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A Veterinary Clinic – Based Cross-Sectional Study on the Prevalence of Dog Diseases in Cagayan, Philippines

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ABSTRACT

Dogs are often called, "man's best friend", like humans, dog's value and long life are also affected by diseases. A descriptive cross-sectional study was conducted to identify the type of prevailing dog diseases in Cagayan, Philippines and to determine the proportional prevalence of dog diseases and their distribution according to month, age, breed and sex. Purposively, case study of 630 dogs was gathered from the animal record of 11Veterinary Clinics. Dog diseases were categorized into infectious, non-infectious, and non-specific. Results showed that the highest proportional prevalence was in infectious diseases (76.9%) then non-infectious diseases (11.5%) and non-specific disease (11.4%). Disease specific proportional prevalence includes Parvovirus (28.7%), Ehrlichiosis (20.1%), Helminthiasis (6.0%), Laceration (5.8%), and Demodicosis (3.8%). In this study, results will benefit both animals and humans on disease awareness and management and knowledge on the type of prevailing dog diseases in Cagayan Province. Also, the importance of animal records as an essential part for the establishment of epidemiological and awareness plan in practicing One-Health Approach.

Keywords: *Cross-sectional study, Proportional prevalence, Dog Diseases, Veterinary Clinic*

INTRODUCTION

One of the ultimate goals of veterinary medicine is to know, understand and assess the various root cause of the diseases of animals like dogs. Dog (*Canis lupus familiaris*) is often called, man's best friend. They perform various roles for humans, such as protection, hunting, herding, pulling loads, guarding, assisting police and military, companionship and aiding handicapped individuals.

Dog's value and long life are affected by diseases common to age, breeds and sex. Some diseases that are pertinent to them due to their personality or lineage. But most likely, diseases of dogs are caught to be from environmental root correlating with immunosuppressive capabilities.

Determination of these prevailing diseases that shorten a dog's life would ideally allow the implementation of preventive veterinary medicine and management practices to improve longevity. A comprehensive knowledge of the epidemiology of these prevailing diseases of dogs is important for their prevention and control; however, such evidence-based information is limited. An epidemiological study providing information on disease status and associated determinants could be helpful for a strategic prevention and control planning and implementation of the One- Health Approach which is beneficial for human, animal and environment.

Objectives of the Study

The general objective of the study is to identify the type of prevailing diseases of dogs from Veterinary Clinics in Cagayan, Philippines. And the specific objectives are to determine the proportional prevalence of dog diseases and their distribution according to month, age, breed and sex.

MATERIALS AND METHODS

Research Design

A descriptive cross-sectional study was conducted to determine the proportional prevalence of dog diseases and their distribution according to month age, breed and sex.

Sampling Technique and Locale of the study

Proportional stratified sampling or stratified random sampling was used in the study. The study was conducted at the province of Cagayan, Philippines. A total of 11 Veterinary Clinics located at different towns of Cagayan namely: Aparri, Sta. Ana, Alcala, Piat, Solana and Tuguegarao served as sources of animal records for the different case study.

Research Instruments and Data Gathering Procedure

Case study compiled and recorded in the animal record from the Veterinary Clinics. Secondary data collection was the method used in this study. The purpose of this method was to gather case study that have already been recorded from Veterinary Clinics. Prior conducting the study, authorizations for data collection were obtained from the different Veterinary Clinics on the condition that data would be treated anonymously.

Analysis of the Data/ Statistical treatment

Proportional prevalence formula

$$PP = \frac{\text{Total number of cases of a specific disease in the study}}{\text{Total number of cases of all types of diseases recorded in the study period}} \times 100$$

Source: Epidemiology Morbidity and Mortality

In this study, the number of case study is the number of dogs that had at least one veterinary care event for the respective diagnostic categories. The proportional prevalence was used to compute the proportion of a specific disease of dogs at a given time, calculated by dividing the number of existing diseases by the total

population. The variations in proportional prevalence among different levels of determinants (age, sex, breed, and month) were determined using Chi-square Test, considering the P - value less than 0.05 as a level of significance. The analysis was performed through Microsoft Excel version 2020.

RESULTS AND DISCUSSION

The study focused on identifying the type of prevailing diseases of dogs from 11 Veterinary Clinics in Cagayan, Philippines and the proportional prevalence of dog diseases and distribution according to month, age, breed, and sex.

Research done by Sharma et. al., (2008), indicated similar trend of results. A previous study in the Philippines showed that the percentage of dog owners willing to allow their dogs to roam the street were 54.7% in semi-urban and 60% in rural areas, this finding maybe a possible reason of acquiring infectious diseases from street dogs.

Result shows that among infectious diseases, the proportional prevalence of viral diseases (34.6%) was the highest followed by bacterial diseases (26.3%) and the lowest was parasitic diseases (16%). In the study, parvovirus (28.7%) was the most prevalent viral disease followed by distemper virus (3.6%); while

Table 1. Different types of dog diseases from different Veterinary Clinics at Cagayan, Philippines

Infectious Diseases (76.9%)				Non-infectious Diseases (11.5%)	*Non-specific Diseases (11.4%)
Viral	Bacterial	Parasitic	Tumor		
Parvovirus (28.73%)	Ehrlichiosis (20.16%)	Helminthiasis (6.03%)	TVT (0.32%)	Laceration (5.87%)	Gastroenteritis (3.81%)
Distemper virus (3.65%)	Anaplasmosis (3.65%)	Demodicosis (3.81%)		Dystocia (1.27%)	Dermatitis (3.33%)
Kennel Cough virus (1.27%)	Pyometra (1.43%)	Ectoparasitism (2.54%)		Hypocalcemia (1.11%)	Poisoning (0.95%)
Coronavirus (0.79%)	Pneumonia (0.95%)	Scabies (1.9%)		Nutritional Deficiency (0.95%)	Otitis (0.79%)
Adenovirus (0.16%)	Colibacillosis (0.16%)	Babesiosis (0.95%)		Urolithiasis (0.63%)	Anemia (0.63%)
		Myiasis (0.32%)		Cataract (0.48%)	Pyodermatitis (0.48%)
		Giardiasis (0.16%)		Hip Dysplasia (0.32%)	Alopecia (0.48%)
				Vaginal Prolapse (0.32%)	Orchitis (0.32%)
				Allergy (0.32%)	Stomatitis (0.32%)
				Heatstroke (0.16%)	Conjunctivitis (0.16%)
				Urethral Obstruction (0.16%)	Hematuria (0.16%)

*Non-specific Diseases – these are the diseases for which a more specific and precise diagnosis has not been made

Results of the study as shown in Table 1, that different types of dog diseases from different Veterinary Clinics at Cagayan, Philippines revealed the highest proportional prevalence in infectious diseases (76.9%) followed by non-infectious (11.5%) and non-specific diseases (11.4%).

ehrlichiosis(20.1%), and anaplasmosis (3.6%) were commonly occurring bacterial diseases. Helminthiasis (6%), demodicosis (3.8%) and ectoparasitism (2.5%) were found as three noticeable parasitic diseases. The dog disease that had the least proportional prevalence in infectious disease is the giardiasis, colibacillosis, and adenovirus with the proportional prevalence of 0.1%. The diagnosis of giardiasis in dogs is not rare, but rather it is

not prevalent in pets including dogs, it is more common in farm animals (Adao et al., 2019). On the other hand, the diagnosis of Veterinary Clinics for colibacillosis in dogs in Cagayan is limited due to satisfaction of general diagnosis. Accordingly, adenovirus or canine infectious hepatitis is rare in dogs.

Result also shows that among the non-infectious diseases, the proportional prevalence of laceration (5.8%) was high, while gastroenteritis (3.8%), and dermatitis (3.3%) were recorded as non-specific diseases. The burden of laceration was comparatively higher than any other diseases in non-infectious disease; this resembled with the study of Uddin et al., (2021) where they had recorded 132 cases of laceration with a proportional incidence of 8.5% in a Veterinary Hospital.

Further, result shows that among the eleven non-specific diseases, the proportional prevalence of gastroenteritis (3.8%) was the highest, followed by dermatitis (3.3%). Due to the nature of canine gastroenteritis which is multifactorial in origin usually makes it hard for veterinarians to diagnose which eventually leads to non – specific disease (Uddin et al.,2021).

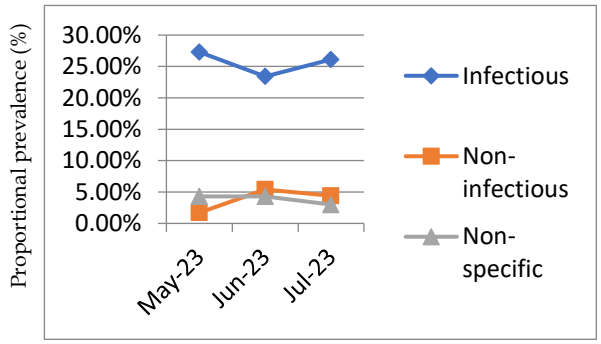

Figure 1. Proportional prevalence of infectious, non-infectious, and non-specific diseases according to month.

Figure 1 demonstrates the proportional prevalence of the different category of dog diseases according to month. Findings showed that the month of July (33.6%, n = 212) with the highest percentage of diseases, followed by the month of May (33.3%, n = 210), and the lowest in is the month of June (33.0%, n = 208). The category of dog disease according to month indicated that infectious diseases had higher proportional prevalence than non-infectious and non-specific diseases. The month distribution of infectious diseases showed a fluctuation trend, around 27.3% (May) to around 23.4% (June), to 26.1% (July). For non-infectious diseases, around 1.7% (May), to around 5.4% (June), to 4.4% (July). Moreover, and the non-specific diseases had a downward trend, around 4.3% (May), to around 3% (July). Results also showed the proportional prevalence of some specific diseases (Ehrlichiosis, Anaplasmosis, Pyometra and Demodicosis) differed significantly according to month at $P< 0.05$. The proportional prevalence of ehrlichiosis (12%) was higher in the month of May than the month of June and July, while the anaplasmosis (2.7%) and pyometra (0.95%) were higher in July than the month of May and June. Moreover, demodicosis (2.06%) was prevalent in the month of June than May and July 2023. For the month distribution of the diseases, ehrlichiosis (12.0%) occurred at a higher proportional prevalence in May than in June and July. In the Philippines, May is considered as part of the summer season transitioning to June which is a rainy season. Previous studies mentioned that there was minimum of five different species of ticks which includes Amblyomma americanum, Haemaphysalis longicornis, Rhipicephalus sanguineus, Haemaphysalis yeni, and Dermacentor variabilis that have been identified as vectors transmitting ehrlichiosis in dogs and that these disease-transmitting vectors become more potent during summer season (Cruz 2018; Migliore et al., 2020; Cruz, et al., 2021 and Aziz et al., 2022). Anaplasmosis occurred at a high proportional prevalence of 2.7% in July compared to May and June; rainy season makes certain parasites thrive in moist environment and were capable of transmitting diseases such as anaplasmosis (Cruz, 2018; Shearer et al., 2020). In case of pyometra (1.4%) which was most prevalent in the month of July compared to May and June, there were no existing studies stating that there is a season predisposition of pyometra. Demodicosis (2.0%) was higher in June compared to May and July. The result corresponded with the study of (Kumar et al., 2020) in which they stated there that the proportional prevalence of demodectic infections was found high in monsoon

season with a high number of positive dogs in the month of June.

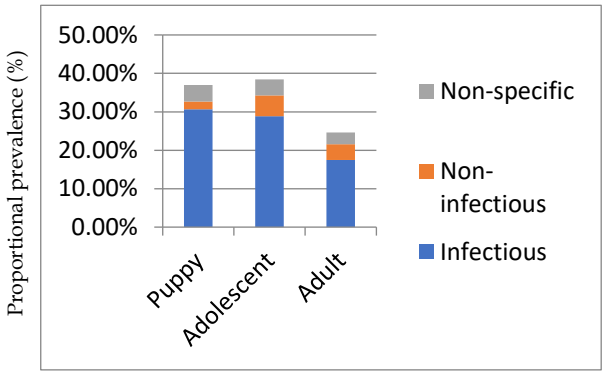

Figure 2. Proportional prevalence of infectious, non-infectious, and non-specific diseases according to age.

Figure 2 demonstrates the proportional prevalence of the different category of dog diseases according to age. Findings showed that the type of disease according to age indicated that infectious diseases (30.6%) and non-specific diseases (4.2%) had higher proportional prevalence occurred in puppy compared to adolescent and adult. Moreover, the non-infectious diseases (5.4%) were higher in adolescent compared to puppy and adult. Further, the proportional prevalence of ehrlichiosis (9.3%), anaplasmosis (2%), and demodicosis (1.7%) were higher in the adolescent than in the puppy and adult, and they differed significantly among other diseases at P<0.05. Study showed that dogs less than 18 months of age were prone to demodicosis possibly due to immunosuppression or systemic diseases (Koch ,2016). Parvovirus infection (18.1%) was more prevalent in the puppy than other age groups, and the disease showed a significant difference at P < 0.05. According to a study done by Ybanez & Ybanez (2016) wherein 57.8% of the CPV-infected dogs had no vaccination history and that majority of the affected dogs were aged between 6 weeks to 6 months. In the study, few specific diseases like pyometra (1.4%) and TVT (0.3%) were found to have a significant difference in proportional prevalence in the adult. Pyometra (Akter et al., 2015) and TVT (Abeka et al.,

Table 2. Proportional prevalence of infectious diseases in dogs according to Breed

Type of diseases	Diseases	Number of cases (Proportional prevalence, %)														Chi-square value	*Pvalue
		ST	PD	JS	DS	PM	PG	AB	BM	LD	CC	HS	GR	LB	TOTAL		
Viral	Parvo virus	86(13.6)	12(1.9)	3(0.4)	3(0.4)	11.(1.7)	1(0.1)	7(1.1)	14(2.2)	4(0.6)	5(0.7)	15(2.3)	2(0.3)	18(2.8)	181(28.73)	6.99	0.86
	Distemper virus	10(1.5)	2(0.3)	1(0.1)	0(0)	1(0.1)	0(0)	0(0)	4(0.6)	1(0.1)	0(0)	0(0)	1(0.1)	3(0.4)	23(3.65)	8.66	0.73
	Kennel Cough Virus	2(0.3)	1(0.1)	0(0)	0(0)	0(0)	0(0)	1(0.1)	1(0.1)	0(0)	1(0.1)	0(0)	0(0)	2(0.3)	8(1.27)	27.60	0.01
	Adenovirus	1(0.1)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	1(0.16)	1.39	1
	Coronavirus	3(0.4)	0(0)	0(0)	0(0)	2(0.3)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	5(0.79)	14.64	0.26
Bacterial	Ehrlichiosis	53(8.4)	4(0.6)	5(0.7)	4(0.6)	6(0.9)	1(0.16)	6(0.9)	9(1.4)	9(1.4)	3(0.4)	10(1.5)	5(0.7)	12(1.9)	127(20.16)	10.01	0.62
	Anaplasmosis	13(2.0)	3(0.4)	0(0)	1(0.1)	0(0)	0(0)	2(0.3)	0(0)	1(0.1)	0(0)	1(0.1)	0(0)	2.(0.3)	23(3.65)	8.82	0.72
	Colibacillosis	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	1(0.1)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	1(0.16)	21.05	0.05
	Pneumonia	2(0.3)	0(0)	0(0)	0(0)	1(0.1)	0(0)	0(0)	0(0)	0(0)	2(0.3)	0(0)	0(0)	1(0.1)	6(0.95)	25.07	0.01
	Pyometra	4(0.6)	3(0.4)	1(0.1)	1(0.1)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	9(1.43)	19.35	0.08
	Demodecosis	11(1.7)	1(0.1)	1(0.1)	0(0)	0(0)	3(0.4)	1(0.1)	1(0.1)	0(0)	0(0)	2(0.3)	0(0)	4(0.6)	24(3,81)	25.62	0.01
	Scabies	4(0.6)	3(0.4)	0(0)	0(0)	1(0.1)	0(0)	0(0)	2(0.3)	1(0.1)	0(0)	0(0)	0(0)	1(0.1)	12(1.9)	12.00	0.45
	Helminthiasis	16(2.5)	1(0.1)	2(0.3)	1(0.1)	3(0.4)	0(0)	2(0.32)	2(0.3)	1(0.1)	1(0.1)	1(0.1)	2(0.3)	6(0.9)	38(6.03)	6.61	0.88
	Ectoparasitism	3(0.4)	1(0.1)	0(0)	2(0.3)	0(0)	2(0.3)	2(0.3)	1(0.1)	2(0.3)	0(0)	1(0.01)	0(0)	2(0.3)	16(2.54)	29.62	0
	Myiasis	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	1(0.1)	0(0)	0(0)	1(0.1)	2.(0.32)	20.98	0.05
	Giardiasis	1(0.1)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	1.(0.16)	1.29	1
	Babesiosis	3(0.4)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	1(0.1)	0(0)	2(0.3)	6(0.95)	5.81	0.93
Malignant Tumor	TVT	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	2(0.3)	2(0.32)	15.32	0.22
Sub-total		212(33.6)	31(4.9)	12(2.0)	12(1.9)	25(3.9)	7(1.1)	22(3.4)	34(5.4)	19(3.02)	13(2.0)	31(4.9)	10(1.5)	56(8.8)	485(76.98)		

ST-Shih-tzu; PD-Poodle; JS-Japanese Spitz; DS-Daschund; PM-Pomeranian; PG-Pug; AB-American Bully; BM-Belgian Malinois; LD-Labrador; CC-Chowchow; HS-Husky; GR- Golden Retriever; Local Breed

*P-value differed significantly at P<0.05; **Non-specific diseases – these are diseases for which one or more specific and precise diagnosis has not been made

Table 3. Proportional prevalence of non-infectious diseases in dogs according to Breed

Type of diseases	Diseases	Number of cases (Proportional prevalence, %)														Chi-square value	*Pvalue
		ST	PD	JS	DS	PM	PG	AB	BM	LD	CC	HS	GR	LB	TOTAL		
Non-infectious	Hypocalcemia	5(0.79)	2(0.32)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	7(1.11)	10.03	0.61
	Laceration	14(2.22)	2(0.32)	0(0)	0(0)	2(0.32)	1(0.16)	1(0.16)	2(0.32)	3(0.48)	1(0.16)	1(0.16)	1(0.16)	9(1.43)	37(5.87)	6.79	0.87
	Nutritional Deficiency	1(0.16)	0(0)	0(0)	1(0.16)	0(0)	0(0)	1(0.16)	2(0.32)	0(0)	0(0)	0(0)	0(0)	1(0.16)	6(0.95)	14.37	0.28
	Dystocia	3(0.48)	1(0.16)	0(0)	1(0.16)	1(0.16)	0(0)	0(0)	0(0)	0(0)	2(0.32)	0(0)	0(0)	0(0)	8(1.27)	10.71	0.55
	Cataract	1(0.16)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	1(0.16)	1(0.16)	0(0)	0(0)	0(0)	3(0.48)	8.76	0.72
	Hip Dysplasia	1(0.16)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	1(0.16)	0(0)	0(0)	0(0)	0(0)	0(0)	2(0.32)	6.52	0.89
	Vaginal Prolapse	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	1(0.16)	0(0)	0(0)	1(0.16)	0(0)	0(0)	0(0)	2(0.32)	14.43	0.27
	Urolithiasis	2(0.32)	0(0)	0(0)	0(0)	1(0.16)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	1(0.16)	4(0.63)	4.65	0.97
	Heat Stroke	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	1(0.16)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	1(0.16)	17.25	0.14
	Urethral Obstruction	1(0.16)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	1(0.16)	1.43	1
	Allergy	2(0.32)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	2(0.32)	2.87	1
Sub-total		30(4.76)	5(0.79)	0(0)	2(0.32)	4(0.63)	1(0.16)	4(0.63)	5(0.79)	4(0.63)	5(0.79)	1(0.16)	1(0.16)	11(1.75)	73(11.59)		

ST-Shih-tzu; PD-Poodle; JS-Japanese Spitz; DS-Daschund; PM-Pomeranian; PG-Pug; AB-American Bully; BM-Belgian Malinois; LD-Labrador; CC-Chowchow; HS-Husky; GR- Golden Retriever; Local Breed

*P-value differed significantly at P<0.05; **Non-specific diseases – these are diseases for which one or more specific and precise diagnosis has not been made

Table 4. Proportional prevalence of non-specific diseases in dogs according to Breed

Type of diseases	Diseases	Number of cases (Proportional prevalence, %)														Chi-square value	*Pvalue
		ST	PD	JS	DS	PM	PG	AB	BM	LD	CC	HS	GR	LB	TOTAL		
**Non-specific	Otitis	2(0.32)	1(0.16)	0(0)	0(0)	0(0)	0(0)	0(0)	1(0.16)	0(0)	0(0)	0(0)	0(0)	1(0.16)	5(0.79)	8.81	0.72
	Pyodermatitis	2(0.32)	0(0)	0(0)	0(0)	0(0)	1(0.16)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	3(0.48)	8.56	0.74
	Gastroenteritis	8(1.27)	0(0)	1(0.16)	1(0.16)	1(0.16)	0(0)	1(0.16)	1(0.16)	4(0.63)	0(0)	2(0.32)	2(0.32)	3(0.48)	24(3.81)	9.19	0.69
	Dermatitis	9(1.43)	1(0.16)	0(0)	0(0)	0(0)	1(0.16)	7(1.11)	1(0.16)	0(0)	0(0)	0(0)	0(0)	2(0.32)	21(3.33)	15.35	0.22
	Alopecia	0(0)	0(0)	0(0)	0(0)	0(0)	1(0.16)	0(0)	1(0.16)	0(0)	0(0)	0(0)	1(0.16)	0(0)	3(0.48)	17.80	0.12
	Orchitis	0(0)	0(0)	1(0.16)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	1(0.16)	2(0.32)	14.00	0.3
	Stomatitis	1(0.16)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	1(0.16)	2(0.32)	3.33	0.99
	Anemia	2(0.32)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	1(0.16)	0(0)	0(0)	0(0)	0(0)	1(0.16)	4(0.63)	4.27	0.98
	Poisoning	1(0.16)	0(0)	1(0.16)	0(0)	1(0.16)	0(0)	0(0)	0(0)	1(0.16)	0(0)		0(0)	0(0)	6(0.95)	18.84	0.09
	Conjunctivitis	1(0.16)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	1(0.16)	1.67	1
	Hematuria	1(0.16)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	1(0.16)	1.67	1

ST-Shih-tzu; PD-Poodle; JS-Japanese Spitz; DS-Daschund; PM-Pomeranian; PG-Pug; AB-American Bully; BM-Belgian Malinois; LD-Labrador; CC-Chowchow; HS-Husky; GR- Golden Retriever; Local Breed

*P-value differed significantly at P<0.05; **Non-specific diseases – these are diseases for which one or more specific and precise diagnosis has not been made

2019) were prevalent in adult dogs, 2-5 years old dogs and being sexually overactive were more prone to diseases. With these results, it shows that age is an important factor as a determinant of dog disease prevalence.

Table 2 shows the proportional prevalence of infectious diseases in dogs according breed. Results showed that in disease-specific proportional prevalence by breed, both demodicosis (1.7%) and ectoparasitism (0.48%) was recorded highest in Shih-tzu breed; pneumonia (0.32%) and kennel cough virus (0.32%) recorded highest in both Local breed and Shih-tzu breed; colibacillosis (0.16%) in American Bully. A significant difference in the proportional prevalence of specific diseases was obtained among the dog breeds at P< 0.05. However, in non-infectious (Table 3) and non-specific diseases (Table 4), there were no recorded diseases that differed significantly at P<0.05. Table 5 showed the thirteen types of dog breeds, the highest proportional prevalence of dog diseases was observed in Shih-tzu breed (42.7%).

According to the Philippine Canine Club, Inc., the Shih-tzu breed is one of the most popular dog breeds in the Philippines and dog owners prefer this breed because of

Table 5. Grand total of proportional prevalence of infectious, non-infectious, and non-specific diseases in dogs according to Breed

Type of diseases		Number of cases (Proportional prevalence, %)														
		ST	PD	JS	DS	PM	PG	AB	BM	LD	CC	HS	GR	LB	TOTAL	
Sub-Total		27(4.29)	2(0.32)	3(0.48)	1(0.16)	2(0.32)	3(0.48)	8(1.27)	5(0.79)	5(0.79)	0(0)	4(0.63)	3(0.48)	9(1.43)	72(11.43)	
Grand Total		269(42.7)	38(6.03)	16(2.54)	15(2.38)	31(4.92)	11(1.75)	34(5.4)	44(6.98)	28(4.44)	18(2.86)	36(5.71)	14(2.22)	76(12.06)	630(100)	

ST-Shih-tzu; PD-Poodle; JS-Japanese Spitz; DS-Daschund; PM-Pomeranian; PG-Pug; AB-American Bully; BM-Belgian Malinois; LD-Labrador; CC-Chowchow; HS-Husky; GR- Golden Retriever; Local Breed

their lively attitude and friendly disposition (Gonzales, 2019). Kennel cough virus, colibacillosis, pneumonia, demodicosis, ectoparasitism, and myiasis are the diseases that were found to have a significant difference in proportional prevalence according to breed. Kennel cough virus was high in Shih-tzu breed and Local breed with the same proportional prevalence of 0.3%; however, there are no existing articles that could provide insights regarding the breed predisposition of KCV. The only noted case of colibacillosis (0.1%) recorded in this study occurred in American Bully breed. Demodicosis was recorded highest in Shih-tzu breed (1.7%) among other breeds. Pneumonia was recorded with a proportional prevalence of 0.3% in Shih-tzu breed and Chow-chow breed which also showed a significant discrepancy among other breeds. Ectoparasitism was recorded in Shih-tzu breed with a proportional prevalence of 0.4% and also differed significantly at $P<0.05$. Myasis occurred in both Chow-chow breed and Local breed with the same proportional prevalence of 0.1%.

Figure 3 demonstrates the proportional prevalence of the different category of dog diseases according to sex. Findings showed that the proportional prevalence of dog diseases in male (53.49%) was higher than in female (46.51%). In infectious diseases, number of male (43.81%) dogs were comparatively higher compared to number of female (33.17%) dogs. When it comes to non-infectious diseases, number of female (7.46%) dogs were recorded higher compared to number of male dogs (4.13%). In non-specific diseases, number of female (5.87%) dogs were comparatively higher compared to male (5.56%) dogs. In disease-specific proportional prevalence by sex, parvovirus (18.5%), and urolithiasis (0.63%) were higher in male than female. Likewise, demodicosis (2.3%) and helminthiasis (3.6%) were greater in female than in male. Errors in disease distribution were noted as it only occurs in female dogs like pyometra (1.43%) and dystocia (1.27%).

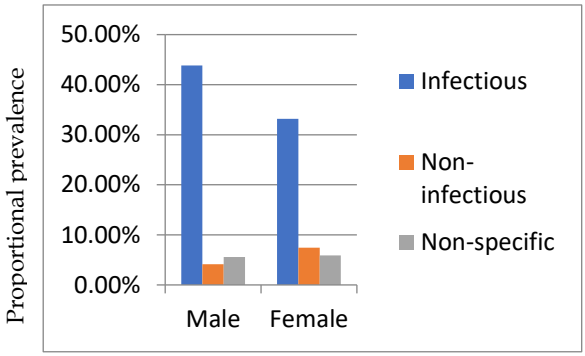

Figure 3. Proportional prevalence of infectious, non-infectious and non-specific diseases in dogs according to sex.

CONCLUSION

This study provides basic information regarding the proportional prevalence of the type of dog diseases and their distribution in terms of month, age, breed and sex. Dog's diseases were classified as infectious, non–infectious and non–specific. Parvovirus, ehrlichiosis, helminthiasis, laceration and demodicosis were the top 5 recorded diseases with the highest proportional prevalence and each differed significantly among month, age, breed and sex. Among the dog diseases, demodicosis showed a significant difference in magnitudes in case of all studied determinants. Hence, the findings of this study could help dog owners employ disease-specific special cares and control measures to the vulnerable levels of the studied determinants at the right time, such as the proper

time of vaccination, deworming and check-ups. On top of this, the current findings could also be used as baseline information for further researches and strategic planning to prevent and control these prevailing diseases, and putting the One-Health Approach into practice – a strategy that benefits the health of people, animals, and the environment.

RECOMMENDATION

The researcher suggests broadening the investigation's temporal scope to encompass a more comprehensive study, spanning a more extensive timeline, to thoroughly assess the proportional prevalence of dog diseases in Cagayan Province. This approach will offer a holistic understanding of the trends, contributing factors, and potential changes over time, enhancing the overall depth and reliability of the study.

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