

Clinical and Epidemiological Insights into Insect Related Dermatitis: Impact on Patient's Daily Lives

Shivani Saini¹, Rekha Sirvi², Pooja Puri³

¹Assistant Professor, Department of Dermatology, Government Medical College, Pali, Rajasthan, India

²Associate Professor, Department of Dermatology, Government Medical College, Pali, Rajasthan, India

³Consultant Dermatologist, Panipat, Haryana, India

Received: 01-12-2025 / Revised: 15-01-2026 / Accepted: 21-02-2026

Corresponding author: Dr. Shivani Saini

Conflict of interest: Nil

Abstract

Background: Insect-related dermatitis (IRD) is a common dermatological condition caused by insect bites, stings, or contact with insect-derived toxins and allergens. The condition can present with a wide range of clinical manifestations and may significantly affect patients' daily activities and quality of life. Despite its frequent occurrence in dermatology outpatient practice, limited epidemiological data are available regarding its clinical profile and impact on daily living in many parts of India, including Rajasthan. The present study was conducted to assess the clinical and epidemiological characteristics of insect-related dermatitis and its impact on patients' daily lives.

Materials and Methods: This hospital-based cross-sectional epidemiological study was conducted in the Dermatology Outpatient Department of Bangur Hospital, Government Medical College, Pali, Rajasthan, over a four-month period from July to October 2025. A total of 385 patients with clinically diagnosed insect-related dermatitis were included using consecutive sampling. Data were collected using a structured questionnaire and clinical examination proforma. Information regarding demographic characteristics, environmental exposures, lesion morphology, symptoms, suspected insect type, treatment practices, and clinical outcomes was recorded. The impact of the disease on quality of life was assessed using the Hindi version of the Skindex-16 questionnaire. Data were analysed using SPSS version 24.0.

Results: Out of 4210 dermatology outpatient visits, 385 patients (9.1%) were diagnosed with insect-related dermatitis. Most patients were aged 41–50 years (22.1%) with slight male predominance (52.5%) and urban residence (65.5%). Outdoor exposure (45.2%) and stagnant water (41.3%) were common risk factors. Upper limb involvement (51.2%) and erythematous papules (54.5%) predominated. Itching (76.6%) was the most frequent symptom. The causative insect was unidentified in 60.3% of cases. Oral antihistamines and topical steroids were the most frequently used treatments. At seven-day follow-up, most patients showed partial or complete improvement. Quality-of-life assessment revealed that the majority of patients experienced mild to moderate impact on daily life.

Conclusion: Insect-related dermatitis is a common dermatological condition with diverse clinical manifestations and a measurable impact on patients' daily activities. Improved awareness, preventive measures, and timely management may help reduce the burden of this condition.

Keywords: Arthropod bites, Dermatological reactions, Insect-related dermatitis, Quality of life, Skindex-16.

DOI: 10.25258/ijcpr.18.3.138

This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

Introduction

Insect-related dermatitis (IRD) is an increasingly significant public health concern, characterized by a spectrum of skin reactions that range from mild irritation to severe allergic responses. [1] These conditions are commonly triggered by insect bites, stings, or direct contact with insect-derived allergens, leading to symptoms such as erythema, swelling, and intense itching. [2] IRD contributes to millions of allergic cases globally each year, resulting not only in physical discomfort but also in

increased healthcare utilization and loss of productivity. [3] Additionally, the economic burden associated with IRD, which includes both direct medical costs and indirect impacts such as lost workdays, amounts to billions of dollars annually. It is estimated that insect-related reactions account for over 20% of reported anaphylaxis cases annually in the United States. [4] The incidence of insect-related dermatitis varies across different geographic regions and is influenced by

environmental conditions, socioeconomic factors, and human behavioural patterns that affect exposure to insects. [5-7] certain biological and environmental factors have been shown to increase insect attraction to humans. Moisture, warmth, carbon dioxide, estrogens, and lactic acid present in human sweat are among the factors that can increase the risk of insect exposure. [8]

Arthropods are responsible for a wide range of dermatological conditions that may vary from trivial bites and stings to severe systemic reactions and, in rare situations, death. [9,10] Arthropods can cause injury to the skin through multiple mechanisms including mechanical injury, venom injection, allergic reactions, and contact with irritating hairs or toxins. [11] Several insect species that commonly affect humans belong to the families Apidae and Bombidae (bees), Vespidae (wasps), and Formicidae (ants). Population studies have suggested that approximately one-third of individuals experiencing systemic reactions to insect stings have a personal history of atopic disease. [12,13] Large local reactions are defined as swellings exceeding 10 cm in diameter and lasting longer than 24 hours, sometimes associated with blister formation. [14]

Dermatitis-causing insects (DCIs) are closely associated with the occurrence of insect-related dermatitis, acting both as vectors and sources of allergens. Several forms of insect-related dermatitis have been described, including *Dendrolimus* dermatitis, *Euproctis similis* dermatitis, and *Paederus* dermatitis, each caused by distinct insect species and associated with characteristic clinical features. For example, bites by insects belonging to *Dendrolimus* species (such as *Dendrolimus houii*, *Dendrolimus kikuchii*, and *Dendrolimus punctatus*) may cause *Dendrolimus* dermatitis, which is characterized by erythema and papular eruptions on the skin. The occurrence of specific forms of dermatitis is often closely related to the geographic distribution of the responsible insect species.

Among the various insect-related dermatoses, *Paederus* dermatitis is one of the most commonly reported forms in tropical and subtropical regions, including many parts of India. It occurs following accidental contact with rove beetles belonging to the genus *Paederus*.

Unlike typical insect bites, the dermatitis develops when the insect is crushed on the skin, releasing a potent toxin known as pederin. This toxin produces an irritant contact dermatitis characterized by erythema, vesicles, pustules, and burning sensation. The lesions often appear in linear or streaky patterns due to the spreading of toxin over the skin surface when the insect is brushed or crushed. These lesions are commonly observed on exposed areas such as the face, neck, and upper limbs,

particularly during the night when these insects are attracted to artificial lights. [15] Certain environmental and occupational exposures may further increase the risk of insect-related dermatitis. [16] For example, forestry workers may be exposed to urticating hairs of caterpillars belonging to certain species of Lepidoptera, while dock workers handling stored food materials may be attacked by mites infesting the cargo. [17] These occupational exposures demonstrate the role of environmental and occupational factors in the development of insect-related skin reactions.

Despite the relatively frequent occurrence of insect-related dermatitis in dermatology outpatient practice, there is limited epidemiological data regarding its clinical profile, risk factors, and impact on daily living in many regions of India, including Rajasthan. Understanding the epidemiological and clinical characteristics of insect-related dermatitis is important for identifying risk factors, planning preventive measures, and improving patient management. Furthermore, assessing the impact of the disease on daily activities helps to understand the broader burden of the condition beyond physical symptoms.

Therefore, the present study was undertaken to assess the clinical and epidemiological profile of insect-related dermatitis and the treatment practices with their short-term outcomes among patients attending the dermatology outpatient department during the study period. The study also aimed to assess the short-term impact of insect-related dermatitis on patients' daily activities using a validated quality-of-life assessment tool.

Materials and Methods

This hospital-based cross-sectional epidemiological study was conducted in the Dermatology Outpatient Department of Bangur Hospital, Government Medical College, Pali, Rajasthan, which is a tertiary care centre serving the population of the south-western region of Rajasthan.

The study was carried out over a period of four months from July 2025 to October 2025. The study population consisted of patients attending the dermatology outpatient department with clinical features suggestive of insect-related dermatitis during the study period. Patients of all age groups and both genders presenting with new-onset skin lesions clinically suggestive of insect related dermatitis were included in the study after obtaining informed consent.

Patients with pre-existing dermatological conditions that could mimic insect bite reactions, such as scabies or papular eczema, were excluded from the study. Patients receiving immunosuppressive therapy or those with systemic

illnesses such as diabetes mellitus or thyroid disorders that could alter skin immunity were also excluded. In addition, patients who were unwilling or unable to provide consent were not included in the study.

A consecutive sampling technique was used. All eligible patients presenting during the study period and meeting the inclusion criteria were included until the required sample size was achieved.

The sample size was calculated using the formula:

$$n = Z^2 \times P \times (1 - P) / d^2$$

Where

- $Z = 1.96$ for 95% confidence interval,
- $P =$ expected prevalence (50%),
- $d =$ allowable error (5%).

Based on this calculation, the minimum sample size required for the study was 385 participants.

Plan of Procedure: The study was conducted after obtaining approval from the Institutional Ethics Committee. Written informed consent was obtained from all participants prior to enrolment in the study. In the case of minors, consent was obtained from parents or guardians. Confidentiality of all participants was maintained throughout the study, and personal identifiers were not included in the dataset used for analysis.

Data were collected using a pre-structured questionnaire and a clinical assessment proforma. Information recorded included demographic details such as age, gender, residence, and occupation. Environmental exposure history was also obtained, including details regarding living conditions, use of mosquito nets, and exposure to vegetation or nearby water bodies. Clinical information related to insect-related dermatitis was documented, including the type of lesion, site of involvement, duration of symptoms, severity of lesions, and associated symptoms such as itching, burning, or pain. Information regarding treatment-seeking behaviour was also collected, including any self-medication or treatment taken before consultation. Wherever possible, the suspected insect responsible for dermatitis was recorded based on patient history or identification through reference images.

All patients underwent a detailed clinical examination by the principal investigator and co-investigator. The morphology and distribution of skin lesions were carefully documented. The presence of secondary infection was also noted. Severity of dermatitis was assessed based on lesion count and intensity of symptoms and was classified into mild, moderate, or severe categories. Pre-

treatment and post-treatment photographs were taken when required for documentation and record keeping. Patients were advised to return for follow-up after seven days in order to assess the short-term response to treatment and document the outcome of the condition. The impact of insect-related dermatitis on daily life was assessed using the Hindi version of the Skindex-16 questionnaire. This questionnaire consists of 16 items covering three domains: symptoms, emotions, and functioning. Each participant completed the questionnaire, and the responses were scored according to the standard scoring system. The total score was obtained by summing the responses, with higher scores indicating greater impact of the disease on quality of life.

Statistical Analysis: All collected data were entered into Microsoft Excel and subsequently analysed using Statistical Package for Social Sciences (SPSS) software version 24.0. Categorical variables such as age group, gender, residence, occupation, environmental exposure factors, clinical features, suspected insect type, treatment modalities, and severity categories were expressed as frequencies and percentages. Continuous variables such as age and Skindex-16 scores were presented as mean \pm standard deviation.

Results

In the present study, out of 4210 patients attending the dermatology outpatient department during the study period, 385 patients were diagnosed with insect-related dermatitis, accounting for 9.1% of total dermatology OPD visits. [Table -1] In the present study, the largest proportion of participants belonged to the 41–50 years age group (22.1%), followed by ≤ 10 years (18.7%) and 31–40 years (17.9%). Males constituted 52.5% of the study population, while females accounted for 47.5%. Most participants were from urban areas (65.5%), whereas 34.5% were from rural areas. The majority of participants had primary education (40.8%), followed by secondary education (25.5%) and graduate or higher education (21.8%), while 11.9% were illiterate. In terms of occupation, students formed the largest group (23.9%), followed by housewives (21.8%) and labourers (18.2%). Agricultural workers constituted 13.5%, those in service or business accounted for 12.5%, and 10.1% were unemployed. The majority of participants belonged to the lower middle class (40.3%), followed by middle class (31.2%) and upper middle class (25.7%), while only 2.9% belonged to the lower class. 45.2% of participants had predominantly outdoor exposure, 35.6% had indoor exposure, and 19.2% had mixed exposure.

Table 1: Distribution of Study Participants According to Demographic Characteristics and Environmental Risk Factors (n = 385)

Variable		Number	Percentage (%)
Age Group (Years)	≤10	72	18.7
	11–20	54	14
	21–30	49	12.7
	31–40	69	17.9
	41–50	85	22.1
	>50	56	14.5
Gender	Male	202	52.5
	Female	183	47.5
Residence	Rural	133	34.5
	Urban	252	65.5
Education Level	Illiterate	46	11.9
	Primary	157	40.8
	Secondary	98	25.5
	Graduate +	84	21.8
Occupation	Students	92	23.9
	Agricultural workers	52	13.5
	Housewives	84	21.8
	Labourers	70	18.2
	Service/Business	48	12.5
	Unemployed	39	10.1
Socioeconomic Status	lower	11	2.9
	Lower Middle	155	40.3
	Middle	120	31.2
	Upper Middle	99	25.7
Living/working environment	Indoor	137	35.6
	Outdoor	174	45.2
	Mixed	74	19.2

In the present study, regular use of mosquito protection measures was reported by 54 participants (14.0%), while 11 participants (2.9%) reported occasional use. The majority of participants did not use mosquito protection measures. The presence of stagnant water in the vicinity of residence was reported by 159 participants (41.3%).

Most participants were residing in pucca houses (84.4%), followed by semi-pucca houses (10.9%), while a small proportion of participants lived in kutcha houses (4.7%). [Table-2] In the present study, the upper limb was the most common site of lesion (51.2%), followed by the trunk (27.3%) and

face (24.4%). Lesions on the lower limb (9.4%), neck (3.1%), and breast/chest (2.9%) were comparatively less frequent. Erythematous papules were the most common lesion type (54.5%), followed by urticarial plaques (47.0%) and papulovesicular lesions (36.1%).

Excoriated papules were observed in 16.9% of patients, while bullous lesions were the least common (6.5%). Itching was the most frequently reported symptom (76.6%), followed by burning sensation (67.5%) and pain (43.6%). Swelling or edema was present in 24.2% of patients, whereas fever (10.9%) and sleep disturbance (2.9%) were relatively less common.

Table 2: Distribution of Lesion Characteristics and Associated Symptoms in Patients with Insect Related Dermatitis (n = 385)

Variable		Number	Percentage (%)
Site of Lesion	Upper limb (arm, hand, shoulder region)	197	51.2
	Face (face, forehead, nose)	94	24.4
	Trunk	105	27.3
	Lower limb (legs, thigh)	36	9.4
	Neck	12	3.1
	Breast/Chest	11	2.9
Morphology of Lesion	Erythematous papules	210	54.5
	Papulovesicular lesions	139	36.1
	Urticarial plaques	181	47

	Excoriated papules	65	16.9
	Bullous lesions	25	6.5
Associated Symptom	Itching	295	76.6
	Burning sensation	260	67.5
	Pain	168	43.6
	Swelling / Edema	93	24.2
	Fever	42	10.9
	Sleep disturbance	11	2.9

[Table -3] In the present study, the suspected insect could not be identified in the majority of cases (60.3%). Among the identified insects, mosquito bites were the most common (11.9%), followed by wasps (10.9%), honeybee stings (9.4%), and spider bites (6.0%). Pediculosis was reported in 1.6% of patients.

Table 3: Distribution of Suspected Insects among Study Participants (n = 385)

Suspected Insect	Number	Percentage (%)
Mosquitoes	46	11.9
Honeybee	36	9.4
Wasps	42	10.9
Spider	23	6
Pediculosis	6	1.6
Insect not identified	232	60.3
Total	385	100

The time delay before presentation ranged from 1 day to 7 days. The mean time delay before seeking treatment was 2.40 ± 1.56 days. The median delay was 2 days, with an interquartile range (IQR) of 1–3 days. In the present study, 36.9% of patients used home remedies before seeking medical care, while 35.3% obtained treatment from pharmacies. A small proportion of patients (1.3%) reported using both home remedies and pharmacy medications. 26.5% of patients took no treatment prior to hospital presentation. [Table 4] In the present study, oral antihistamines (64.9%) and topical

steroids (58.7%) were the most commonly used treatment modalities, while 32.5% of patients received combination therapy. Self-medication was reported in 21.3%, and antibiotics were prescribed in 11.7% of cases. At 7-day follow-up, 47.8% of patients showed partial improvement, 42.3% achieved complete improvement, and 9.9% showed no improvement. Assessment of quality of life using the Skindex-16 scale revealed moderate impact in 44.1% of patients, while 39.5% experienced mild impact and 16.4% had severe impact on daily life.

Table 4: Treatment Modalities, Clinical Outcome at 7 Days, and Impact on Daily Life among Patients with Insect Related Dermatitis (n = 385)

Variable		Number	Percentage (%)
Treatment Modalities	Topical steroids	226	58.7
	Oral antihistamines	250	64.9
	Combination therapy	125	32.5
	Self-medication	82	21.3
	Antibiotics	45	11.7
Outcome at 7 Days	Complete improvement	163	42.3
	Partial improvement	184	47.8
	No improvement	38	9.9
Impact on Daily Life (Skindex-16)	Mild	152	39.5
	Moderate	170	44.1
	Severe	63	16.4



Figure 1: Clinical photographs showing morphological presentations of insect-related dermatitis, including erythematous plaques, papular lesions, excoriated lesions, edematous reactions, and bullous lesions



Figure 1: Clinical photographs demonstrating morphological manifestations of insect-related dermatitis, including facial papules, hyperpigmented excoriated plaques, erythematous swelling, and localized plaque-like lesions

Discussion

In the present study, the largest proportion of participants belonged to the 41–50 years age group (22.1%), with a slight male predominance (52.5%). Most patients were from urban areas (65.5%), and outdoor exposure (45.2%) was more common than indoor exposure (35.6%). These findings suggest that insect-related dermatitis in our setting was more frequent in economically active adults and in persons with greater environmental exposure. The higher proportion of middle-aged patients in our study may be related to greater occupational mobility, outdoor work, and household responsibilities that increase exposure to insects. Male predominance may reflect more outdoor activity or work-related exposure, although the difference was small. The higher proportion of urban residents in our study may be due to the hospital-based design and better healthcare access in urban populations. At the same time, outdoor exposure, stagnant water, and housing-environment factors remain important because they increase contact with mosquitoes and other arthropods.

Our finding of a mild male predominance is similar to the study by Gyeltshen et al [18], who reported 54% males among 81 patients with *Paederus* dermatitis in Bhutan, and to Inbamani et al [19], who observed 60% males in their case series. However, their patients were distinctly younger, with Gyeltshen et al [18] reporting a mean age of 22 years and the 11–20 year age group forming 40.7% of cases, while our study showed the highest proportion in the 41–50 year group. This difference may be due to differences in study population, outbreak setting, and occupational profile. Our findings differ from Kar et al [20], who studied 100 patients with insect bite dermatitis and found no age or gender preponderance. They also emphasized environmental risk factors such as heavy insect infestation, warm weather, and lack of protective measures, which is in line with our observation that a large proportion of participants had outdoor exposure and environmental risk. A similar environmental link was reported by Uzunoğlu et al [21], where all 46 patients were hazelnut farm workers, strongly suggesting occupational exposure as the major determinant. Their study supports the importance of environmental and occupational contact, although their population was more homogeneous and occupation-specific than ours.

Lesion Characteristics and Associated Symptoms: In the present study, the upper limb was the most common site of involvement (51.2%), followed by the trunk (27.3%) and face (24.4%). The most common lesion morphology was erythematous papules (54.5%), followed by urticarial plaques (47.0%) and papulovesicular lesions (36.1%). Itching (76.6%) was the

commonest symptom, followed by burning sensation (67.5%) and pain (43.6%). These findings indicate that exposed areas and inflammatory papular lesions predominate in our patients. Upper-limb involvement may be because the arms and hands are frequently exposed during daily work and household activities. Papules, papulovesicles, and urticarial plaques represent inflammatory reactions to arthropod bites or contact toxins. The high frequency of itching is expected because pruritus is a major feature of arthropod bite reactions. Burning and pain may be more prominent in irritant reactions such as *Paederus* dermatitis, where toxin release causes acute inflammation.

Our observation that itching was the commonest symptom (76.6%) is close to Uzunoğlu et al [21], who reported itching in 70.09% of cases, and supports the central role of pruritus in insect-related dermatitis. However, they found the neck to be the most commonly involved site (47.83%), whereas in our study the upper limb (51.2%) was the predominant site. This difference may be due to differences in clothing habits, occupational exposure, and insect species involved. They also reported erythematous plaques in 84.78%, whereas our study showed a broader distribution with papules, plaques, and papulovesicular lesions.

Our results also show partial similarity to Gyeltshen et al [18], who described common symptoms as pain, itching, redness, tenderness, and blister formation, with erythematovesicular lesions in 70%, linear lesions in 54.3%, and kissing lesions in 28.4%. In contrast, our study had more erythematous papules and fewer bullous lesions (6.5%), suggesting that our cohort included a broader spectrum of insect-related dermatitis and not only classical *Paederus* dermatitis.

Srihari et al [22] also reported that patients commonly presented with burning and itching, and that the face, neck, and arms were the most frequently involved sites. Their description of linear erythematous plaques and erythematovesicles supports the pattern seen in toxin-mediated dermatitis, but differs from our study where papular lesions were more common overall. This difference again suggests variation in case mix and probably in the causative arthropods.

In Inbamani et al [19], burning sensation and pain were each present in 80%, linear lesions in 40%, and the face in 40% was the commonest site. Compared with that study, our patients had a higher frequency of itching and more upper-limb involvement. This may be because their series focused specifically on *Paederus* dermatitis, while our study included insect-related dermatitis more broadly.

Suspected Insects and Treatment-Seeking Behaviour:

In the present study, the suspected insect was not identified in 60.3% of cases. Among identified causes, mosquitoes accounted for 11.9%, wasps 10.9%, honeybee 9.4%, and spider 6.0%. The mean delay before presentation was 2.40 ± 1.56 days, with a median of 2 days. Before hospital consultation, 36.9% used home remedies, 35.3% took treatment from pharmacies, 1.3% used both, and 26.5% took no prior treatment. Failure to identify the insect is common because patients often do not directly observe the arthropod or may notice lesions only after a delay. Mosquitoes are likely to be frequent contributors in settings with stagnant water and peri-domestic exposure. The short but definite delay in presentation may reflect initial underestimation of severity, easy availability of over-the-counter medicines, and use of household remedies.

The high proportion of unidentified insects in our study is understandable in routine clinical settings and contrasts with Uzunoglu et al [21], where insects were actually collected and identified as *Paederus fuscipes*. Their approach allowed definitive species identification, whereas our study relied mainly on history and clinical impression.

In Srihari et al [22], none of the patients could clearly recall the encounter with the beetle, although they described a typical history of burning and itching at night followed by lesions the next morning. This supports our findings.

The importance of environmental risk and preventive practices was also stressed by Kar et al [20], who identified residence in heavily infested areas and lack of protective measures as important risk factors. This supports our finding that many patients likely acquired exposure from common environmental sources even when the specific insect was not recognized.

Treatment Modalities, Clinical Outcome at 7 Days, and Impact on Daily Life:

In the present study, oral antihistamines (64.9%) and topical steroids (58.7%) were the most commonly used treatment modalities, while 32.5% received combination therapy. At 7-day follow-up, 42.3% had complete improvement, 47.8% had partial improvement, and 9.9% showed no improvement. On Skindex-16 assessment, 44.1% had moderate impact on daily life, 39.5% had mild impact, and 16.4% had severe impact.

Antihistamines reduce itching and improve comfort, while topical corticosteroids suppress local inflammation. The predominance of partial and complete improvement within one week suggests that many cases respond well to symptomatic treatment, though some may persist because of secondary excoriation, ongoing

exposure, or delayed presentation. The moderate quality-of-life impact seen in many patients is expected because itching, burning, visible lesions, and sleep disturbance can interfere with daily activities even when the disease is not life-threatening.

Our treatment pattern is broadly consistent with Gyeltshen et al [18], where all patients received topical or oral steroid therapy and recovery was 100%. However, their mean time from onset to recovery was 13 ± 8.3 days, whereas our outcomes were assessed at 7 days, which likely explains why we observed a mix of complete and partial improvement rather than universal recovery. The self-limiting nature of *Paederus* dermatitis with appropriate symptomatic therapy has also been described by Srihari et al [22] and Inbamani et al [19], both of whom emphasized the importance of early recognition and appropriate treatment. Their reports support our finding that outcomes are generally favorable when patients receive rational therapy.

In the present study, a relatively adequate sample size was included, which improves the reliability of the findings. The study comprehensively evaluated clinical, epidemiological, and treatment-related aspects of insect-related dermatitis in a single setting. Although the cross-sectional design limits the ability to establish causal relationships between risk factors and outcomes. The study was conducted in a single tertiary care centre, which may limit the generalizability of the findings to the broader population. Identification of the causative insect was not possible in the majority of cases, which may affect the accuracy of epidemiological correlations.

Conclusion

In the present study, insect-related dermatitis was identified as a common dermatological condition contributing to a notable proportion of outpatient visits. The study demonstrated that the condition affects individuals across all age groups, and higher representation of urban populations. Environmental and occupational factors, particularly outdoor exposure and presence of stagnant water, were found to play an important role in disease occurrence.

Clinically, insect-related dermatitis was characterized by involvement of exposed body parts, with erythematous papules being the most common lesion type. Itching was the predominant symptom, followed by burning sensation and pain, reflecting the inflammatory nature of the condition. The majority of cases were associated with unidentified insects, indicating challenges in establishing direct causative agents based on patient history alone.

Treatment practices revealed that oral antihistamines and topical steroids were the most commonly used modalities. Patients receiving appropriate treatment, especially combination therapy, showed better clinical outcomes. The study also demonstrated that insect-related dermatitis has a measurable impact on quality of life, with a significant proportion of patients experiencing moderate impairment. This emphasizes the importance of addressing both clinical symptoms and patient well-being during management.

The results highlight the importance of environmental control measures, early diagnosis, and appropriate treatment in improving patient outcomes. The study also underscores the need for increased awareness among both healthcare providers and the general population to reduce disease burden and prevent complications.

It is recommended that awareness regarding preventive measures such as use of protective clothing, mosquito nets, and environmental control should be increased among the general population. Early medical consultation should be encouraged to avoid inappropriate self-medication. Healthcare providers should emphasize rational use of medications and avoid unnecessary antibiotic use. Community-level interventions targeting environmental risk factors such as stagnant water and vegetation control should be strengthened.

References

- Hossler EW. Caterpillars and moths: Part I. Dermatologic manifestations of encounters with Lepidoptera. *Journal of the American Academy of Dermatology*. 2010 Jan 1;62(1):1-0.
- Nguyen QB, Vu MA, Hebert AA. Insect repellents: an updated review for the clinician. *Journal of the American Academy of Dermatology*. 2023 Jan 1;88(1):123-30.
- Wang Y, Allen KJ, Suaini NH, McWilliam V, Peters RL, Koplin JJ. The global incidence and prevalence of anaphylaxis in children in the general population: a systematic review. *Allergy*. 2019 Jun;74(6):1063-80.
- Wood RA, Camargo Jr CA, Lieberman P, Sampson HA, Schwartz LB, Zitt M, Collins C, Tringale M, Wilkinson M, Boyle J, Simons FE. Anaphylaxis in America: the prevalence and characteristics of anaphylaxis in the United States. *Journal of Allergy and Clinical Immunology*. 2014 Feb 1;133(2):461-7.
- Abbasi K, Ali P, Barbour V, Benfield T, Bibbins-Domingo K, Hancocks S, Horton R, Laybourn-Langton L, Mash R, Sahni P, Sharief WM. Time to treat the climate and nature crisis as one indivisible global health emergency. *European Heart Journal-Cardiovascular Imaging*. 2024; 25:6-7.
- Xiong M, Li X, Zhang C, Shen S. Effects of weather and air pollution on outpatient visits for insect-and-mite-caused dermatitis: an empirical and predictive analysis. *BMC Public Health*. 2024 Feb 28;24(1):633.
- Cai X, Smirnova L, Ma Z, Orlova E. Allergic contact dermatitis and associated allergic dermatoses: epidemiological, allergic, and immunological characteristics. *Advances in Dermatology and Allergology/Postępy Dermatologii i Alergologii*. 2021 Dec 1;38(6):1058-64.
- Brown AW. The attraction of mosquitoes to hosts. *JAMA*. 1966; 196:249-52.
- Mehta VR. Cutaneous reactions to insect bites. *Indian J Dermatol Venerol Leprol*. 1980; 46:225-9.
- Harves AD, Millikan LE. Current concepts of therapy and pathophysiology in arthropod bites and stings. Part 1 Arthropods. *Int J Dermatol*. 1975; 14:543-62.
- Bagnall B, Rook A. Arthropods and the skin. In: Rook A, editor. *Recent Advances in Dermatology*. Vol. 4. Edinburgh: Churchill Livingstone; 1977. pp. 59-90.
- Brown H, Bernton HS. Allergy to the hymenoptera. V. Clinical study of 400 patients. *Arch Intern Med*. 1970;125:665-9.
- Schwartz HJ, Kahn B. Hymenoptera Sensitivity. II. The role of atopy in the development of clinical hypersensitivity. *J Allergy*. 1970;45:87-91.
- Bilo BM, Rueff F, Mosbech H, Bonifazi F, Oude-Elberink JN. EAACI interest group on insect venom hypersensitivity. Diagnosis of hymenoptera venom allergy. *Allergy*. 2005; 60:1339-49.
- Gyeltshen K, Sangye N, Tenzin KC, Dorji T. Clinical description and treatment outcomes of Paederus dermatitis in Phuentsholing, Bhutan in 2021: a cross-sectional study. *Skin Health and Disease*. 2023 Aug;3(4):ski2-223.
- Krinsky WL. Dermatoses associated with the bites of mites and ticks (Arthropoda:Acari) *Int J Dermatol*. 1983; 22:75-91.
- Burns DA. Diseases Caused by Arthropods and Other Noxious Animals. In: Burns T, Breathnach S, Cox N, Griffiths C, editors. *Rook's Textbook of Dermatology*. 7th ed. Massachusetts: Blackwell Publishing, Inc; 2004. pp. 332-10.
- Gyeltshen K, Sangye N, Tenzin KC, Dorji T. Clinical description and treatment outcomes of Paederus dermatitis in Phuentsholing, Bhutan in 2021: A cross-sectional study. *Skin Health Dis*. 2023 Feb 23;3(4):e223.
- Inbamani APD, Sundaram G, Ramalingam R. Morphological and Clinical Patterns of

- Paederus Dermatitis. *Cureus*. 2024 Apr 23;16(4):e58813.
20. Kar S, Dongre A, Krishnan A, Godse S, Singh N. Epidemiological study of insect bite reactions from central India. *Indian J Dermatol*. 2013 Sep;58(5):337-41
 21. Uzunoglu E, Oguz ID, Kir B, Akdemir C. Clinical and Epidemiological Features of Paederus Dermatitis Among Nut Farm Workers in Turkey. *Am J Trop Med Hyg*. 2017 Feb 8;96(2):483-487.
 22. Srihari S, Kombettu AP, Rudrappa KG, Betkerur J. Paederus Dermatitis: A Case Series. *Indian Dermatol Online J*. 2017 Sep-Oct; 8(5):361-364.