



Epidemiology of Canine Dermatoses at Aizawl, Mizoram

Payel Kar¹, J.B. Rajesh¹, S.K. Behera¹, Bedanga Konwar², A.K. Samanta³,
Kalyan Sarma¹, T.C. Tolenkhomba⁴

10.18805/IJAR.B-5520

ABSTRACT

Background: The numbers of dermatoses cases in veterinary hospitals are high. Canine dermatoses can have a serious negative effect on a dog's health and well-being, causing pain, discomfort and reduced quality of life. Furthermore, several dermatoses may be zoonotic, posing a risk to human health. To ascertain the epidemiology of dermatological disorders in dogs in Aizawl, Mizoram, the research work was done.

Methods: The study was conducted between November 2023 to October 2024 at Veterinary Clinical Complex, Central agricultural university, Aizawl, Mizoram by clinical evaluation of each case, physical examination and data collection like age, breed, sex, body weight, deworming and types of diet. Different skin diseases were separated like bacterial, parasitic and others.

Result: The hospital-based incidence of dermatoses in canine was found 14.6% with different etiology in Aizawl, Mizoram. The infection was more recorded in dogs between 2 to 8 years of age (5.18%), more in females (8.73%) and more in the mixed breed (8.46%) of dogs.

Key words: Bacteria, Canine, Dermatoses, Epidemiology, Food.

INTRODUCTION

Skin and hair diseases have a significant role in the practice of small animals. Common issues include fungal infections, neoplasia, allergies, ectoparasitism and bacterial infections. Numerous nutritional elements might have an impact on the coat and skin. Investigating these aspects in patients with skin problems is crucial, for this reason. Nutritional disorders can cause changes in the skin, such as a dry dull coat with brittle hairs, delayed hair development and crusts, scales and erythema in parts of the skin that are stretched, like the distal extremities. Dogs are susceptible to a wide variety of inflammatory skin conditions. These consist of food allergies, parasite infestations, bacterial infection and adverse food reactions (Hensel, 2010). Sex hormone dermatoses are uncommon in dogs and are caused by an excess of one or more sex hormones, either exogenously or endogenously (Gupta *et al.*, 2023).

The normal skin of healthy animals is extremely resistant to invasion by the wide variety of bacteria that they are continuously exposed. In the absence of any obvious impairment of host defences, pathogenic organisms like coagulase-positive *Staphylococci* can cause the typical symptoms of cellulitis, furunculosis and folliculitis. *Staphylococci* are an important group of commensals of the skin and mucous membranes in dogs. The majority of secondary infections are caused due to cutaneous, immunologic, metabolic abnormalities, nutritional deficiencies (Ibrahim *et al.*, 2015; Chaudhary *et al.*, 2021). This study aimed to identify epidemiological determinants and record the incidence of skin disorders in dogs in this north eastern region of the country.

MATERIALS AND METHODS

The present study was carried out in the Veterinary Clinical Complex (VCC) of College of Veterinary Sciences and

¹Department of Veterinary Medicine, College of Veterinary Sciences and Animal Husbandry, Central Agricultural University (I), Selesih PO, Aizawl-796 015, Mizoram, India.

²Department of Veterinary Surgery and amp; Radiology, College of Veterinary Sciences and Animal Husbandry, Central Agricultural University (I), Selesih PO, Aizawl-796 015, Mizoram, India.

³Department of Animal Nutrition, College of Veterinary Sciences and Animal Husbandry, Central Agricultural University (I), Selesih PO, Aizawl-796 015, Mizoram, India.

⁴Department of Animal Genetics and Breeding, College of Veterinary Sciences and Animal Husbandry, Central Agricultural University (I), Selesih PO, Aizawl-796 015, Mizoram, India.

Corresponding Author: J.B. Rajesh, Department of Veterinary Medicine, College of Veterinary Sciences and Animal Husbandry, Central Agricultural University (I), Selesih PO, Aizawl-796 015, Mizoram, India. Email: leovet@gmail.com

How to cite this article: Kar, P., Rajesh, J.B., Behera, S.K., Konwar, B. and Samanta, A.K. (2025). Epidemiology of Canine Dermatoses at Aizawl, Mizoram. Indian Journal of Animal Research. 1-5. doi: 10.18805/IJAR.B-5520.

Submitted: 07-11-2024 **Accepted:** 14-04-2025 **Online:** 26-06-2025

Animal Husbandry, Central Agricultural University, Selesih, Aizawl, Mizoram. The study period was from November 2023 to October 2024. Dogs presented to the hospital with clinical signs of dermatological problem were included for the study. Detailed clinical examination of each case were done and epidemiological information such as history, clinical symptoms, age, sex, breed, deworming and feeding pattern were taken. To ascertain the epidemiological pattern of different skin conditions in dogs, the data was analysed. Skin scrapings were collected and examined from the

suspected dogs for mite infestation by the method described by Rahman *et al.* (2021). Skin swab was collected from the skin lesions to find out the bacterial infection as per the method described by Debnath *et al.* (2023) and also by Varughese and Chitra (2024). For cytological examination skin impression smear was collected as per the standard method given by Beco *et al.* (2013).

RESULTS AND DISCUSSION

A total of 733 dogs of either sex which were brought for the treatment to the Veterinary Clinical Complex (VCC), of the College were screened for canine dermatoses. The samples from these animals were examined for external parasites like Demodex, bacterial etiology like *Staphylococcus* and other condition (allergy, hypothyroidism etc.). Cases were selected randomly for all. Clinical examinations were done based on history, vital parameters, physical, clinical observations and laboratory findings. The hospital-based incidence of canine dermatoses in Aizawl was 14.6% (Table 1). Out of 107 animals with dermatoses where 65 dogs were for bacterial etiology, 26 for external parasites (Demodex: Fig 1) and 16 cases other causes (Table 2). Increasing trend in skin diseases may be the result of improved understanding of skin disease diagnostics, increasing the number of pets, greater consciousness among pet owners, or as a result of climate change.

In a similar study at Bangladesh by Rana *et al.* (2022) they found similar percentage of canine dermatoses cases (16%).

In this study, hospital-based percentage of canine dermatoses due to bacteria was 60.75%, external parasites were 24.30% and others were 14.95%. Hospital based canine dermatoses incidence due to external parasites were 3.55% (Table 3). In a study by Mate *et al.* (2022) at West Bengal they found 29.35% of canine dermatoses due to bacterial cause, 32.24% cases due to parasites and 38.40% cases due to fungal causes registered at OPD.

Among the bacterial dermatoses, 18 dogs were found positive for *S. aureus*, 6 samples were found positive for

MRSA (Methicillin-resistant *Staphylococcus aureus*) and 41 dogs were found due to other bacteria. The hospital-based occurrence of canine dermatoses along with *S. aureus* was 2.46%, MRSA was 0.82% and other bacteria were 5.59%. According to a study by Rana *et al.* (2022), out of 150 cases 16% cases were positive for *S. aureus* and 8.7% were positive for MRSA by PCR (Table 4).

To find out the age-wise incidence of dermatoses in dogs, animals were grouped into 4 viz. below 6 months of age, 6 months -2 years of age, 2-8 years of age and above 8 years of age. As per age wise incidence it was found that canine dermatoses are most significantly ($p < 0.05$) common in 2 to 8 years of age followed by below 6 months of age, between 6 months to 2 years and above 8 years of age (2.18%) (Table 5). It could be because adult dogs spend the majority of their time outside the home. According to Fungwithaya *et al.* (2017) it was found that dogs had an average age 6.78 ± 2.3 years have more than 20% occurrence of dermatoses due to *S. aureus* infection. However, Khoshnegah *et al.* (2013) opined that dogs did not exhibit an age predisposition for dermatological diseases. In breed-wise incidence of dermatoses was more observed in Mixed (8.46%), followed by pure breed (4.37%) and non-descript (1.77%) (Table 6). Variations in the results could be caused by the popularity of a particular breed in a certain area. In the study by Katariya *et al.* (2018) reported that Mongrels had the highest number of dermatosis cases (26.34%), followed by German shepherds (19.16%), Labradors (13.17%), Toy breeds (16.7%), Miscellaneous breeds (17.96%) and Saint Bernards (6.58%). Sex-wise incidence of dermatoses in dogs were noted more in female dogs (8.73%) than male dogs (5.87%) (Table 7). The higher incidence in females might be due to the imbalance of oestrogen and progesterone hormone in female dogs. These observations were in agreement with Kanda *et al.* (2019). According to Qekwana *et al.* (2017) female dogs (4.3%) were more affected with dermatoses than male dogs. Body weight wise incidence of dermatoses in dogs were observed in small (7.91%), medium (4.50%) and large breed (2.18%) of dogs (Table 8), which was consistent with the findings of Boost *et al.* (2007) who reported that small dogs accounted for a higher proportion of dermatoses due to *S. aureus* infection and this is linked to the colonization of the organism and ease of access to the home by smaller breeds.

Canine dermatoses and deworming and types of food

In this research study, the highest percentage of canine dermatoses was recorded in non-dewormed dogs (5.18%) than dewormed dogs (9.41%) (Table 9). The dog's immune system may be weakened by internal parasites, leaving

Table 1: Hospital based canine dermatoses incidence in dogs in Aizawl, Mizoram.

Total number of animals	Animals with dermatoses	Incidence rate (%)
733	107	14.6

Table 2: Different etiology identified for dermatoses.

Etiology	No. of animals	Percentage (%)
Bacteria	65	60.75
External parasites	26	24.30
others	16	14.95

Table 3: Hospital based canine dermatoses due to external parasites.

Total number of animals	No. of animals with dermatoses	No. of dogs positive on skin scarping	Incidence rate (%)
733	107	26	3.55

them more susceptible to dermatoses and bacterial infections. The natural barrier function of the skin can be compromised by parasites that interfere with the absorption of nutrients. According to Lynch and Karla

(2021) moderate to severe canine pyoderma is triggered by presence of ectoparasite. Hookworm infestation disrupt the skin barrier facilitating the entry of agents can cause skin lesion (Chu *et al.*, 2013).

In this research study, the highest percentage of canine dermatoses found in the dogs fed with home-made diet (57.94%) followed by commercial diet (25.23%) and mixed diet (16.82%) (Table 10). It could be due to home-made food may not contain balanced nutrients required for the body. In general, commercial diets are ready to eat and include the entire essential nutrient in the correct amounts to maintain health of the skin (Menniti *et al.*, 2022).

Table 4: Hospital based canine dermatoses with bacterial origin in Aizawl, Mizoram.

Bacterial cause	No. of animals	Incidence rate (%)
<i>S. aureus</i> infection	18	2.46
MRSA	6	0.82
Other bacterial cause	41	5.59

Table 5: Age wise canine dermatoses at Aizawl, Mizoram.

Age group	Total number of animals (n= 733)	No. of animals with dermatoses (n= 107)	Incidence rate (%)	Chi-square test	P value
< 6 months	109	28	3.82	25.0702	0.0000
6 months -2 years	355	25	3.41		
2-8 years	182	38	5.18		
>8 years	87	16	2.18		

Significant ($p < 0.05$), n= Number of animals.

Table 6: Breed wise canine dermatoses incidence at Aizawl, Mizoram.

Breed wise	Total number of animals (n= 733)	No. of animals with dermatoses (n= 107)	Incidence rate (%)	Chi-square value	P value
Non-descript	122	13	1.77	1.6813	0.4314
Pure breed	225	32	4.37		
Mixed	386	62	8.46		

Non-significant ($p < 0.05$), n= Number of animals.

Table 7: Sex wise canine dermatoses incidence at Aizawl, Mizoram.

Sex	Total number of animals (n= 733)	Number of animals with dermatoses (n= 107)	Incidence rate (%)	Chi-square value	P value
Male	402	43	5.87	0.9337	0.3333
Female	331	64	8.73		

Non-significant ($p < 0.05$), n= Number of animals.

Table 8: Body weight wise incidence of canine dermatoses at Aizawl, Mizoram.

Body weight (Kg)	Total number of animals (n= 733)	No. of animals with dermatoses (n= 107)	Incidence rate (%)	Chi-square value	P value
Small (1-10 Kg)	330	58	7.91	3.2121	0.2006
Medium (>10-25 Kg)	265	33	4.50		
Large (>25 Kg)	138	16	2.18		

Non-significant ($p < 0.05$), n= Number of animals.

Table 9: Canine dermatoses and deworming.

Group	Total no. of animals (n= 733)	Positive animals for dermatoses (n= 107)	Incidence rate	Chi-square value	P value
Dewormed	244	38	5.18	0.2075	0.6487
Not-dewormed	489	69	9.41		

Non-significant ($P < 0.05$), n= Number of animals.

Table 10: Canine dermatoses and types of food.

	Types of foods of animals (n= 733)			Types of food of animals with dermatoses (n= 107)			Chi-square vale	P value
	Home-made	Commercial	Mixed	Home-made	Commercial	Mixed		
No. of animals	409	224	100	78	15	14	13.7085	0.0010
% of animals	55.80	30.55	13.64	57.94	25.23	16.82		

Significant (p<0.05), n= Number of animals.

**Fig 1:** Presence of Demodex mite in skin scraping examination.

CONCLUSION

Canine dermatoses are complicated disease with different aetiologies. The incidence, risk factors and clinical manifestations of the diseases have been understood by epidemiological studies. Canine dermatoses can more accurately diagnose and treat by knowing their epidemiology, which will eventually benefit canines' health and well being.

ACKNOWLEDGEMENT

The authors are thankful to Vice Chancellor of Central Agricultural University, Imphal and Dean of CVSc and AH, Selesih, Aizawl for providing the facilities.

Conflict of interest

Authors declare that there are no conflicts of interest.

REFERENCES

- Beco, L., Guaguère, E., Méndez, C.L., Noli, C., Nuttall, T. and Vroom, M. (2013). Suggested guidelines for using systemic antimicrobials in bacterial skin infections: part 1-diagnosis based on clinical presentation, cytology and culture. *Veterinary Record*. 172: 72-78. doi: <https://doi.org/10.1136/vr.101.069>.
- Boost, M.V., O'Donoghue, M.M. and Siu, K.H.G. (2007). Characterisation of methicillin-resistant *Staphylococcus aureus* isolates from dogs and their owners. *Clinical Microbiology and Infection*. 13: 731-733. doi: <https://doi.org/10.1111/j.1469-0691.2007.01737.x>.
- Chaudhary, S.S., Chauhan, H.C., Sharma, K.K., Patel, S.S., Mohapatra, S.K., Patel, A.C. and Chandel, B. S. (2021). Bacteriological and molecular identification and characterization of *Staphylococcus aureus* from different affections of canines. *Indian Journal of Animal Research*. 55: 474-478. doi: 10.18805/ijar.B-3965.
- Chu, S., Myers, S.L., Wagner, B. and Snead, E.C. (2013). Hookworm dermatitis due to *Uncinaria stenocephala* in a dog from Saskat-chewan. *The Canadian Veterinary Journal*. 54: 743-747.
- Debnath, A., Rajesh, J.B., Sarma, K., Ralte, L., Tolenkhomba, T.C., Prasad, H., Hmar, L., Lucy, E. and Debbarma, B. (2023). Management of Methicillin resistant *Staphylococcus aureus* in canine dermal infection in Mizoram. *Pharma Innovation*. 12: 2829-2831. doi: 10.30954/2277-940X.06.2022.15.
- Fungwithaya, P., Brikshavana, P., Chanchaithong, P. and Prapasarakul, N. (2017). Distribution of methicillin-resistant coagulase-positive *Staphylococci* (MRCoPS) in a surgical unit and cystotomy operation sites in a veterinary teaching hospital. *Journal of Veterinary Medical Science*. 79: 359-365. doi: <https://doi.org/10.1292/jvms.16-0146>.
- Gupta, C., Kumar, S.H. and Balagangatharathilagar, M. (2023). Successful management of follicular cyst-induced dermatoses in a labrador retriever dog. *Indian Journal of Animal Research*. 1: 1-5. doi: 10.18805/IJAR.B-5108.
- Hensel, P. (2010). Nutrition and skin diseases in veterinary medicine. *Clinics in Dermatology*. 28: 686-693. doi: <https://doi.org/10.1016/j.clindermatol.2010.03.031>.
- Ibrahim, F., Khan, T. and Pujalte, G. G. (2015). Bacterial skin infections. *Primary Care - Clinics in Office Practice*. 42: 485-499. doi: 10.1016/j.pop.2015.08.001.
- Kanda, N., Hoashi, T. and Saeki, H. (2019). The roles of sex hormones in the course of atopic dermatitis. *International Journal of Molecular Sciences*. 20: 4660-4680. doi: <https://doi.org/10.3390/ijms20194660>.
- Katariya, A., Arora, N., Ilyas, W., Rajora, V. S. and Mrigesh, M. (2018). Prevalence of canine dermatosis with special reference to ectoparasites in and around Tarai region of Uttarakhand. *India. Journal of Entomology and Zoology Studies*. 6: 809-14.
- Khoshnegah, J., Movassaghi, A.R. and Rad, M. (2013). Survey of dermatological conditions in a population of domestic dogs in Mashhad, northeast of Iran (2007-2011). *Veterinary Research Forum*. 4: 99-103.
- Lynch, S.A. and Karla, J.H. (2021). The complex diseases of *Staphylococcus pseudintermedius* in canines. *Veterinary sciences*. 8: 1-19. <https://doi.org/10.3390/vetsci8010011>.

- Mate, Y., Sarkar, P.K., Lodh, C., Isore, D.P., Biswas, U. and Sarkar, S. (2022). Point prevalence of canine pyoderma of *Staphylococcus aureus* origin and its management by antibiotics and Gandhaka Druti. *Journal of Drug Research in Ayurvedic Sciences*. 7: 168-174. doi: 10.4103/jdras.jdras_63_22.
- Menniti, M., da Silva, C.B., Hottat, M.C. and Hesta, M. (2022). Homemade diets for pets: Reasons, risks and rewards. *Vlaams Diergeneeskundig Tijdschrift*. 91: 284-291. doi: <https://doi.org/10.21825/vdt.85521>.
- Qekwana, D.N., Oguttu, J.W. and Sithole, F. (2017). Burden and predictors of *Staphylococcus aureus* and *S. pseudintermedius* infections among dogs presented at an academic veterinary hospital in South Africa (2007-2012). *PeerJ*. 5: e3198-3216. doi: 10.7717/peerj.3198.
- Rahman, M., Bostami, M.B., Datta, A., Sabuj, A.A.M., Rana, E.A., Mannan, A. and Chowdhury, M.Y.E. (2021). Estimation of the prevalence and determination of risk factors associated with demodicosis in dogs. *Journal of Advanced Veterinary and Animal Research*. 8: 116-122. doi: 10.5455/javar.2021.h493
- Rana, E.A., Islam, M.Z., Das, T., Dutta, A., Ahad, A., Biswas, P.K. and Barua, H. (2022). Prevalence of coagulase positive methicillin resistant *Staphylococcus aureus* and *Staphylococcus pseudintermedius* in dogs in Bangladesh. *Veterinary Medicine and Science*. 8: 498-508. doi: <https://doi.org/10.1002/vms3.701>.
- Varughese, H.S. and Chitra, M.A. (2024). Characterization of *Staphylococcus pseudintermedius* isolates from skin infections of dogs. *Indian Journal of Animal Research*. 58: 1319-1325. doi: 10.18805/IJAR.B-4560.