published.

**FA,RK**: Substantial contribution to study design and interpretation of data, critical review of the manuscript, has given final approval of the version to be published.

**HA,SD,HT**: Substantial contribution to study design, critical review of the manuscript, has given final approval of the version to be published.

## References


1. Hay RJ, Johns NE, Williams HC, Bolliger IW, Dellavalle RP, Margolis DJ, *et al*. The global burden of skin disease in 2010: An analysis of the prevalence and impact of skin conditions. *J Invest Dermatol*. 2014;**134(6)**:1527–34.
2. Azam F, Munir S, Ashraf A, Imran AA, Rashid T. Histopathological analysis of skin biopsies in a tertiary care setting. *J Pak Assoc Dermatol*. 2018;**27(2)**:154-7.
3. Kayhan M, Unluoglu I, Kayhan S, Bilge U. Assessment of clinical diagnosis, age and gender differences of elderly patients applying to dermatology clinic of a secondary health institute in family medicine aspect. *Biomed Res*. 2017;**28**:2.
4. Patel K, Desai B. Pediatric dermatoses encountered in dermatology outpatient department of a teaching institute. *Int J Contemp Pediatr*. 2016;**3(4)**:1178–84. Available from: http://www.ijpediatrics.com
5. 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*. 2017;**12(5)**:392–6. Available from: /pmc/articles/PMC6694895/
6. Korfitis C, Gregoriou S, Antoniou C, Katsambas AD, Rigopoulos D. Skin biopsy in the context of dermatological diagnosis: a retrospective cohort study. *Dermatol Res Pract*. 2014;**2014**:734906. doi: 10.1155/2014/734906.
7. Weinstein DA, Konda S, Coldiron BM. Use of skin biopsies among dermatologists. *Dermatologic Surg*. 2017;**43(11)**:1348–57.
8. Rosenbaum BE, Klein R, Hagan PG, Seadey MY, Quarcoo NL, Hoffmann R, Robinson M, Lartey M, Leger MC. Dermatology in Ghana: a retrospective review of skin disease at the Korle Bu Teaching Hospital Dermatology Clinic. *Pan Afr Med J*. 2017;**26**:125.
9. Ahmed I, Ansari M, Malick K. An audit of dermatoses at Baqai Institute of Skin Diseases, Karachi. *J Pak Assoc Dermatol*. 2017;**13(3)**:117-22.
10. Javed M, Jairamani C. Pediatric dermatology: An audit at Hamdard University Hospital, Karachi. *J Pak Assoc Dermatol*. 2006;**16(2)**:93–6.
11. Definition of Skin biopsy [Internet]. [cited 2021 May 1]. Available from: https://www.medicinenet.com/skin_biopsy/definition.htm
12. Nischal U, Nischal KC, Khopkar U. Techniques of skin biopsy and practical considerations. *J Cut Aesthet Surg*. 2008;**1(2)**:107.
13. Ramsey ML, Rostami S. Skin biopsy. StatPearls [Internet]. 2020 Jan 7.
14. Yang S, Kampp J. Common Dermatologic Procedures. *Med Clin North Am*. 2015;**99(6)**:1305-21.
15. Korftis C, Gregoriou S, Antoniou C, Katsambas AD, Rigopoulos D. Skin biopsy in the context of dermatological diagnosis: a retrospective cohort study. *Dermatol Res Pract*. 2014; **2014**:734906.
16. Venugopal R, Shankar P, Pathania V. Clinicopathological correlation in the diagnosis of skin diseases: A retrospective study. *Medical Journal of Dr. DY Patil Vidyapeeth*. 2020;**13(6)**:648.
17. Rao GS, Kumar SS, Sandhya Pattern of skin diseases in an Indian village. *Indian J Med Sci*. 2003;**57**:108–10.
18. Alghanmi NM, Abdullah LS. Pathology of skin diseases. A study from Western Saudi Arabia. *Saudi Med J*. 2012;**34**:74–9.

19. Singh S, Debnath A, Datta D, Chakravarty S, Chaubey RN. Histopathological Evaluation of Skin Lesions with Special Reference to Skin Adnexal Tumors in a Tertiary Centre of North-Eastern India-A Three Year Study. *IOSR J Dental Med Sci*. 2016;**15**:34–9.
20. Al-Zoman AY, Facharizt, Al-Asmari AK. Pattern of skin diseases at Riyadh Military Hospital. *Egyptian Dermatol Online J*. 2008;**4**:1–10.
21. Al Shammrie F, Al Shammrie A. Pattern of skin disease in Hail region of Saudi Arabia. J Dermatol Surg. 2017;**21**:62–6.
22. Symvoulakis EK, Krasagakis K, Komninos ID, Kastrinakis I, Lyronis I, Philalithis A, Tosca AD. Primary care and pattern of skin diseases in a Mediterranean Island. *BMC Fam Prac*. 2006;**7**:1–6.
23. El-Khateeb EA, Imam AA, Sallam MA. Pattern of skin diseases in Cairo, Egypt. *Int J Dermatol*. 2011;**50**:844–53
24. Bilgili ME, Yildiz H, Sarici G. Prevalence of skin diseases in a dermatology outpatient clinic in Turkey. A cross-sectional, retrospective study. *J Dermatol Case Rep*. 2013;**7**:108.
25. Malik A, Siraj F, Shruti S, Gupta P, Khullar G, Ramesh V. Clinicopathological Concordance in 2216 Cases of Skin Biopsy over One Year: An Indian Experience. *Cureus*. 2020;**12(4)**:e7752.
26. Gupta P, Karuna V, Grover K, Rathi M, Verma N. #e histopathological spectrum of skin diseases with emphasis on clinicopathological correlation: A prospective study. *IP J Diagnost Pathol Oncol*. 2018;**3(2)**:91-5.
27. Najdawi F*;* Fa'ouri M. Frequency and types of skin disorders and associated diabetes mellitus in elderly Jordanians. *La Rev St Mediterr Orient*. 2002;**8**:574–8.
28. Symvoulakis E.K*;* Krasagakis K*;* Komninos I.D, Kastrinakis I, Lyronis I, Philalithis A. Primary care and pattern of skin diseases in a mediterranean island. *BMC Fam Pract*. 2006;**7**:6. http://www.biomedcentral.com/1471-2296/7/6.