# Oral disorders in animals seen in the Dentistry sector of the University of Franca and prevention in the control of local and systemic impairments

Afecções orais em animais atendidos no setor de Odontologia da Universidade de Franca e a prevenção no controle de comprometimentos locais e sistêmicos

Trastornos bucales en animales vistos en el sector de Odontología de la Universidad de Franca y prevención en el control de alteraciones locales y sistémicas

**Fernanda Gosuen Gonçalves Dias**
ORCID: https://orcid.org/0000-0001-6072-4789
Universidade de Franca, Brazil
E-mail: fernandagosuen@yahoo.com.br
**Alex Roberto de Oliveira**
ORCID: https://orcid.org/0000-0002-6726-5498
Universidade de Franca, Brazil
E-mail: alexr_medvet@hotmail.com
**Luis Gustavo Gosuen Gonçalves Dias**
ORCID: https://orcid.org/0000-0003-3993-1649
Universidade Estadual Paulista, Brazil
E-mail: gustavogosuen@gmail.com
**Lucas de Freitas Pereira**
ORCID: https://orcid.org/0000-0001-6611-296X
Universidade de Franca, Brazil
E-mail: lucapereira@gmail.com
**Marina Queiroz Derruci**
ORCID: https://orcid.org/0000-0002-2668-4872
Universidade de Franca, Brazil
E-mail: derruci.marina@gmail.com
**James Cintra Costa**
ORCID: https://orcid.org/0000-0001-8411-8062
Universidade de Franca, Brazil
E-mail: jamesfrancasp@gmail.com

**Abstract**
Several oral conditions can affect canine and feline species, causing local and systemic impairments. Thus, the objective of the present work was to carry out a retrospective study of 385 cases treated in the Small Animal Dentistry surgical sector at the University of Franca, emphasizing those with infraorbital fistulas, dental and bone fractures and neoplasms and, in addition, relate them to the patients' review (sex, species, age and race) and type of food. The results were expressed in percentages. Of the 385 dental records, 30 patients were diagnosed with infraorbital fistulas (7.8%), 25 with dental fractures (6.5%), 26 with bone fractures (6.8%) and 28 with neoplasms (7.3%). As described in the scientific literature, there was no significant difference regarding the gender of those affected by all oral disorders. The canine species was the most affected and the majority of patients were adults to the elderly. The mixed breed and Poodles were the most affected. As for the type of food provided, most were commercial dry food; in contrast, a large part offered commercial food plus homemade food, which can predispose and aggravate some oral diseases. In view of the recommended methodology and data obtained, it can be inferred that infraorbital fistulas, dental fractures, bone fractures and neoplasms are commonly diagnosed in companion animals, mainly in elderly and small dogs, which can generate local and systemic damage. The wrong diet can predispose oral diseases; thus, disclosure to tutors about dental care can improve the quality of life and survival of dogs and cats.
**Keywords:** Infraorbital fistula; Tooth fracture; Oral fracture; Oral neoplasia; Little animals.

**Resumo**
Diversas afecções orais podem acometer a espécie canina e felina, causando comprometimentos locais e sistêmicos. Assim, o objetivo do presente trabalho foi realizar estudo retrospectivo de 385 casos atendidos no setor cirúrgico de Odontologia de Pequenos Animais da Universidade de Franca, enfatizando os de fístulas infraorbitárias, fraturas dentárias e ósseas e neoplasias e, ademais, relacioná-los com a resenha dos pacientes (sexo, espécie, idade e raça) e tipo de alimentação. Os resultados foram expressos em percentuais. Das 385 fichas odontológicas, 30 pacientes foram diagnosticados com fístulas infraorbitárias (7,8%), 25 com fraturas dentárias (6,5%), 26 com fraturas ósseas (6,8%) e

28 com neoplasias (7,3%). Conforme descrito na literatura científica, não houve diferença significativa quanto ao gênero dos acometidos por todas as afecções orais. A espécie canina foi a mais afetada e a maioria dos pacientes era adultos a idosos. Os sem raça definida e os Poodles foram os mais acometidos. Quanto ao tipo de alimentação fornecida, a maioria era ração comercial; em contrapartida, grande parte oferecia ração comercial acrescida de comida caseira, o que pode predispor e agravar algumas enfermidades orais. Perante a metodologia preconizada e os dados obtidos, pode-se inferir que as fístulas infraorbitárias, fraturas dentárias, fraturas ósseas e neoplasias são comumente diagnosticadas em animais de companhia, principalmente em cães idosos e pequenos, podendo gerar danos locais e sistêmicos. A alimentação errônea pode predispor enfermidades orais; assim a divulgação aos tutores quanto aos cuidados odontológicos pode melhorar a qualidade de vida e sobrevida dos cães e gatos.
**Palavras-chave:** Fístula infraorbitária; Fratura dentária; Fratura oral; Neoplasia oral; Pequenos animais.

**Resumen**
Varias afecciones orales pueden afectar a especies caninas y felinas, provocando alteraciones locales y sistémicas. Así, el objetivo del presente estudio fue realizar un estudio retrospectivo de 385 casos atendidos en el sector quirúrgico de la Odontología de Pequeños Animales en la Universidad de Franca, destacando aquellos con fístulas infraorbitarias, fracturas y neoplasias dentales y óseas y, además, relacionarlas con la revisión de pacientes (sexo, especie, edad y raza) y tipo de alimentación. Los resultados se expresaron en porcentajes. De los 385 registros dentales, 30 pacientes fueron diagnosticados con fístulas infraorbitarias (7,8%), 25 con fracturas dentales (6,5%), 26 con fracturas óseas (6,8%) y 28 con neoplasias (7,3%). Como se describe en la literatura científica, no hubo diferencias significativas con respecto al género de los afectados por todos los trastornos bucales. La especie canina fue la más afectada y la mayoría de los pacientes fueron desde adultos hasta ancianos. El mestizo y los caniches fueron los más afectados. En cuanto al tipo de alimentos proporcionados, la mayoría eran alimentos comerciales; por otro lado, la mayoría ofrecía comida comercial más comida casera, que puede predisponer y agravar algunas enfermedades bucales. En vista de la metodología recomendada y los datos obtenidos, se puede inferir que las fístulas infraorbitarias, fracturas dentales, fracturas óseas y neoplasias son comúnmente diagnosticadas en animales de compañía, especialmente en perros ancianos y pequeños, que pueden generar daño local y sistémico. Una dieta incorrecta puede predisponer enfermedades bucales; por lo tanto, la divulgación a los tutores sobre el cuidado dental puede mejorar la calidad de vida y la supervivencia de perros y gatos.
**Palabras clave**: Fístula infraorbitaria; Fractura de diente; Fractura oral; Neoplasia oral; Pequeños animales.

# 1. Introduction

Among the various conditions that commonly affect the oral cavity of dogs and cats, highlight infraorbital fistulas, dental and bone fractures, in addition to neoplasms (Dias et al., 2013a, Rocha et al., 2013; Chaves et al., 2020; Perin et al., 2020).

### 1.1 Infraorbital fistula

Infraorbital fistula is commonly diagnosed in dogs and is characterized by a periapical osteolytic lesion, which usually affects the upper fourth premolar tooth, which can cause abscess (Santos et al., 2012; Perin et al., 2020). This dental element, whose function is to assist in the grinding of food, has three roots inserted in the maxillary bone, close to the right and left infraorbital region of the animal. Compromise usually occurs in one of the three roots, and may be unilateral or bilateral (Wiggs & Lobprise, 1997).

Among the factors that cause infraorbital fistula include dental fractures and trauma, severe and advanced periodontal diseases, neoplasms in the maxillary region, periapical and iatrogenic injuries, in addition to excessive tooth wear (Gioso, 2003; Dias et al., 2013; Ribeiro, Carvalho & Canuto, 2015; Perin et al., 2020).

In cases of fractures of the upper fourth premolar tooth, the fistula followed by external leakage of secretions occurs due to bacterial migration to the dental apex, caused by the exposure of the dental pulp, forming root abscess (Wiggs & Lobprise, 1997; Leon-Roman & Gioso, 2004; Cohen & Burns, 2006). Dental fractures can be masked by dental calculus, making diagnosis difficult (Gioso, 2003). Dental trauma without fracture can cause hemorrhage in the dental pulp, resulting in sterile pulpitis, with contamination by the phenomenon of anacoresis (bacterial tropism for inflamed sites) and pulp necrosis (Gorrel, 2010).

In severe periodontitis, infraorbital fistula occurs due to the formation of a deep maxillary periodontal pocket towards the roots of the tooth, causing bone lysis between the apex of the alveolus and the nasal cavity or maxillary sinus (Carvalho, Ferro & Martinez, 2019).

The progression of infraorbital fistula is slow, and can extend from months to years (Gioso, 2003). The most evident clinical symptom is an increase in facial volume and cutaneous fistulation in the infraorbital region, draining varying amounts of blood and pus (Santos et al., 2012; Perin et al., 2020).

Intra-oral radiographic examination, in addition to not being an invasive and costly method, is essential to confirm the apical involvement of one or more roots of the upper fourth premolar tooth, being able to show periapical lysis and areas of radiolucency around the apex of the affected root, indicating bone destruction (Gioso, 2003).

The treatment of infraorbital fistula consists of extraction or endodontics, together with antibiotics and anti-inflammatories in the pre and postoperative period (Dias et al., 2013).

## 1.2 Dental fracture

Dental fractures can be caused by injuries diverse as the animal's habit of gnawing hard objects such as natural bones and toys. In addition, they can be caused by dental malocclusion, where maxillary teeth have undue and constant contact with the mandibles, causing multiple wear of the enamel and dentin, with consequent fracture (Gioso, 2003).

Most dental fractures cause exposure of the dental pulp with subsequent hemorrhage and pulpitis that can progress to infraorbital fistula (Camargo, Gioso & Carvalho, 2010). As the condition progresses, pulp necrosis may occur, with consequent decrease in pain due to the mortification of nerve bundles, which can make the dental fracture go unnoticed. Dental fractures can also be masked by overlapping dental stones (Leon-Roman & Gioso, 2004).

Clinical signs include discontinuity of the dental element, dental darkening, pulp exposure, increased facial volume and sensitivity, infraorbital fistula, hyporexia, among others (Camargo, Gioso & Carvalho, 2010).

Diagnosis of dental fractures should include patient history, clinical signs, oral inspection and intraoral x-rays (Santos et al., 2012; Carvalho, Ferro & Martinez, 2019) and the therapeutic options available are endodontic or exodontic treatment, depending on the dental root and financial conditions of the tutor (Gioso, 2002).

## 1.3   Maxillary and mandibular fracture

Oral bone fractures, commonly diagnosed in dogs and cats, can occur secondary to malignant and destructive oral neoplasms, which cause considerable bone resorption and discontinuity, representing about 3 to 6% of all oral fractures in these species  (Do Prado et al., 2011; Rocha et al., 2013). Other common causes of mandibular and maxillary fractures are various injuries (falls, run over, fights, among others) and severe periodontal disease, which causes significant bone resorption followed by pathological fracture, especially in senile patients (Johnson & Hulse, 2008).

According to Harasen (2008) and Johnson and Hulse (2008), oral fractures can be single or multiple, open or closed, and mandibular fractures are more common than jaws. In cats, mandibular symphysis disjunction is the most common condition, representing approximately 73% of mandibular fractures in this species (Do Prado et al., 2011).

Clinical signs include oral bleeding and tenderness, epistaxis, dental malocclusion, hyporexia, facial swelling and bone discontinuity(Johnson & Hulse, 2008; Rocha et al., 2013).

Together with the oral physical examination, intra and extra-oral radiographs allow to define the presence of bone discontinuity, bone resorption and tooth viability to facilitate surgical stabilization. Furthermore, x-rays can identify impairments in the temporomandibular joint, which may occur concurrently with oral fractures (Harasen, 2008; Pereira, Moraes & Bonato, 2008; Carvalho, Ferro & Martinez, 2019).

The main objective of treatment is to resume dental occlusion as close to natural, keeping dental elements viable, not damaging adjacent soft tissues and returning bone function as quickly as possible (Harasen, 2008; Do Prado et al., 2011).

### 1.4 Oral neoplasia

Oral neoplasms are classified as benign or malignant, according to the different biochemical, morphological and functional characteristics. They are considered the major cause of death or euthanasia in animals, with the oral cavity representing the fourth place of occurrence and, generally, they are noticed by tutors when the new formation is already in an advanced stage (Dias et al., 2013a; Chaves et al., 2020).

The etiology of oral neoplasms is not fully established (Morris; Dobson, 2002), however, environmental (exogenous) and internal (endogenous) factors are believed. Environmental ones include ionizing radiation, chemical carcinogens (pesticides, herbicides, insecticides), sunlight and trauma; interns, on the other hand, include chronic infections, viruses, metallic implants, hormonal and genetic factors. There is no information available in the literature regarding the effects of animals' eating habits on the incidence of this condition (Viswanath et al., 2000).

Among oral neoplasms, melanoma is the malignant neoplasm most frequently diagnosed in dogs, followed by squamous cell carcinoma and fibrosarcoma; on the other hand, as for the benign, epulides stand out. In cats, squamous cell carcinoma is the most commonly diagnosed (Dias et al., 2013).

Some clinical signs can be easily detected, such as an increase in oral volume together with changes in the facial contour, local bleeding, pain when opening the mouth, paws in the mouth, halitosis, severe drooling, dysphagia, tooth loss, exophthalmos, cough, dyspnoea, nasal discharge, chronic rhinitis, anorexia, weight loss and pathological fracture due to severe bone involvement (Chaves et al., 2020).

For the definitive diagnosis, cytological and histopathological evaluation is essential, in addition to clinical findings and/or intraoral radiographs. Surgical treatment for excision of the tumor mass aims at eliminating the affected tissue without loss of function and, when possible, the aesthetic preservation of the oral cavity (Gorrel, 2010).

In view of the high incidence of oral diseases in small animals and their various local and systemic consequences, the purpose of this study was to carry out a retrospective study of cases seen in the surgical sector of Veterinary Dentistry for Small Animals at the University of Franca, emphasizing those of fistulas infraorbital diseases, dental and bone fractures and neoplasms and, nonetheless, relate them to the review and possible predisposing factors.

## 2. Methodology

Were evaluated 385 dental records referring to the specialized surgical care of the Veterinary Dentistry of Small Animals sector of the Veterinary Hospital of the University of Franca (UNIFRAN - SP), in the period from January 25, 2007 to October 2, 2017, with the purpose of highlighting the diagnosed cases of infraorbital fistulas, dental fractures, maxillary and mandible fractures and neoplasms, relating them with the patients' review (sex, species, age and race) and, nevertheless, possible predisposing factors such as the type of food provided.

The methodology was based on laboratory research, of a quantitative nature (Pereira et al., 2018) and the data were expressed in percentages.

## 3. Results

Of the 385 dental records analyzed, 30 cases were diagnosed with infraorbital fistulas (7.8%), 25 with dental fractures (6.5%), 26 with bone fractures (6.8%) and 28 with neoplasms (7.3%).

### 3.1 Infraorbital fistula

Of the 30 cases of infraorbital fistulas, 16 (53.3%) were male patients and 14 (46.7%) female. As for the species, it was observed that 30 (100%) were canine and no feline (0%). Regarding the age of the affected, 1 animal (3.3%) was 0 to 2 years old, 5 (16.7%) from 3 to 7 years old, 21 (70%) from 8 to 18 years old and 3 animals (10 %) did not have the age informed in the attendance form. Regarding the breed, one Basset Hound (3.3%), one Beagle (3.3%), a Chuiahua (3.3%), two Cockers (6.7%), one Fila Brasileiro (3.3 %), one Fox (3.3%), five Pinschers (16.7%), three Poodles (10%), twelve mixed breed dogs (40%) and three Teckels (10%). As for the type of food provided to those affected by infraorbital fistula, it was noted that for 13 animals (43.4%) it was only commercial food, 15 (50%) commercial food plus homemade food, one (3.3%) only homemade food and one (3.3%) commercial food associated with snacks.

### 3.2 Dental fracture

Of the 25 cases diagnosed with dental fractures, 12 animals were male (48%) and 13 female (52%). As for the species, 22 (88%) were canines and three (12%) felines. Regarding the age of the affected, three animals (12%) were 0 to 2 years old, 12 (48%) were 3 to 7 years old and ten (40%) were 8 to 18 years old. In line with the breed, two Boxers (8.0%), one Lhasa Apso (4.0%), two Pinscher (8.0%), one Pit Bull (4.0%), five Poodles (20.0 %), four Shitzu (16.0%), two Siamese (8.0%), five mixed breed dogs (20.0%), two Teckels (8.0%) and one Yorkshire (4.0%). As for the type of food provided to those affected by dental fractures, it was observed that for 14 animals (56.0%) it was only commercial food and for 11 (44.0%) commercial food with homemade food.

### 3.3 Maxillary and mandibular fracture

Of the 26 cases of bone fractures, 16 animals (61.54%) were male and 10 (38.46%) were female. As for the species, 23 were canines (88.46%) and three cats (11.54%). Regarding the age of those affected, eight (30.8%) were 0 to 2 years old, nine (34.6%) were 3 to 7 years old, four (15.40%) were 8 to 18 years old and five (19.20%) did not have their age informed in the attendance form. Regarding the breed, one Basset Hound (3.8%), one Blue Heeler (3.8%), two Pinschers (7.8%), a Pit Bull (3.8%), five Poodles (19, 2%), one Shitzu (3.8%), two Siamese (7.8%), ten mixed breed dogs (38.4%) and three Teckels (11.6%). As for the type of food provided to those affected by bone fractures, it was noted that for 12 animals (46.2%) it was only commercial food, for 12 (46.2%) commercial food plus homemade food and for 2 animals (7,6%) homemade food only.

### 3.4 Oral neoplasia

Of the 28 cases diagnosed with oral neoplasms, 16 animals (57.14%) were male and 12 (42.86%) were female. As for the species, 28 were canine (100%) and no feline (0%). Regarding the age of the affected animals, three (10.8%) were 0 to 2 years old, four (14.2%) were 3 to 7 years old, 19 (67.9%) were 8 to 18 years old and two (7.14%) did not have the age informed in the attendance form. As for the breed, one Cocker (3.6%), two Labradors (7.1%), one Maltese (3.6%), one German Shepherd (3.6%), five Poodles (17.9%), two Rottweiler (7.1%), 14 mixed breed dogs (49.9%), one Teckel (3.6%) and one Yorkshire (3.6%). As for the type of food provided to those affected by neoplasms, it was observed that for 14 animals (50%) it was only commercial feed and for 14 animals (50%) commercial feed plus homemade food.

## 4. Discussion

Oral disorders are commonly diagnosed in pets and for this reason, early diagnosis and treatment directly reflect on the quality of life of those affected and, in this sense, the importance of the dental specialty is emphasized, especially for dogs and cats (Roza, 2004; Colmery, 2005).

Regarding the oral conditions investigated in the current study, there were no significant differences in the percentages regarding the sex of the affected animals, corroborating with the descriptions of Gioso (2003) that, to date, there is no scientific evidence regarding this type of predisposition.

As for the animal species, dogs were considerably more affected by infraorbital fistula compared to cats, coinciding with the reports by Dias et al. (2013), that this condition is not commonly diagnosed in the feline species, with few reports described in the scientific literature; yet, when present, the canine tooth is the most affected and not the upper fourth premolar, and usually there is an increase in volume and involvement in the region of the conjunctival sac resulting from the dental fistula. In this context, Ribeiro, Scherer and Sanavria (2011) reported a case in a cat with involvement of the upper second premolar tooth.

Regarding dental fractures, there was also predominance in the canine species, which can, in part, be attributed to the food selectivity of cats, according to reports by Gioso (2003).

It is believed that the greater involvement of dogs in relation to oral fractures is related to the high incidence of periodontal disease in this species, as according to Niemiec (2008), Abdalla et al. (2009) and Santos, Carlos and Albuquerque (2012), this oral condition affects approximately 85% of dogs, progressively, causing considerable bone resorption, predisposing to the occurrence of maxillary and mandibular fractures (Kortegaard, 2008).

In the present study, dogs were the most affected by oral neoplasms. In general, the nature of most canine animals should be considered, favoring oral manipulation by tutors and, consequently, the detection of abnormalities involving the stomatognathic system (Gioso, 2003); in addition, the greater ease of transport of these animals to a specialized dental care center. Also, according to descriptions by Santos, Carlos and Albuquerque (2012), one must consider the semi-household habit of many cats, which makes it difficult to detect oral clinical symptoms.

Regarding the age of the animals diagnosed with infraorbital fistula, most were between 8 and 18 years old, in accordance with what was exposed by Gioso (2003), Gorrel (2010) and Niemiec (2008), that periodontal disease has a high incidence in seniles, being one of the causes of infraorbital fistula. In this sense, the formation of a deep maxillary periodontal pocket occurs towards the roots of the tooth, causing bone lysis between the apex of the alveolus and the nasal cavity or maxillary sinus (Wiggs & Lobprise, 1997). On the other hand, there was no predominance of involvement in the elderly regarding bone fractures due to bone resorption caused by periodontitis, disagreeing with the findings in the scientific literature (San Román, 1999; Santos et al., 2012).

Still regarding the age of the animals in this retrospective survey, the majority of those affected by dental fractures were young adults, differently from what has been described by some authors that the puppies are predisposed to this type of oral affection because they have the habit of gnawing hard objects (Gioso, 2003; Ferro et al., 2004).

Acording to Morris and Dobson (2002) and Dias et al. (2013), oral neoplasms occur more frequently in animals of medium to advanced age, confirming the findings of the current investigation; although affections in young people are not uncommon.

Followed by the mixed breed animals, the Pinscher and Poodle breed were the most affected by infraorbital fistula, similar to the scientific reports that small and medium-sized dogs are the most affected by periodontal disease (Kyllar & Witter, 2005), which is considered a common cause of infraorbital fistula (Gioso, 2003; Dias et al., 2013; Ribeiro, Carvalho & Canuto, 2015). In this theme, Santos, Carlos and Albuquerque (2012) said that these breeds are the most affected by periodontitis because they are more likely to accumulate plaque and dental calculus, due to the teeth having little bone support, limited inter-dental space, tooth crowding, in addition to malocclusion and dental anomalies, which makes it difficult to remove dirt by natural methods such as moving the lips and tongue, chewing and gnawing objects. Still, Eurides, Gonçalves

and Mazzanti (1996) stated that in mixed breed dogs, the incidence of bacterial plaque is high, especially in animals over the age of six years.

The mixed-breed dogs and Poodles were also the most affected by bone fractures, confirming the aforementioned arguments regarding periodontal disease, which generates bone resorption, predisposing to maxillary and mandibular discontinuities (Do Prado et al., 2011).

Among the canine breeds described by Liptak and Withrow (2007) as predisposed to oral neoplasms, the Poodle and Cocker Spaniel are included, consistent with the findings of this research.

In this study, it was observed that the majority of animals with oral disease were fed commercial food plus homemade food. In this context, homemade food, canned food and snacks due to the pasty consistency, adhere more easily to dental elements, favoring the progression of periodontal disease (Wiggs & Lobprise, 1997; San Román, 1999; Gorrel, 2010), which predisposes the occurrence of infraorbital fistulas (Gioso, 2003; Dias et al., 2013; Ribeiro, Carvalho & Canuto, 2015) e fraturas ósseas (Johnson & Hulse, 2008). Thus, the importance of offering only commercial feed stands out, which allows mechanical and abrasive cleaning of the teeth, due to the texture of the pellets (Capík, 2010). In addition, commercial rations induce higher frequency of chewing, stimulating salivary flow, increasing the production of antimicrobial agents that assist in cleaning the oral cavity (Wiggs & Lobprise, 1997; Logan, 2006; Gorrel, 2010), in addition to being composed of polyphosphates (hexametaphosphate and tripolyphosphates) that act as chelators of salivary calcium, preventing plaque mineralization in odontoliths (Santos, Carlos & Albuquerque, 2012).

According to Viswanath et al. (2000), there is no information available in the literature regarding the effects of animals' eating habits on the incidence of oral neoplasms. Regardless of gender, species, age, race and type of food provided, it was noted that the number of cases diagnosed with oral neoplasms was similar to that of bone fractures; thus, it must be considered that some tumors have a destructive character causing bone resorption and predisposition to fragile bone tissue (Liptak & Withrow, 2007), being worsened concomitantly by periodontal disease (San Román, 1999). This relationship in the number of cases was also noted for dental fractures and infraorbital fistulas (Dias et al., 2013; Ribeiro, Carvalho & Canuto, 2015) confirming the possible progression of oral disorders, which disadvantages the prognosis, if not diagnosed and treated precociously.

In view of the high incidence of oral diseases in small animals, it is essential to disseminate and raise awareness among tutors regarding prevention methods, early diagnosis and treatment, aiming to improve the quality of life and survival of those affected, regardless of sex, species, age, race and type of food available (Roza, 2004; Do Prado et al., 2011). Thus, among oral disease prevention methods, regular toothbrushing stands out, which in addition to removing plaque, favors constant inspection of the oral cavity by tutors (Watanabe et al., 2015).

In this sense, to be efficient tooth brushing should be performed at least three times a week (Brown, Mcgenity & Chem, 2005). Veterinary dentifrices, in addition to not having soaps like humans, present an attractive flavor to animals (meat), in addition to products in its composition (zinc, chlorhexidine, sodium hexametaphosphate and enzymes (thiocyanate, peroxidase, glycooxidase) that inhibit the formation and adhesion of plaque (Domingues et al., 1999; Brown, Mcgenity & Chem, 2005).

Regardless of the animal species, the failure to correctly fill out the attendance sheets regarding the review, history and diagnosis of patients, becomes a limiting factor in the scientific dissemination of data, hampering investigations and studies of the conditions that affect animals.

## 5. Conclusion

Based on the applied methodology and the results obtained, it is admitted that the occurrence of oral conditions, including infraorbital fistulas, dental fractures, bone fractures and neoplasms are commonly diagnosed in small animals, especially in senile and small breed canines, causing local and systemic commitments. However, the type of food provided to pets can predispose and aggravate some of these oral diseases. In this way, the disclosure and awareness of tutors regarding methods of prevention, diagnosis and early treatment become essential in the quality of life and survival of dogs and cats.

## Acknowledgments

## References

Abdalla, S., Silva, M. F. A., Pereira, A. R., Azevedo, F. D., Fernandes, J. I., Minono, G. P., & Botelho, R. P. (2009). Quantificação computadorizada dos índices de placa e cálculo dentais da imagem digital da superfície vestibular dos dentes de cães. *Pesquisa Veterinária Brasileira*, 29(8), 666-672.

Brown, W. Y., Mcgenity, P. B. A., & Chem, C. (2005). Effective periodontal disease control using gental hygiene chews. *Journal of Veterinary Dentistry*, 22(1), 16-19.

Camargo, S. L. S., Gioso, M. A., & Carvalho, V. G. G. (2010). Dor de dente: os animais, nossos pacientes, sentem ou não. *Revista Científica de Medicina Veterinária Pequenos Animais e Animais de Estimação*, 8(24), 37-43.

Capík, I. (2010). Periodontal health vs. various preventive means in toy dog breeds. *Acta Veterinária Brunensis*, 79(4), 637-645.

Carvalho, V. G. G., Ferro, D. G., & Martinez, L. A. V. (2019). Importância da radiografia intra-oral em tratamentos periodontais de cães e gatos: relato de três casos. *Revista Brasileira de Ciência Veterinária*, 26(3), 69-74.

Chaves, L. D. C. S., Silva, F. L., Silva, C. R. A., Souza, M. C., Oliveira, J. R. A., Silva, L. S., & Santos, L.P. (2020). *Pubvet - Medicina Veterinária e Zootecnia*, 14(1), 1-6.

Cohen, S., & Burns, R. C. (2006). *Pathway of the Pulp*. (7a ed.), Saint Louis: Mosby, 425- 446.

Colmery, B. (2005). The gold standard of veterinary oral health care. *The Veterinary Clinics of North America: Small Animal Practice*, 35(4), 781-787.

Dias, F. G. G., Dias, L. G. G., Pereira, L. F., Cabrini, T. M., & Rocha, J. R. (2013a). Neoplasias orais nos animais de companhia - revisão de literatura. *Revista Científica Eletrônica de Medicina Veterinária*, 11(1), 1 - 9.

Dias, F. G. G., Pereira, L. F., Mattos Junior, E., Rocha, J. R., & Dias, L. G. G. (2013). Fístula infraorbitária na espécie canina. *Enciclopédia Biosfera*, 9(17), 1453-1465.

Do Prado, T. D., Silva, L. A. F., Mariano, K. P., Rodrigues, L. F., Meneses, T. D., & Roza, M. R. (2011). Técnicas de imobilização de mandíbulas de cães e gatos: revisão de literatura. *Medvep - Revista Científica de Medicina Veterinária*, 9(31), 600-605.

Eurides, D., Gonçalves, G. F., & Mazzanti, A. (1996). Placa bacteriana dentária em cães. *Ciência Rural*, 26(3), 419-422.

Ferro, D. G., Lopes, F. M., Venturini, M. A. F. A., Correa, H. L., & Gioso, M. A. (2004). Prevalência de neoplasias da cavidade oral de cães atendidos no Centro Odontológico Veterinário Odontovet® entre 1994 e 2003. *Arquivos de Ciências Veterinárias e Zoologia da UNIPAR*, 7(2), 123-128.

Gioso, M. A. (2003). *Odontologia para o Clínico de Pequenos Animais*. (5a. ed.), São Paulo: iEditora, 202p.

Gioso, M. A. (2002). Tratamento de canal convencional : opção à extração de dentes afetados endodonticamente - revisão. *Clínica Veterinária*, 40(1), 32-44.

Gorrel, C. (2010). *Odontologia em Pequenos Animais*. Elsevier, p. 35-44.

Harasen, G. (2008). Maxillary and mandibular fractures. *The Canadian Veterinary Journal*, 49(8), 819-820.

Johnson, A. L., & Hulse, D. A. (2008). Tratamento de fraturas específicas. *Cirurgia de Pequenos Animais*, 2(1), 900-1016.

Kyllar, M., & Witter, K. (2005). Prevalence of dental disorders in pet dogs. *Veterinarni Medicina*, 50(2), 496-505.

Kortegaard, H. E., Eriksen, T., & Baelum, V. (2008). Periodontal disease in research beagle dogs - an epidemiological study. *Journal of Small Animal Practice*, 49(12), 610-616.

Leon-Roman, M. A., & Gioso, M. A. (2004). Endodontia - anatomia, fisiopatologia e terapia para afecções dos tecidos internos do dente. *Revista Científica de Medicina Veterinária – Pequenos Animais e Animais de Estimação*, 2(7), 195-203.

Liptak, J. M., & Withrow, S. J. (2007). Cancer of the gastrointestinal tract - Oral Tumors. In: Vail, D. M., & Withrow, S. J. *Small Animal - Clinical Oncology*. (4a. ed.) Canada: Saunders Elsevier, p. 455-473.

Logan, E. I. (2006). Dietary influences on periodontal health in dogs and cats. *Veterinary Clinics Small Animal Practice*, 36(1), 1385-1401.

Morris, J., & Dobson, J. (2002). *Oncologia em Pequenos Animales*. República Argentina: Inter-Médica Editorial.

Niemiec, B. A. (2008). Periodontal Therapy. *Topics in Companion Animal Medicine*, 23(2), 81-90.

Pereira, A. S., Shitsuka, D. M., Parreira, F. J., & Shitsuka, R. (2018). *Metodologia da Pesquisa Científica*. Universidade Federal de Santa Maria. UFSM. https://repositorio.ufsm.br/bitstream/handle/1/15824/Lic_Computacao_Metodologia Pesquisa-Cientifica.pdf?sequence=1.

Pereira, M. L., Moraes, M. A. V., & Bonato, C. A. S. (2008). Fraturas patológicas em mandíbula por periodontite severa: relato de caso. *Ensaios e Ciência: Ciências Biológicas, Agrárias e da Saúde*, 12(1), 171-179.

Perin, R. S., De Vidis, N. Y., Azambuja, M. B., Antunes Junior, H. J. V., & Souza, J. A. (2020). Fístula dentária infraorbitária em cão. *Biotemas*, 24(2), 143-145.

Ribeiro, C. M., Scherer, P. O., & Sanavria, A. (2011). Abscesso periapical no segundo pré-molar superior esquerdo associado à fístula na região frontal em um felino (*Felis catus*) da raça Persa – relato de caso. *Revista Brasileira de Medicina Veterinária*, 33(3), 155-158.

Ribeiro, I. M. M., Carvalho, C. J. S., & Canuto, J. (2015). Fístula infraorbitária em cadela : relato de caso. *Medicina Veterinária e Zootecnia*, 9(4), 158-194.

Rocha, A. G., Rosa-Ballaben, N. M., Moraes, P. C., Padilha Filho, J. G., & Minto, B.W. (2013). Utilização do bloqueio labial com botões na correção das fraturas mandibulares em gatos. *ARS Veterinaria*, 29(2), 83-87.

Roza, M. R. (2004). *Odontologia em Pequenos Animais*. L. F. Livros.

San Román, F. (1999). *Atlas de Odontologia de Pequenos Animais*. Manole.

Santos, N. S., Carlos, R. S. A., & Albuquerque, G. R. (2012). Doença periodontal em cães e gatos - revisão de literatura. *Revista Científica de Medicina Veterinária - Pequenos Animais e Animais de Estimação*, 10(32), 1-12.

Viswanath, S., Vijayasarathi, S. K., Gowda, R. N. S., & Satyanarayana, M. L. (2000). Epidemiology of canine oral tumours. *Indian Veterinary Journal*, 1(77), 107-109.

Watanabe, K., Hayashi, K., Kijima, S., Nonaka, C., & Yamazoe, K. (2015). Tooth brushing inhibits oral bacteria in dogs. *The Journal of Veterinary Medical Science*, 77(10), 1323-1325.

Wiggs, R. B., & Lobprise, H. B. (1997). *Veterinary Dentistry, Principles and Pratice*. Lippncott- Raven.