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## Prevalence of canine dermatosis with special reference to ectoparasites in and around Tarai region of Uttarakhand, India

**Avinash Katariya, Niddhi Arora, Wani Ilyas, VS Rajora and Meena Mrigesh**

#### Abstract

A study was undertaken to ascertain the prevalence of dermatosis in canines in and around tarai region of Uttarakhand. Diagnosis of different conditions was determined by microscopic examination of skin scrapings. Prevalence was based on region, etiology, age, breed, sex, and month wise. Highest prevalence of dermatosis was recorded at Pantnagar (21.16%) and lowest at Bajpur (16.15%). Fungal infections (32.93%) were the major etiological agents followed by miscellaneous infestations (24.55%), ticks/fleas/lice (20.95%), mange (10.77%) and mixed infections (10.77%). Maximum cases of dermatosis was reported in the month of August (27.0%) and minimum in April (10.3%). With respect to sex, males recorded a higher prevalence rate (59.28%) than females (40.71%) at Pantnagar. Infestation of tick/flea/lice was observed mainly in 2-5 years of age, mange during 0-6 month's age group where as fungal infections mainly observed in dogs above 5 years of age. Regarding breed wise distribution maximum cases of dermatosis was reported in Mongrels (26.34%) followed by German shepherd (19.16%), Miscellaneous breeds (17.96%), Toy breeds (16.7%), Labradors (13.17%) and Saint bernards (6.58%).

**Keywords:** Canines, prevalence, dermatosis, Tarai region

#### 1. Introduction

In addition to the general state of health, condition of skin also reflects the aesthetic value, especially in pet animals. Dog's skin is susceptible to many infectious agents' vis-à-vis parasites, bacteria, viruses, fungi and allergens some of which may be contagious and difficult to control <sup>[1]</sup>. In general dermatitis represents a significant percentage of cases in small animal practice especially in canines. This disorder holds a significant importance in dogs due to their untoward effects on the animal such as distress, irritation, and offensive smell besides being a potential source of a number of zoonotic diseases <sup>[2]</sup>. The nature of skin diseases can be of infectious including bacteria, fungi and parasites or non-infectious including allergic, autoimmune, hormonal, and nutritional. The affected dogs constantly scratch themselves due to itching and look miserable. A thorough history and chronology of the development of skin lesions are important in differentiating between different types of skin infections <sup>[3]</sup>. Prevalence studies provide information regarding the disease burden in a particular area. Environment, breed, sex, and age are the major determinants reported to have a marked influence on the variation and severity of skin diseases <sup>[1]</sup>. These studies assist in taking preventive steps before disease occurrence to reduce the losses incurred by death and to alleviate the unnecessary pain and sufferings to dogs. Keeping in view the nuisance created for dogs with skin infections together with the economic losses incurring in treatment, this study was envisaged with the objective to record the prevalence of dermatitis with respect to etiology, season, breed, and sex in certain parts of the Tarai region of Uttarakhand.

#### 2. Materials and methods

All the dogs which were brought to the Teaching Veterinary Clinical Complex at G.B Pant University of Agriculture and Technology, Pantnagar for a period of one year from May 2016 to April 2017 were screened for dermatological infections. In addition, dermatological cases from different nearby Veterinary Hospitals of State Animal Husbandry Department of Uttarakhand viz. Pantnagar, Rudrapur, Gadarpur, Bajpur, Kicchha, Lalkuan, Haldwani and

Nainital were also recorded. Categorization of various dermatological disorders was done on the basis of etiological agent as ticks/fleas/lice, mites (ectoparasites), fungal, miscellaneous and mixed infection. Miscellaneous group includes dogs suffering from bacterial, allergic, viral, immunological, congenital and endocrinological dermatoses. In addition to etiology, area, month, age, sex, and breed was also taken into consideration. Screening of dermatoses affected dogs was done on the basis of clinical manifestations and skin scraping examination for the presence of ectoparasites. Further classification of ectoparasites into ticks/fleas/lice and mites were done based on morphological characteristics [4].

### 2.1 Collection of skin scrapings

The dogs screened out for the presence of dermatoses were examined by skin scrapings for the presence of ectoparasites including fungal infections. Skin scraping was collected aseptically from the dogs exhibiting pruritis, alopecia, itching, and other skin lesions. For the existence of mites (dead or alive) skin scrapings were taken with the help of a sterilized

scalpel blade (24 no) until capillary blood oozing occurred and the samples were collected from the periphery of active lesions in test tube containing 10% KOH (Potassium hydroxide) [5]. For the confirmation of fungi, the skin scraping was also taken in 10% KOH solution and microscopically examined under low power and then high power for the presence of spores and hyphae. The presence of ticks/fleas/lice on the skin surface and in the hair coat of affected dogs was also recorded by naked eyes. The presence of flea infestation was also confirmed by the presence of flea's dirt on the hair coat of affected dogs [4].

### 3. Results and Discussion

A total of 4034 canine cases were recorded at different Veterinary Hospitals of State Animal Husbandry Department including Pantnagar. Out of 4034 dogs, 778 dogs were suffering from various dermatological disorders recording an overall prevalence of 19.28%. Highest prevalence was found at Pantnagar (21.16%) and lowest at Bajpur (16.15%) as shown in fig. 1. These findings are in agreement with previous studies [6].

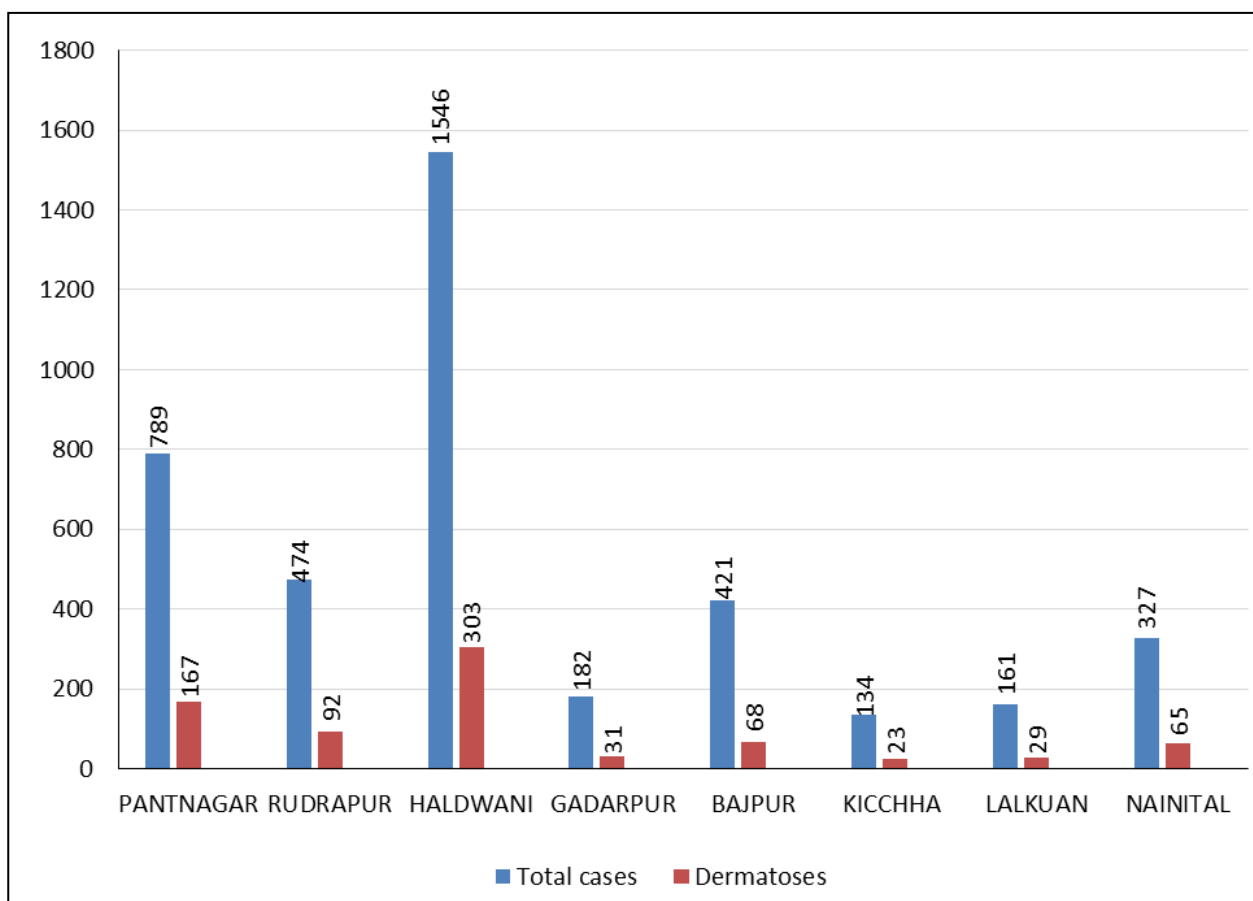
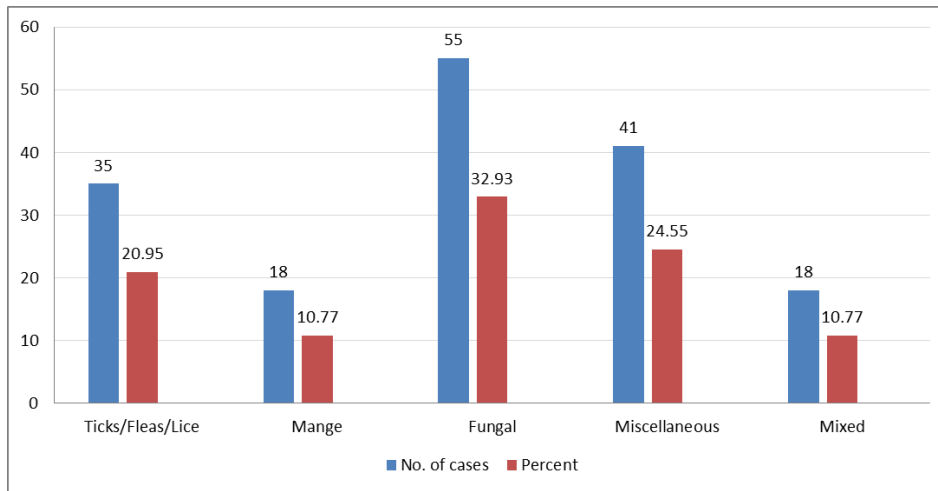


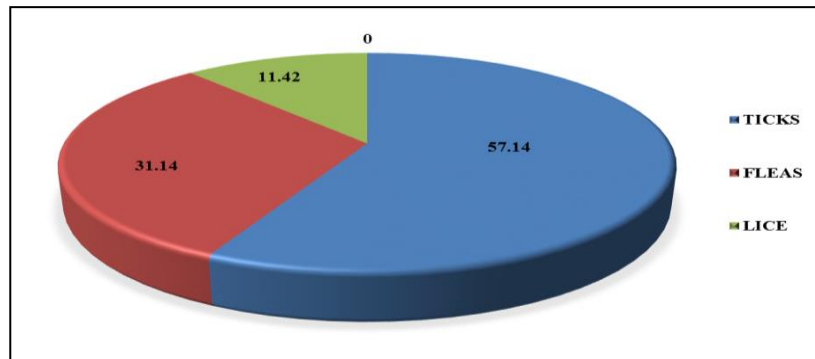
Fig 1: Region wise prevalence of canine dermatological disorders

The etiology wise prevalence study was conducted in 167 canine dermatoses cases presented at Teaching Veterinary Clinical Complex, Pantnagar. The present study revealed that maximum dermatoses was of fungal origin (32.93%) followed by miscellaneous infestations (24.55%), ticks/fleas/lice (20.95%), mange (10.77%) and mixed infections (10.77%) as shown in fig. 2 and fig.3. The maximum occurrence of fungal dermatoses might be due to warm and humid atmosphere at Pantnagar, which favors the growth of fungus. Out of ticks/fleas/lice, ticks were the most prevailing ectoparasites with the prevalence of 57.14% (20/35), fleas having 31.14%

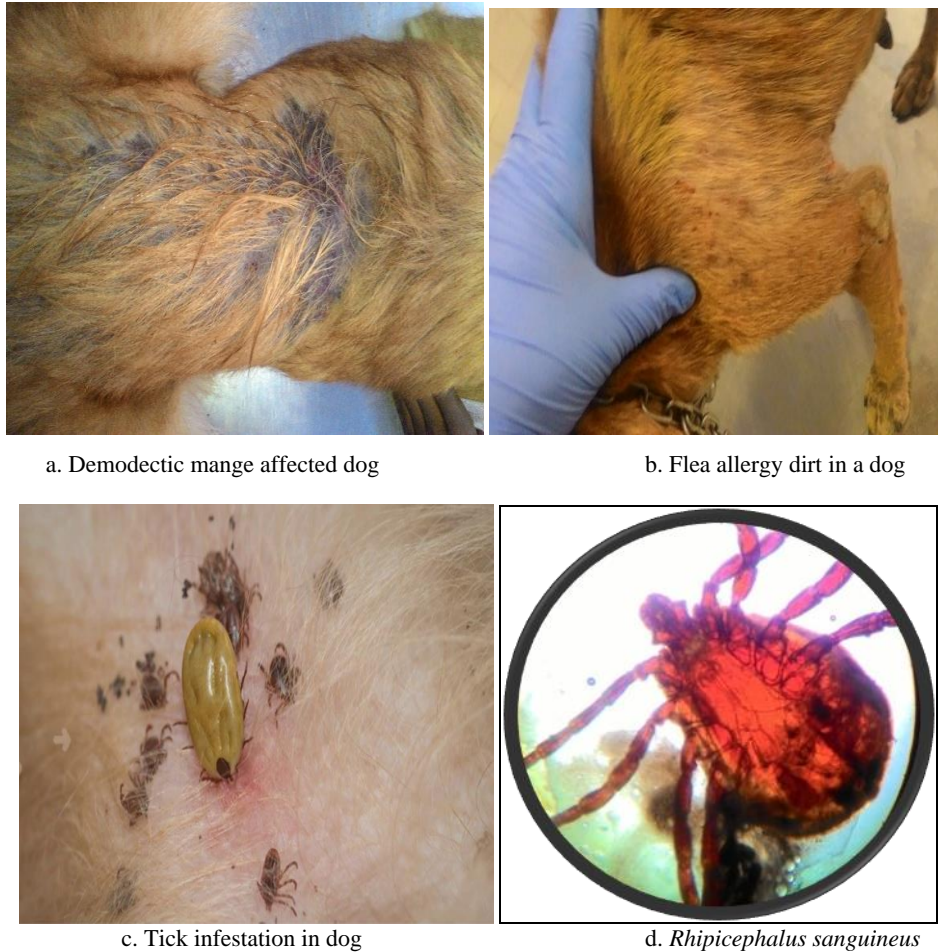
(11/35) and lice having least prevalence of 11.42 (4/35). Overall incidence of demodectic and sarcoptic mange was found to be 10.77% with incidence of demodectic and sarcoptic mange as 5.55% (10/18) and 4.44% (8/18) respectively (Fig. 4). Our findings are well supported by Lakhar *et al.* [7] and Asmita *et al.* [6] who reported similar findings of ectoparasite infestation rate in canines where as contradictory results were reported by Sharma [8] who reported higher prevalence of dermatosis by ectoparasite infestation.



**Fig 2:** Etiology wise prevalence of canines dermatosis



**Fig 3:** Prevalence of ticks/fleas/lice in canines at Pantnagar



**Fig 4:** Ectoparasite infestation of dogs

In the present study, the maximum prevalence rate of canine dermatosis was observed in the month of August (27.04%) followed by July (26.70%) and least number of cases in April (10.34%) as evident from fig 5. Similar findings were also reported by Chhabra [9] and Asmita *et al.* [10]. Higher

prevalence rate during August and July might be due to hot and humid environmental conditions that favor the development of the parasites and the animals remain wet for long duration which further enhances the precipitation of these disorders [11].

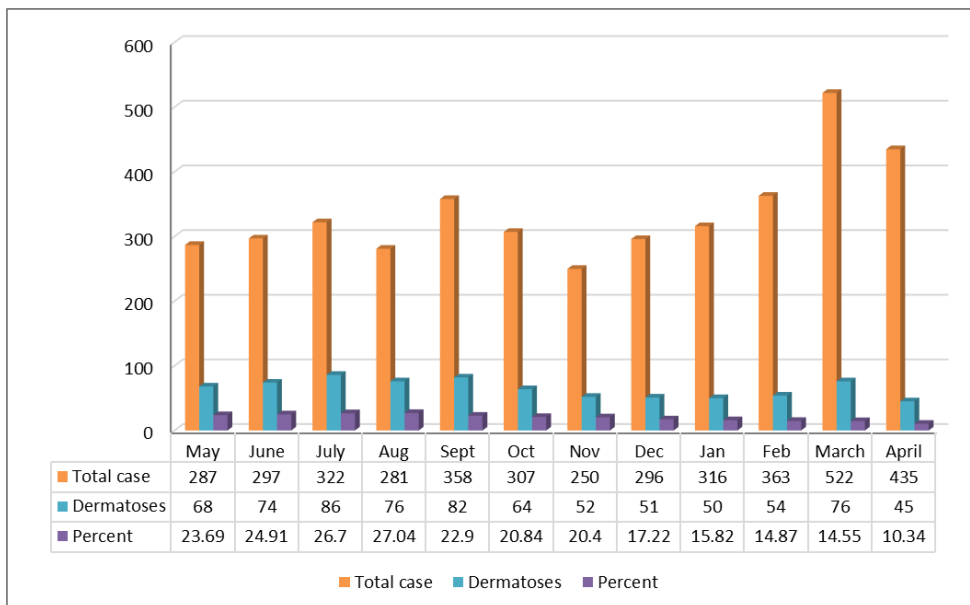


Fig 5: Month wise prevalence of canine dermatosis

Maximum prevalence rate of dermatological cases was recorded in males (59.28%) than females (40.71%) at Pantnagar as shown in fig 1. Maximum prevalence rate of ticks/ fleas/lice was also recorded in males (60%) than females (40%). In case of demodectic and sarcoptic mange maximum prevalence rate was observed in males (60% and

75%) and females (40% and 25%). Similarly, males were found more affected with fungal (58.18%), miscellaneous (58.53%) and mixed infections (55.55%) than in females as 41.81% for fungal, 41.46% for miscellaneous and 44.44% for mixed infections (Fig.6). These findings are well supported by Sharma [8].

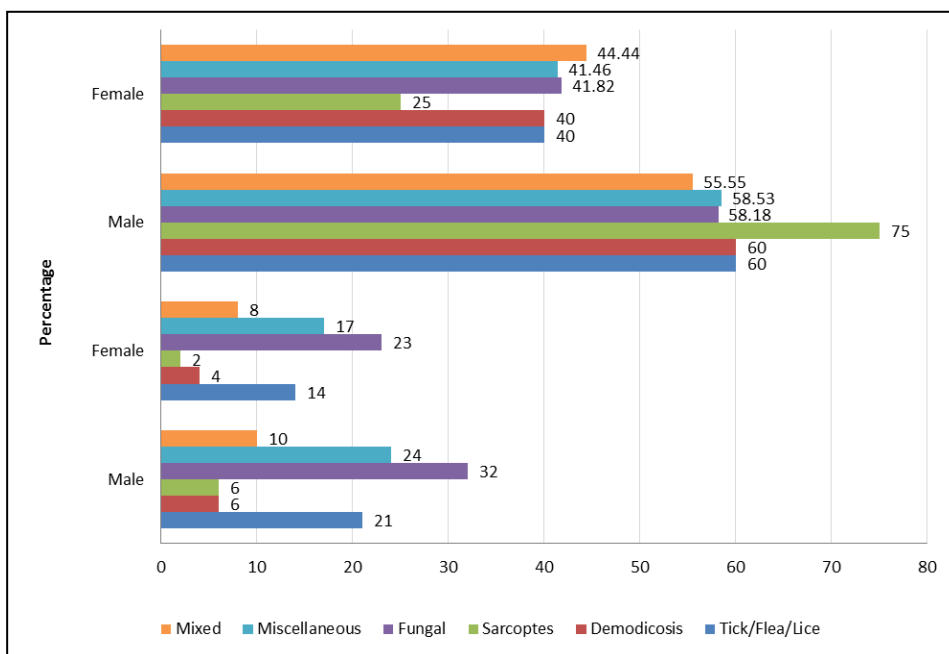
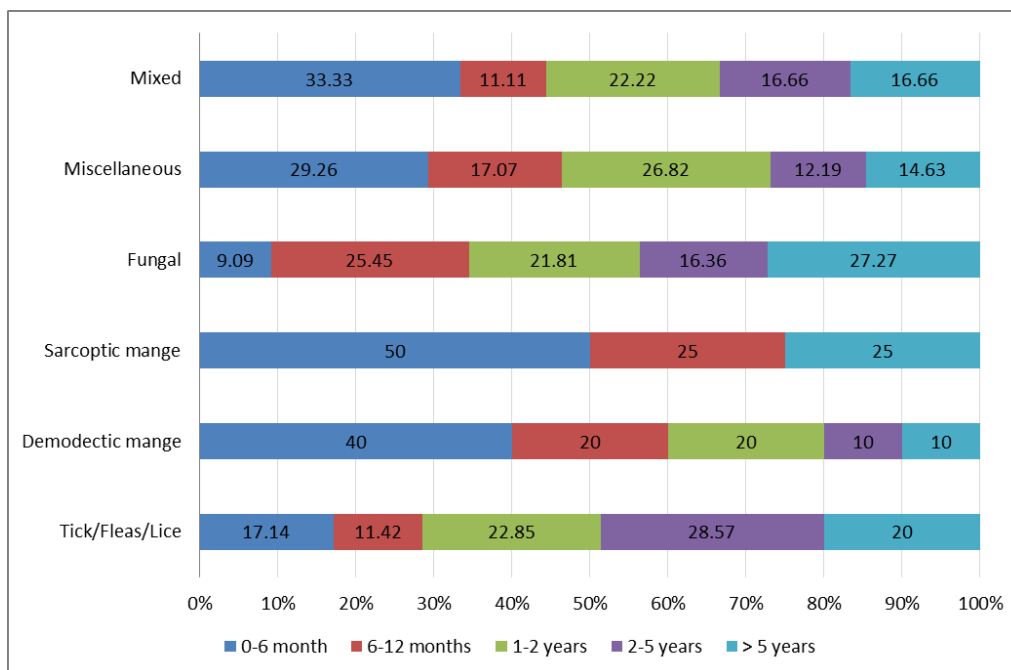


Fig 6: Sex wise prevalence of canine dermatosis

Prevalence of different dermatological infections with respect to age is shown in fig. 7. Animals affected with ticks/fleas/lice were distributed in all the age groups but the incidence was found to be higher (28.57%) in 2-5 years of age followed by (22.85%) in 1 to 2 years of age. The distribution of demodectic mange was reported higher (40%) in young ones

i.e. 0 to 6-months age group followed by 6 to 12 months as 20% and 1 to 2 years of age group as 20% which is in agreement to the study by Chesler [12]. In another study by Shirk [13], 21.2% of demodicosis cases were reported in less than six months of age groups.

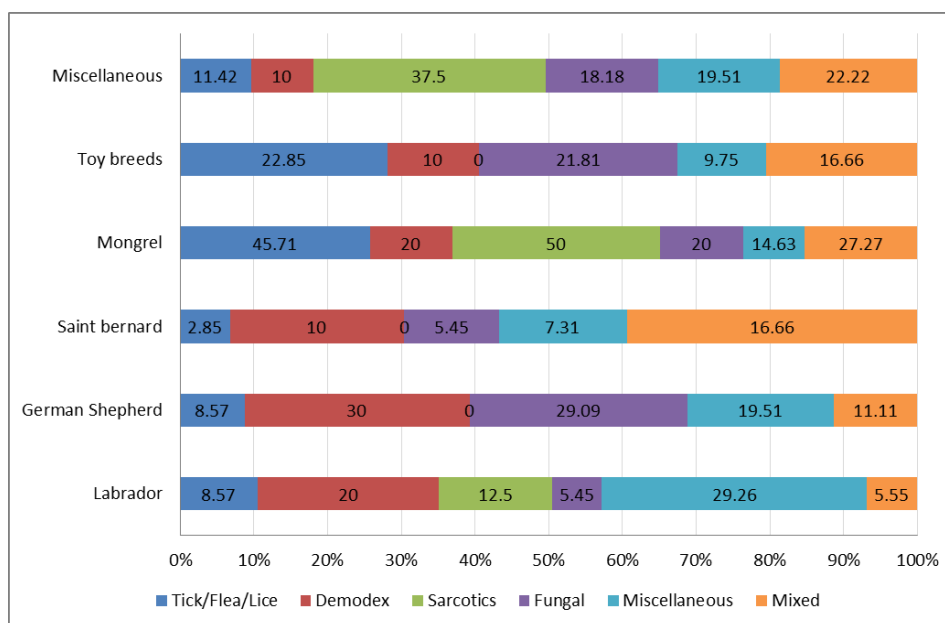


**Fig 7:** Age wise prevalence of canines dermatosis

Sarcoptic mange was found to be higher (50%) in young ones of 0 to 6 months of age followed by 6 to 12 months age groups. Throughout the study, dogs influenced by fungal dermatoses were found to be above 5-year age group 27.27% followed with 6 to 12-month age groups 25.45%. Dermatitis due to miscellaneous causes were found to be (29.26%) in 0-6 months age group followed by (26.82%) in 1-2 years of age. In addition, mixed infections were more prevalent (33.33%) during 0-6 months age group followed by (22.22%) in 1-2 years. Similar findings were reported by Upadhyay [14] who also reported maximum cases of pyoderma in young age group.

Maximum cases of dermatological findings were recorded in

mongrel dogs (26.34%) followed by German Shepherd (19.16%), miscellaneous (17.96%), toy breeds (16.76%), Labrador (13.17%) and Saint Bernard (6.58%) as shown in fig.8. These findings are in contradiction to Sachan *et al.* [15] who reported maximum cases of bacterial and fungal skin infections in Pomeranian (50%), followed by mongrel (25%), German Shepherd, Doberman and Labrador (22.5%). In present study, prevalence of ticks/fleas/lice infestation was highest in mongrels (45.71%) followed by toy breeds (22.85%). In case of demodectic mange, the most affected breeds were German Shepherds (30%), followed by Labradors (20%) and mongrels (20%).



**Fig 8:** Breed wise prevalence of dermatosis in canines at Pantnagar

Chesler *et al.* [12] reported the highest incidence of demodicosis in mixed breeds (25.30%), German Shepherds (12.72%) and Spanish Cocker (7.19%). Lakhar *et al.* [7] reported German Spitz (53.33%) more vulnerable to

demodicosis. Tarpatiki and Kadocsa [16] reported that demodicosis was more frequent in Doberman, English bulldog and Alsatian, especially in dogs with short hair (75%).

It was found that sarcoptic mange mostly affected mongrels (50%), followed by miscellaneous group (37.5%). Fungal dermatoses affected mainly the German Shepherd breed (45.71%), followed by toy breeds (21.81%), mongrel (20%), miscellaneous breeds (18.18%), Labradors (5.45%) and Saint Bernard (5.45%). This corroborates with the study by Senthil *et al.* [17]. Kumar and Thakur [18] who reported higher incidence of mycotic dermatitis in pure bred dogs (69%) than in non-descript dogs (31%).

#### 4. Conclusion

Dermatosis in veterinary practice is commonly encountered problem in canines. Maximum prevalence was recorded from Pantnagar with fungal infections as the major etiological agents. Demodectic mange affected maximally in winter months and males were more affected than females. Prior knowledge of regional, seasonal, breed, age, and sex wise prevalence of different dermatological infections assists us to take the obligatory measures before the development of severe infection to avoid the unnecessary suffering and pain to dogs and also to reduce treatment cost. This study although provides insights about canine in different months, age, sex and breed but further research is required to combat the menace created by these dermatological infections in dogs.

#### 5. Acknowledgement

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