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## Prevalence of canine ehrlichiosis in and around Bidar

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### Abstract

Canine Ehrlichiosis, caused by *Ehrlichia canis*, is a tick-borne disease affecting dogs, transmitted primarily by *Rhipicephalus sanguineus*. The present study conducted in and around Bidar reported an overall prevalence of 1.58%. Year-wise prevalence was found to be 61.76% in 2022 and 38.23% in 2023. Month-wise, the highest prevalence was noted in May and October (14.70%). Male dogs (51.47%) showed a slightly higher infection rate than females (48.52%). Age-wise, dogs between one to three years exhibited the highest prevalence (63.23%), Labrador Retrievers showed the highest breed-wise prevalence (26.47%), likely due to overrepresentation. Seasonally, the disease peaked in summer (44.11%) reflecting increased vector activity during warmer months. These findings align with earlier studies and highlight the influence of age, gender, breed, and seasonal variation on disease prevalence.

**Keywords:** Ehrlichiosis, tick, dog, prevalence

### Introduction

Canine Ehrlichiosis is caused by *Ehrlichia canis* (order *Rickettsiales*, family *Anaplasmataceae*), a gram negative, obligatory intracellular rickettsial organism. It is one of the major tick-transmitted diseases of canines (Unver *et al.*, 2006) <sup>[1]</sup>. When a significant number of military German Shepherd dogs died in the Vietnam War in the 1970s, canine ehrlichiosis garnered world-wide attention (Amyx *et al.*, 1971) <sup>[2]</sup>.

*Rhipicephalus sanguineus* is generally considered the main vector responsible for canine ehrlichiosis (Groves *et al.*, 1975) <sup>[3]</sup> (Aguiar *et al.*, 2007) <sup>[4]</sup>. These disease-transmitting vectors become more potent during summer and spring seasons (Neer and Harrus., 2006) <sup>[5]</sup>.

The transmission patterns of vector-borne infections worldwide have changed in recent years as a result of ecological variations due to global warming, the exponential growth of the human population, deforestation, and the frequent movement of pets from one continent to another (Dantas-Torres, F., 2015) <sup>[6]</sup>.

### Materials and Methods

The present study was conducted by obtaining the records of Out Patient Ward (TVCC, Medicine), Veterinary College, Bidar from January 2022 to December 2023 to know the prevalence of canine ehrlichiosis in and around Bidar, Karnataka. Ehrlichiosis affected dogs presented to the Veterinary Clinical Complex, Veterinary College Bidar were included for the study.

### Result and Discussion

Prevalence of canine ehrlichiosis in and around Bidar was found to be 1.58 per cent (Table 1 and Figure 1). Year-wise point prevalence of ehrlichiosis in dogs was found to be 61.76 and 38.23 per cent for 2022 (January 2022 to December 2022) and 2023 (January 2023 to December 2023) respectively (Table 2 and Figure 2). Similarly, lower prevalence rate of 1.33 per cent was observed by Mittal *et al.* (2017) <sup>[7]</sup> and Roopali *et al.* (2019) <sup>[8]</sup>. The lower prevalence rate in the present study might be due to the assessment of a smaller number of samples for the investigation due to the low density of the dog population in and around Bidar. Month-wise point prevalence of canine ehrlichiosis was found to be highest in May (14.70%)

and October (14.70%) followed by June (13.23%) and September (8.82%) as depicted in (Figure 3). The gender wise prevalence was higher in male dogs (51.47%) compared to female dogs (48.52%) (Table 3 and Figure 4). Judy *et al.* (2023) [9] and Kumar *et al.* (2023) [10] reported higher prevalence in male dogs. No gender predisposition was noted by Harrus *et al.* (1997) [11] and Smitha (2003) [12]. The age-wise prevalence canine ehrlichiosis was highest in animals of age group one to three years (63.23%), followed by dogs of less than one year of age (22.05%) and lowest in dogs of age group more than three years (14.70%) (Table 4) which is in accordance with Chakroborty *et al.* (2023) [13] and Kumar *et al.* (2023) [10]. Smitha (2003) [12] reported no age predilection for ehrlichiosis. The prevalence of ehrlichiosis in dogs was highest in Labrador Retriever (26.47%) which is in agreement with Sarawade *et al.* (2023) [14] and Kumar *et al.* (2023) [10]. It was followed by non-descript (22.05%) and German Shepherds (22.05%), Golden Retriever (10.29%), Pomeranian (5.88%) and Doberman (5.88%) as depicted in (Table 5). This finding of higher prevalence in labrador can be attributed to over presentation of the breed due to the preference of the dog owners. The highest prevalence of canine ehrlichiosis was observed in summer season (44.11%) followed by rainy season (29.41%) and lowest in the winter season (26.47%). (Table 6). This is in accordance with Roopali *et al.* (2019) [8] and Singh *et al.* (2021) [15]. In the summer season the vector population being high for the transmission of disease could be attributed to higher prevalence.

**Table 1:** Overall prevalence of canine ehrlichiosis in and around Bidar (January 2022 to December 2023)

Sl. No.	Total No. of cases	Total No. of canine ehrlichiosis cases	Percentage (%)
1	4313	68	1.58

**Table 2:** Year- wise point prevalence of canine ehrlichiosis in and around Bidar (January 2022 to December 2023)

Sl. No.	Year	Total No. of canine ehrlichiosis cases	Percentage (%)
1	2022	42	61.76
2	2023	26	38.23
	Total	68	100

**Table 3:** Gender-wise point prevalence of canine ehrlichiosis in and around Bidar (January 2022 to December 2023)

Sl. No.	Gender	Total No. of canine ehrlichiosis cases	Percentage (%)
1	Male	35	51.47
2	Female	33	48.52
	Total	68	100

**Table 4:** Age-wise point prevalence of canine ehrlichiosis in and around Bidar (January 2022 to December 2023)

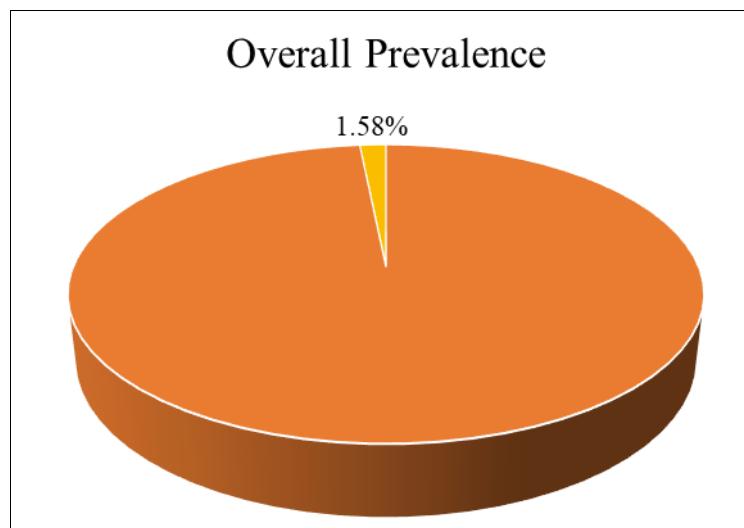
Sl. No.	Age (Years)	No. of canine ehrlichiosis cases	Percentage (%)
1	Less than 1 year	15	22.05
2	1-3 years	43	63.23
3	More than 3 years	10	14.70
	Total	68	100

**Table 5:** Breed-wise point prevalence of canine ehrlichiosis in and around Bidar (January 2022 to December 2023)

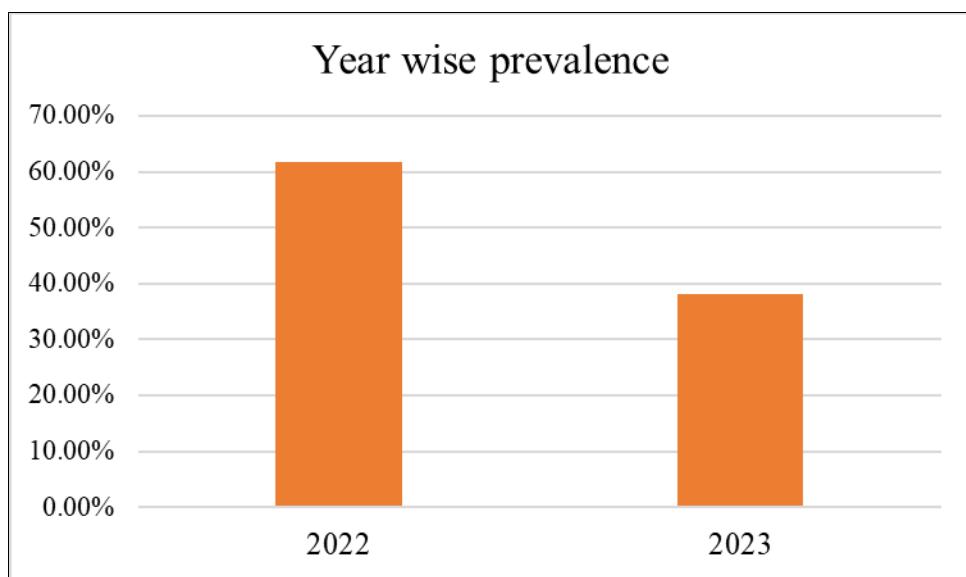
Sl. No.	Age	No. of canine ehrlichiosis cases	Percentage (%)
1	Labrador Retriever	18	26.47
2	Non descript	15	22.05
3	German Shepherd	15	22.05
4	Golden Retriever	7	10.29
5	Pomeranian	4	5.88
6	Doberman	4	5.88
7	Mudhol hound	1	1.47
8	Rottweiler	1	1.47
9	Saint Bernard	1	1.47
10	Shih Tzu	1	1.47
11	Beagle	1	1.47
	Total	68	100

**Table 6:** Season-wise point prevalence of canine ehrlichiosis in and around Bidar (January 2022 to December 2023)

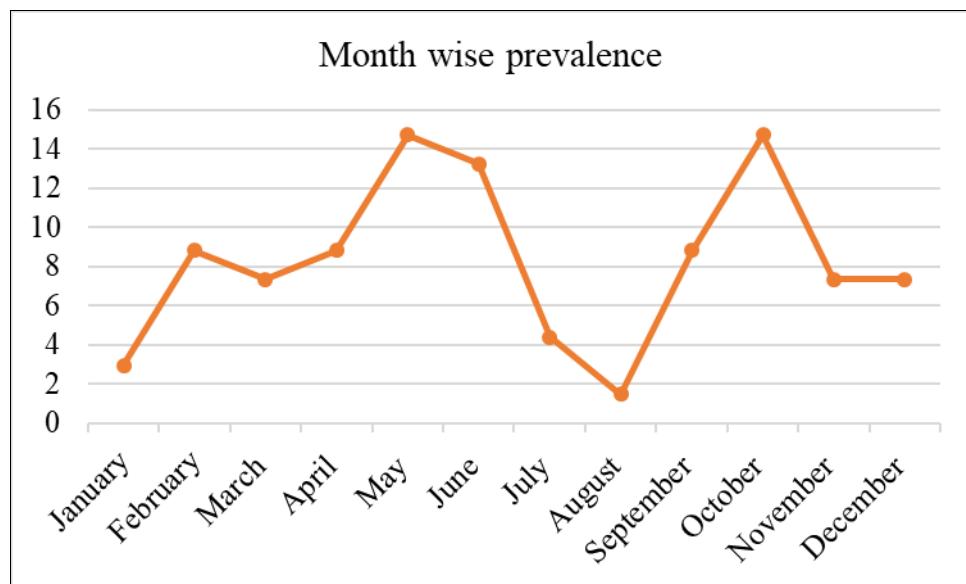
Sl. No.	Season	Total number of canine ehrlichiosis cases	Percentage (%)
1	Winter	18	26.47
2	Summer	30	44.11
3	Rainy	20	29.41
	Total	68	100



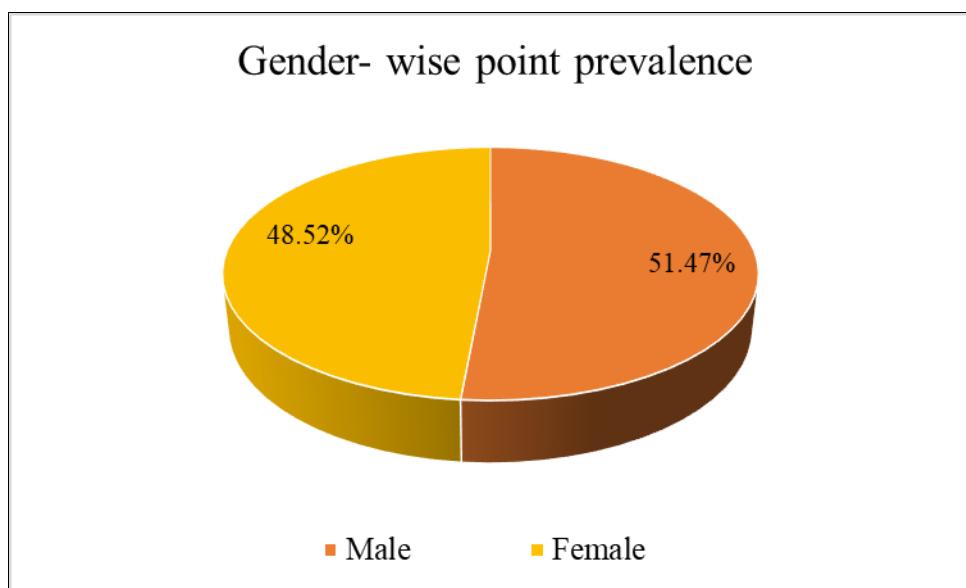
**Fig 1:** Overall prevalence of canine ehrlichiosis in and around Bidar (January 2022 to December 2023)



**Fig 2:** Year wise point prevalence of canine ehrlichiosis in and around bidar (January 2022 to December 2023)



**Figure 3:** Month- wise point prevalence of canine ehrlichiosis in and around bidar (January 2022 to December 2023)



**Fig 4:** Gender-wise point prevalence of canine ehrlichiosis in and around bidar (January 2022 to December 2023)

## Conclusion

Canine ehrlichiosis in and around Bidar shows clear seasonal and demographic trends, with higher prevalence during summer and monsoon months. Young adult dogs, especially males and Labrador Retrievers, were more commonly affected. Though overall prevalence was low, significant year-wise and seasonal variations were observed. These findings emphasize the need for regular tick control, increased owner awareness, and early diagnosis to effectively manage the disease in endemic regions.

## Conflict of Interest

Not available

## Financial Support

Not available

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