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Comparative Analysis Of Oral Health Status Between Breeds Of Dogs (Canine)And Cats (Feline) In Chennai City, Tamilnadu, India- A Cross-Sectional Studyon Veterinary Dentistry

Mansi Chaubey[1], PrabuD[2], Suganya.P[3], BharathwajVV[4], SindhuR[4], Dinesh Dhamoodhar[5], ShreelakshmiS[4], RajmohanM[5], PrashanthyMR[3]

[1]Undergraduate student, SRM Dental College, Ramapuram, Chennai, India

[2]Master of dental surgery, Professor and Head, Department of Public Health Dentistry, SRM Dental College and Hospital, Ramapuram, Chennai, India

[3]Postgraduate student, Department of Public Health Dentistry, SRM Dental College and Hospital, Ramapuram, Chennnai, India

[4]Master of dental surgery, Senior Lecturer, Department of Public Health Dentistry, SRM Dental College and Hospital, Ramapuram, Chennai, India

[5]Master of dental surgery, Reader, Department of Public Health Dentistry, SRM Dental College and Hospital, Ramapuram, Chennai, India

ABSTRACT:

Background: Oral health is more important to maintain general well-being not only for the people but also for the domestic animals. There exists a myth that the oral health of domestic animals is not as important as their physical health. The negligence of oral health might cause many systemic diseases in animals.

Aim: The aim of this study is to analyze the oral health status of canines (dogs) and felines(cats) in Chennai city, Tamilnadu, India.

Materials and method: An observational cross-sectional study was conducted among 49 canines (dogs) and 51felines(cats) in various veterinary hospitals of Chennai city based on the simple random sampling method. Their oral health status was assessed by direct visual examination using Modified Triadan System and a 7-item questionnaire regarding demographic data, systemic diseases and tooth brushing. The data were tabulated and analyzed using descriptive statistics and chi-square test. P-value < 0.05 was considered to be statistically significant.

Results: The oral health status of feline (cats) was found to be good when compared to dogs. There was a statistically significant association found in gingivitis (P=0.01) and malocclusion (P = 0.04) among dogs and cats.

Conclusion: The disregard towards the oral hygiene of domestic animals must come to an end. Their lives must be given the same value as those of the homo-sapiens.

Keywords: Oral health, Dogs, Cats, Dental caries, Periodontitis.

INTRODUCTION:

Oral diseases have been identified as the most frequently diagnosed clinical conditions in domestic dogs and cats. They can be subdivided into conditions that affect the tooth, periodontiumand other oral tissues. Nutrition plays a key role in tooth development, gingival and oral tissue integrity, bone strength, prevention and management of oral diseases [1].

Periodontal diseases result from bacterial plaque accumulation on the tooth surfaces, which causes inflammatory and altered immune responses in the supporting tissues of the oral cavity. Dental plaque has been implicated as a potential reservoir ofH. pylori and it was detected in saliva [2]. It is a sticky yellow- to tan-colored material that forms within 3 to 24 hours after tooth cleaning [3]. The dental plaque was more severe in small breed dogs, but periodontal disease prevalence increases with aging in all dogs.

Uncontrolled plaque accumulation and gingivitis may lead to severe periodontitis. The symptoms of periodontal diseases range from mild gingivitis to irreversible damage to the supporting structures of the teeth, resulting in tooth loss. It has been estimated that by two years of age, 70 % of cats and 80 % of dogs are affected by some form of periodontal disease. The etiology of this condition starts with the formation of

dental plaque that extends into the gingival sulcus. With the aid of the calcium salts from saliva, it produces the calculus, which was the main cause for the development of gingivitis [4].

Many factors contribute the oral health status of pet animals, and some of these might be influenced by the pet owner. It is known that diet and level of oral home care were an owner-controlled factor that plays a crucial role in determining the oral health status of cats and dogs [5].

Recently some studies had shown a close association of oral health disorders with the general health of the animals. The persistent infection of the oral cavity does not only discomfort the affected animal but may also cause diseases of distant organs. Overt bacterial infections were seen only rarely, but the inflammatory response, which they elicit in the gingival tissue ultimately responsible for a progressive loss of collagen attachment of the tooth to the underlying alveolar bone. The consequence results in the loosening or even loss of the tooth [6].

No previous studies were conducted regarding the oral health status of dogs and cats in India especially in Tamilnadu. Hence this present study aims to analyze the oral health status of canines (dogs) and feline (cats) in Chennai city.

MATERIALS AND METHOD:

A cross-sectional study was conducted during the period of January 2020 amongfelines (cats) and canines(dogs) breeds in various veterinary hospitals of Chennai city to evaluate the oral health status between the two. The sample size was calculated to be 100 by setting a confidence level 95% and margin of error being 5%. The ethical approval for this study was obtained from the department of Public health dentistry, SRM dental college, Ramapuram. Conscious examinations were performed on animals according to the standard procedures used in small animal practice.

A total number of fifty one felines (cats) and forty nine (dogs) were obtained from various veterinary hospitals in Chennai city based on the simple random sampling method. The inclusion criteria of this study include only the individual who wants their domestic animals to be a part of this study. The mentally disabled dogs and cats were excluded and those pet owners who didn’t fulfill the consent form and questionnaire were excluded from the study.

A 5-item questionnaire regarding demographic data, tooth brushing and systemic diseases were obtained. All animals in the survey underwent oral examinations and the teeth were recorded based on the Modified Triadan System to assess calculus, caries, gingivitis, periodontitis, malocclusion, fracture of teeth, oral lesions, attrition, etc.

The animals were held back with their mouth open by their owners and a quick study of their oral cavity was done with the help of veterinarians. To check the posteriors, mouth mirrors were used. The collected data were analyzed and tabulated using descriptive statistics and chi-square test. P value <0.05 was considered to be statistically significant.

RESULTS:

Fig 1: Descriptive statistics of cats and dogs

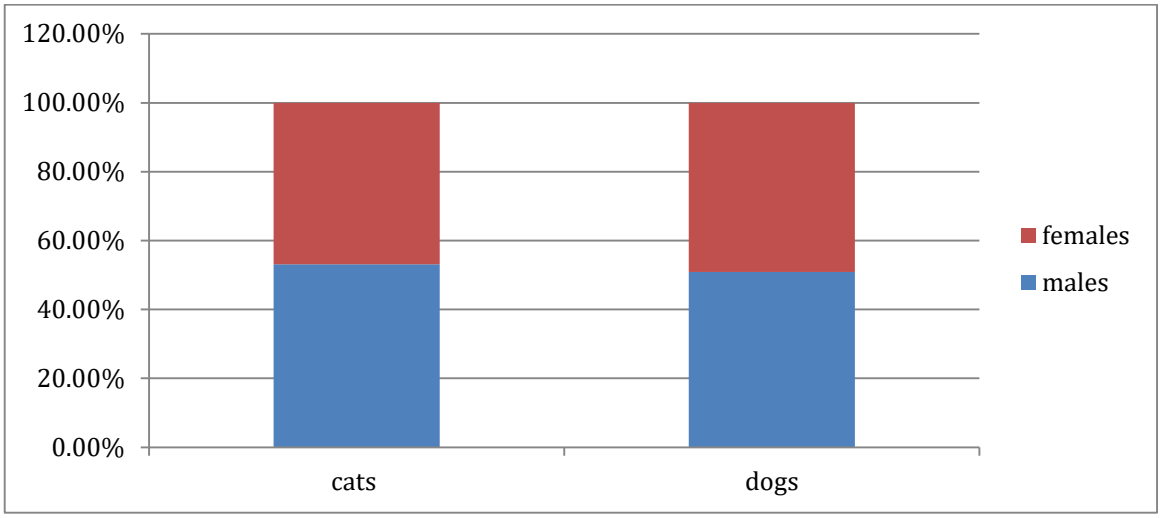

Fig 1 depicts the gender-wise distribution of the canines and felines. Totally 51 felines and 49 canines were participated in the study. Out of 51 felines, 26 (50.9%) were males and 25 (49.1%) were female felines. Out of 49 canines, 26 (53.1%) were males and 23 (46.9%) were female canines.

Table 1: Gender-wise distribution of oral health status of (canine) dogs

S. No.	Variables	Oral health status of canine (dogs) in percentage (%)	
		Males	Females
1	Systemic disease	59.2%	40.8%
2	Teeth brushed	32.7%	67.3%
3	Gingivitis	32.7%	67.3%
4	Oral lesions	2%	98%
5	Attrition	36.7%	63.3%
6.	Missing teeth	36.7%	63.3%
6	Dental caries	61.2%	38.8%
7	Calculus	24.5%	75.5%
8	Stains	75.5%	24.5%
9	Periodontitis	30.6%	69.4%
10	Fractured teeth	22.4%	77.6%
11	Malocclusion	22.4%	79.6%

Table 1 show that male dogs were more prone to dental caries (61.2%) and stains (38.8%) when compared to female dogs.

Table 2: Percentage-wise distribution of oral health status of (feline) cats

S. No.	Variables	Oral health status of feline (cats) in percentage (%)	
		Males	Females
1.	Systemic disease	17.6%	82.4%
2.	Teeth brushed	23.5%	76.5%
3.	Gingivitis	45.1%	54.9%
4.	Oral lesions	0%	100%
5.	Attrition	45.1%	54.9%

6.	Missing teeth	37.3%	62.7%
7.	Dental caries	31.4%	68.6%
8.	Calculus	45.1%	54.9%
9.	Stains	21.6%	78.4%
10.	Periodontitis	56.9%	43.1%
11.	Fractured teeth	27.5%	72.5%
12.	Malocclusion	15.7%	84.3%

Table 2 shows that male cats had more number of Periodontitis (56.9%) when compared to female cats (43.1%)

Fig 2: Percentage- wise distribution of oral health status among canine (dogs) and feline (cats)

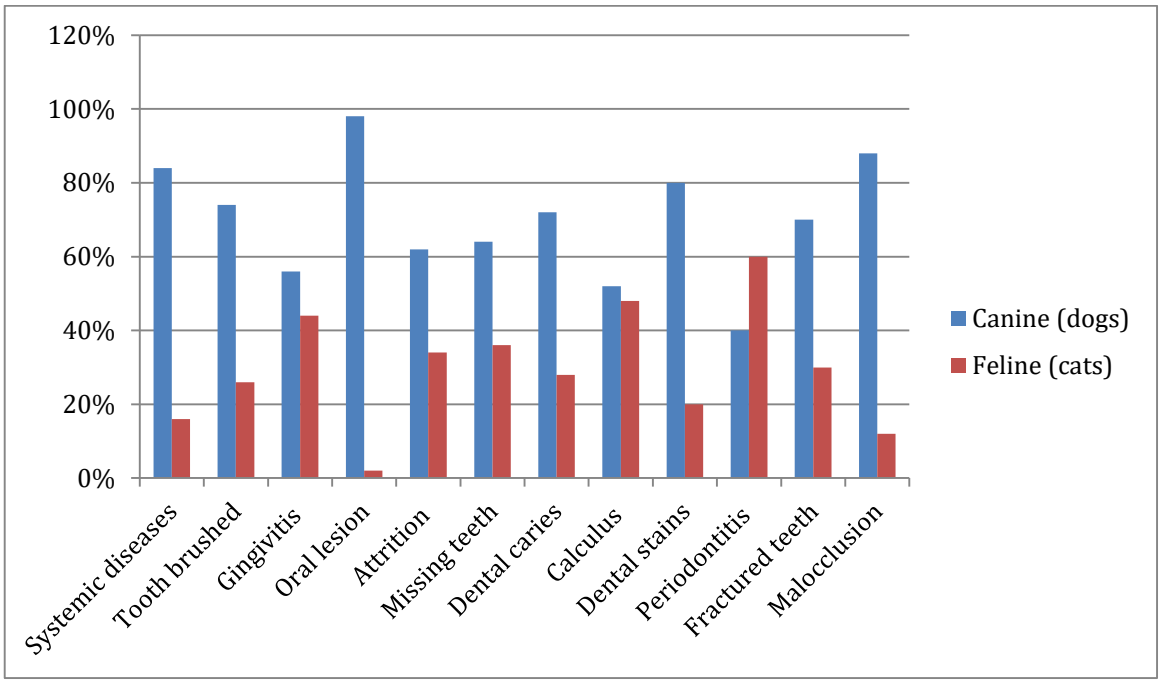

Fig 2 depicts that the canines had poor oral health when compared to felines. The felines (60%) had highest prevalence of periodontitis when compared to canines (40%).

Table 3: Association of oral health status among canine (dogs) and feline (cats)

S.NO.	Variables	P value
1.	Sex	0.20
2.	Systemic diseases	0.40
3.	Teeth brushed	0.72
4.	Gingivitis	0.01*
5.	Oral lesion	-
6.	Attrition	0.41
7.	Missing teeth	0.16
8.	Dental caries	0.09
9.	Calculus	0.38
10.	Stains	0.07
11.	Periodontitis	0.10
12.	Fractured teeth	0.058

13.	Malocclusion	0.004*

Table 3 shows that there was statistically significant difference found in Gingivitis (p=0.01) and malocclusion (p = 0.04) among dogs and cats.

DISCUSSION:

In the recent times, domestic animals were found to be affected with many sorts of diseases; hence it is very importantfor the pet owners to keep their companion animals healthy by proper preventive and nutritive measures. The oral health of the animals determines the overall health of domestic animals. Dental caries and periodontal diseases were found to more prevalent in domestic animals especially among canines (dogs) and felines (cats). Gram negative anaerobic rods usually cause tissue destruction which results from auto degradation induced by the continuing inflammatory response [7]. The good oral hygiene must be maintained as they are prone to numerous dental infections as well.

A studyconducted by Miller et al in the year 1994 had discussed about the efficacy of brushing frequency among dogs and concluded that brushing once a day and3 times a week were found to be very suitable and laid-back way to maintain the dogs oral hygiene. The teethbrushed for a 24week period, brushing three times a week was enough to maintain gingival health, whereas daily brushing results in traumatic gingival inflammation Brushing twice daily with a hard bristle human toothbrush caused gingival lesion [8].

Another study conducted by Gawor et al in the year 2006 had discussed about the influence of diet on oral health of cats and dogs. According to this study, the oral cavity in cats and dogs were commonly affected by periodontal pathogens. Although changes in feeding methods have arguably improved the health of cats and dogs by reducing or preventing diseases associated with nutritional deficiencies, periodontal disease remains a serious problem. Numerous studies showed an influence of diet and home oral hygiene on periodontal health. There is reasonable evidence that soft diets were associated with increased frequency and severity of periodontal disease and that harder foods requiring vigorous mastication are preferable for cats and dogs [9]. In the present study 74% of dogs 26% of cats had brushed their teeth daily with the prevalence of gingivitis as 56% in dogs and 44% in cats.

Previousstudy conducted by Gorrel et al in the year 1998 had described about the benefits of a dental hygiene chew of the periodontal health of cats. According to this, plaque reduction by chewing activity becomes an important means of promoting improved oral hygiene in the cat. The daily addition of the chew to a dry diet significantly reduced the accumulation of plaque and calculus following periodontal therapy. Gingivitis scores were lower following the period when the cats were consuming the chew [10]. Concluding that consumption of a dental hygiene chew as a daily treat is effective in reducing accumulation of dental deposits (plaque and calculus) in cats.

The study conducted by Harrison et al in the year 2019 had discussed about the preventive and nutritional measures of canine and feline and concluded that both canine and feline had increased prevalence of periodontitis due to improper brushing and diet [11]. This was in contrast with the present study that the prevalence of periodontitis found to be highest among feline whereas canines had increased prevalence of oral lesions.

Another study conducted by Rajmohan et al in the year 2018 had discussed about the prevalence of dental caries among various breeds of canines and concluded that dogs had highest prevalence of dental caries and it was found to be statistically significant with different breeds of canines (P=0.048) [12]. This was in line with the present study that canines(dogs) had highest prevalence of dental caries when compared to felines(cats). The male canines (61.2%) were more prone to dental caries when compared to female canines (38.8%).

The systemic diseases were found to be more common in male canines (59.2%) when compared to female canines (40.8%). The female canines (32.7%) had brushed their teeth daily when compared to male canines (67.3%). The female canines had higher prevalence of gingivitis (67.3%), oral lesions (98%), missing teeth (63.3%), calculus (75.5%), periodontitis (69.4%), fractured teeth (77.6%) and malocclusion (79.6%) when

compared to male canines whereas the male canines had higher prevalence of dental caries (61.2%) and stains (75.5%) when compared to female canines (38.8%).

The female felines (76.5%) had brushed their teeth daily when compared to male felines (23.5%). The prevalence of gingivitis (54.9%), oral lesions (100%), attrition (54.9%), missing teeth (62.7%), dental caries (68.6%), calculus (54.9%), stains (78.4%), fractured teeth (72.5%) and malocclusion (84.3%) were found to be more in female felines when compared to males felines whereas the male felines (56.9%) had highest prevalence of periodontitis when compared to female felines (43.1%).There was a statistically significant association were found between gingivitis (P=0.01) and malocclusion (P=0.004) in both canines and felines.

Overall analysis of this study shows that male canines and felines had good oral health status when compared to females. The prevalence of periodontitis was found to more common in male felines whereas the dental caries prevalence was more common in male felines. The canines had highest prevalence of dental caries (72%), gingivitis (56%), oral lesions (98%), attrition (62%), calculus (52%), stains (80%), missing teeth (64%), fractured teeth (70%) and malocclusion (88%) whereas the felines had highest prevalence of periodontitis (60%).

LIMITATIONS:

Overestimation or underestimation of responses causes social acceptability bias which might affect the appropriate outcome of the study. Only small number of samples was included in this study. Further longitudinal studies should be conducted to get more appropriate results. There might be a chance of gender and age bias which affects the relevant outcome.

CONCLUSION:

It is now evident that public must not turn a blind eye to the difficulties faced by four-legged friends as the infections occurs in animals had more probability of spreading to other organs. The veterinarians should educate proper knowledge and awareness to the pet owners regarding the oral health complications in cats and dogs. A daily oral hygiene regimen should be part of every dog and cats routine, and advising suitable options to pet owners for better benefits. There are animal tooth brushes specifically designed for cleaning the teeth of animals whose teeth and mouth shape were different from human, and whose gums were more sensitive. The maintenance of good oral health will reduce the risk of infections of domestic animals.

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CONFLICT OF INTEREST: NIL

REFERENCES:

1. Logan EI. Dietary influences on periodontal health in dogs and cats. Veterinary Clinics: Small Animal Practice. 2006 Nov 1;36(6):1385-401.
2. Anand PS, Nandakumar K, Shenoy KT. Are dental plaque, poor oral hygiene, and periodontal disease associated with Helicobacter pylori infection?. Journal of periodontology. 2006 Apr;77(4):692-8.
3. DuPont GA. Prevention of periodontal disease. Veterinary Clinics of North America: Small Animal Practice. 1998 Sep 1;28(5):1129-45.
4. Mata F. The choice of diet affects the oral health of the domestic cat. Animals. 2015 Mar;5(1):101-9.
5. Buckley C, Colyer A, Skrzywanek M, Jodkowska K, Kurski G, Gawor J, Ceregrzyn M. The impact of home-prepared diets and home oral hygiene on oral health in cats and dogs. British journal of nutrition. 2011 Oct;106(S1):S124-7.
6. Kyllar M, Witter K. Prevalence of dental disorders in pet dogs. Veterinarni Medicina-Praha. 2005 Nov 1;50(11):496-505.
7. Harvey CE. Periodontal disease in dogs: Etiopathogenesis, prevalence, and significance. Veterinary Clinics: Small Animal Practice. 1998 Sep 1;28(5):1111-28.
8. Miller BR, Harvey CE. Compliance with oral hygiene recommendations following periodontal treatment in client-owned dogs. Journal of Veterinary Dentistry. 1994 Mar;11(1):18-19.

9. Gawor JP, Reiter AM, Jodkowska K, Kurski G, Wojtacki MP, Kurek A. Influence of diet on oral health in cats and dogs. The Journal of nutrition. 2006 Jul 1;136(7):2021S-23S.
10. Gorrel C, Inskeep G, Inskeep T. Benefits of a 'dental hygiene chew' on the periodontal health of cats. Journal of veterinary dentistry. 1998 Sep;15(3):135-8.
11. Harrison C. Nutrition and preventative oral healthcare treatments for canine and feline patients. The Veterinary Nurse. 2017 Oct 2;8(8):432-40.
12. Rajmohan M, Jeeva VL, Karunanithi K, Prabu D, Sunayana NN. Catch in the canine–A preliminary study. University Journal of Surgery and Surgical Specialities. 2018 Apr 5; 4(2).