P.L. Mahato et al. (2020) Int. J. Appl. Sci. Biotechnol. Vol 8(1): 96-101
DOI: 10.3126/ijasbt.v8i1. 27770

ISSN (Online): 2091-2609
DOI Prefix: 10.3126/ijasbt

International Journal of Applied Sciences and Biotechnology (IJASBT)

Research Article

Demography, Health Status and Public Attitude of Owned Dog in Bharatpur, Nepal

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Article Information

Received: 15 February 2020
Revised version received: 15 March 2020
Accepted: 18 March 2020
Published: 29 March 2020

Cite this article as:
P.L. Mahato *et al*. (2020) Int. J. Appl. Sci. Biotechnol. Vol 8(1): 96-101. DOI: 10.3126/ijasbt.v8i1.27770

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Peer reviewed under authority of IJASBT

Abstract

Dog play an important role as companion and guard animal. This study was carried out at Bharatpur Metropolitan City, Chitwan where 95 dogs owned families who owned 119 dogs were purposively surveyed to collect baseline data on owned dog demographics, assess knowledge, attitudes and practices of dog owners concerning dogs. Median age of population was found to be 2.5 years and range from 1 month to 12 year. Respondents showed no any specific preference for keeping dogs i.e. 39.5% for male, 23.5% for female and while 37% does not concern about the sex and most animals were kept for companionship (52.9%). Of those surveyed mixed dogs, of no definable cross, were most common, followed by Japanese Spitz (23.5%) and German shepherd (11.8%). Results show that 92.1% of respondent have knowledge on vaccination schedule while 94% of dog were vaccinated and 82.4% dog were routinely de-wormed. Study findings revealed that majority owner reported the dogs were not facing any major problem (84.9%) while some are facing ecto-parasite problem (7.5 %) followed by dermatological problem (2.5%). Among the total population only in 15.1% neutering was done. Thus, based on the findings of present study, it is concluded that focus should be given to animal birth control program (ABC) while developing health management strategies. Meanwhile, further study covering wider geography and considering the major risk factors is recommended.

Keywords: Animal Birth Control (ABC); Disease; Dog and Vaccination Schedule

Introduction

Dog, nowadays play very important role in our life. They have become our family member and are also man's best and the oldest friend. Although historians agree that dogs were the first domesticated animal, there is debate on how long ago and where the friendship began. It is also believed that, the dog were first domesticated 12000 years ago from Natufian of Israel (Davis & Valla, 1978). In middle ages, the dogs and the horse were very important for travelling and hunting. The cave picture of wolf and man sitting around the fire, indicate the early association of human being and the animals (Gammonley & Yates, 1991). Dog play an important role as companion and guard animal. The dog and the wolf both have good cooperation with humans, both of them have good tolerance and social skills, making them eligible to become friend, but only differentiating factor is that, the dog wait for human response while wolf

interact earlier than the human during the interaction. The dog follow and wolf lead, which made dog, humans oldest friend (Range *et al*., 2019). A study on visually impaired people, shows that the guide dogs has benefits like increased confidence, independence, good companionship and increased & changed social interaction (Whitmarsh, 2005). Peoples also accept that, those who interact with their pets or animals have improved physical, psychological and social health experiences and also provide specific benefit to special group in the society (Brodie & Biley, 1999). In addition, they help in reducing the stress and increase relaxation, reduce the chances of cardiac problems, reduces hypertension problems, reduce loneliness. In another aspect, they bring social interaction and help to build social harmony in the community in general and in some special groups like among children or among the disabilities.

Despite lot of benefits, the pet dogs have some disadvantages also, likes they transfer diseases to human, they may bite; their feces in the street are also a problem. Dogs are major reservoir of disease and they transfer many bacterial and viral diseases to human through their saliva, feces, urine and even by their touch (Ghasemzadeh & Namazi, 2015). In Nepal, there is large population of stray dog, which have more potential to transmit zoonotic diseases, not only to the humans but also to some other animals. Among various causes leaving the pet in street is one of important cause that has contribution in stray dog population (Carding, 1969). Demography of the dog is the basic thing that provides the information about the dog's breed, their gender, which can help us in controlling the dog population in certain locality. The dog has therapeutic and prophylactic value in human life (Wells, 2007), so we must know the health status of the pet we had. The knowledge of health status helps to control zoonotic disease; additionally, they provide status of the animal welfare. Knowing the attitude of dog owner, animal welfare can be improved and animal rights can be ensured.

Materials and Methods

The survey was carried in the Bharatpur metropolitan city, located in Chitwan district of Nepal. The survey sites were marked by a mobile app named map marker, which mark the site in the Google map. The houses, which have kept the pet, is marked in the map. Each marker was coded with some symbol, which represents the number of dogs surveyed on the dog and name of the data collectors. The survey was carried from January 5 to march 3rd of 2019. The area was selected purposely, and data was collected by face-to-face interview using pre-tested, well-designed questionnaire. The respondents were responsible and between the age of 20-50 years old. In every household, the owner was interviewed along with the pet animal to ensure they had the dog. Purposely selected area was taken, and we asked every houses in that area, for the presence of the dog pet with them. The owner knows, which of their neighbor had pet dog, so we asked them about the next nearest pet owner. Ninety-five household was surveyed who owned 119 dogs of different breeds for different purposes. In the same house, those who mostly take care of the dog was selected for the interview. The respondent was interviewed irrespective of the gender.

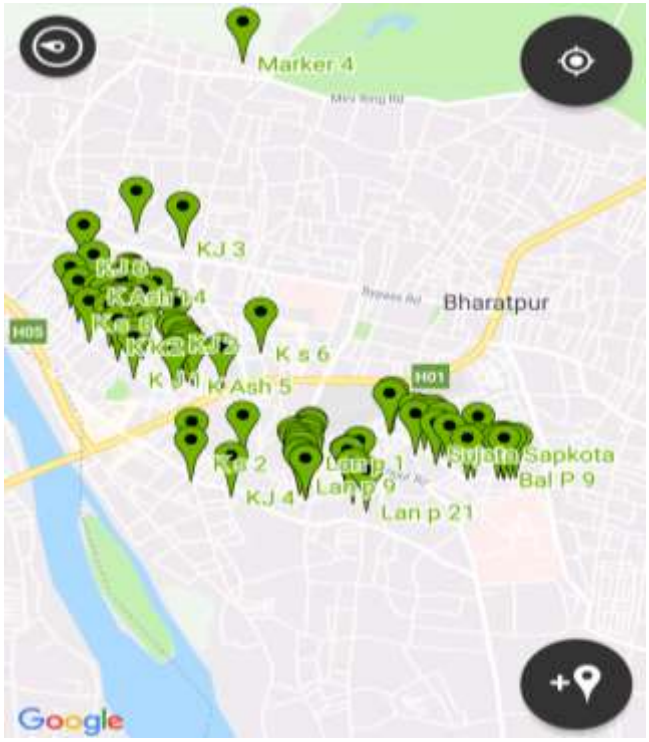

Fig. 1: Map marker and marked places of the data collection

Some dogs were free to roam around and claimed by more than one household or refused by all of them. Such dogs stay in more than one house in different period. Such dogs have very high chances of being stray dog after few years. We managed to count them one, and mentioned in those household who has the dog at the time of our survey. The dog of an age of 0-6 month was categorized to "puppy", from 7-36 month was categorized to "adolescence and adulthood" and older was kept in "senior" category. The data collection was done in the daytime from 10AM to 6 PM. The survey completed in 3 month and the collected data was analyzed in SPSS Var. 16 after entry in the MS Excel 2016. Surveyor identified the breed of dogs themselves as all the surveyor were veterinary students and had capacity to distinguish breed by their external characters. However, most of respondent has kept the unidentified mongrel or mix breed. About the zoonosis, we simply asked about the disease, if they do not know the name of the disease, we explained by telling them the symptoms of the diseases.

Results

Ninety-five household who owned 119 dogs was surveyed, in Bharatpur Metropolitan City, Chitwan. 62.2% of household keep single pet dog, 17.6% of them kept two while only 3.4% keep three dogs in the same roof. 52.9% of household had pet for companionship, 26.9% had for protection and only 20.2% for both the purpose (Fig. 2). Among surveyed pet dog males were 50.4%, while females were 49.6% in population, maintaining sex ration of 1:1. Only 15.1% of them were neutered, however some were smaller to neuter. The age of dog varies from 1 month to 144 month (12years). Mean age observed was 38.57 months with median age of 30 months. The number of dogs found was largest in the group of 1 month to 11 months (21.01%), it was followed by the age group 12-23 months (Fig. 3). Most of the pet dog (82.4) did not attack anyone and frequency of dogs attacking once and twice is highest while number of attacks for some may reach up to 25 times in its lifetime (Fig. 4). Among 119 dogs, 72 (60.5%) had their own house constructed outside or inside, and remaining did not. Those dogs, without their own home, may live outside the house or with the owner, depending on the purpose of keeping of the pet. In addition, those who had made separate housing for the pet, they also had separate bed for the dogs. Most of (78.2%) dogs get only homemade food, only 7.6% of them get commercial food but 14.3% dog get both type of food to eat. Most common color of pet dog was white (35.3%) followed by black (25.2%). Of those surveyed mixed dogs, of no definable cross, were most common, followed by Japanese Spitz (23.5%) and German shepherd (11.8%). Other breeds were cross of Japanese Spitz, German shepherd cross, Golden Retriever, Pomeranian, Pug, Beagle, Labrador, Labrador cross, Cocker spaniel, Dalmatian, Coolie, Doberman, Boxer, and Alps (Fig. 5).

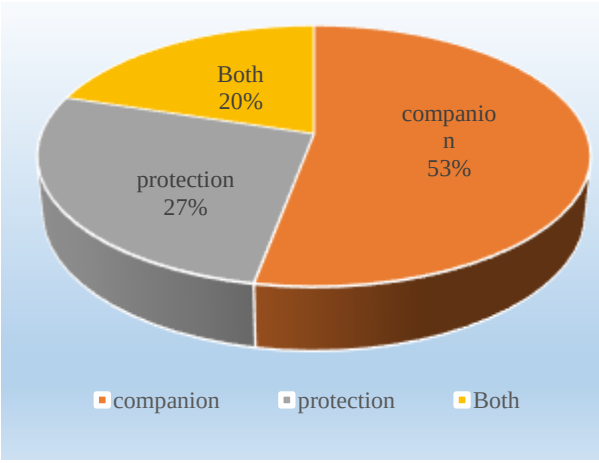

Fig. 2: Purpose of keeping their pet

Golden retriever is of 3.4 percentages while other breeds are less than 2% in frequency. Respondents showed no any specific preference for keeping dogs i.e. 39.5% for male, 23.5% for female and while 37% does not concern about the sex. The finding shows that the number of sprayed, castrated pet dog is very small (15.1%) in population. In the study, the total male was 50.42%, among them only 5.02% were castrated, and female were 49.58%, with only 10.08% of spayed (Fig. 6). Study findings revealed that majority owner reported the dogs were not facing any major problem (84.9%) while some are facing ecto-parasite problem (7.5 %) followed by dermatological problem (2.5%), endo-parasitic problem (2.4%) and viral disease (1.6%) (Fig. 7).

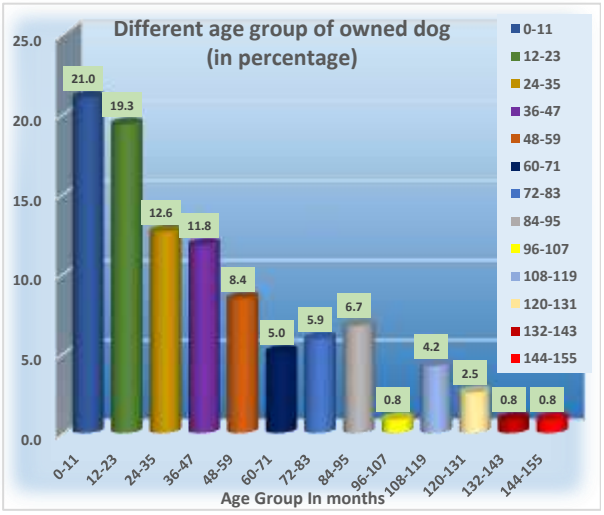

Fig. 3: Age wise distribution of owned dog in Bharatpur

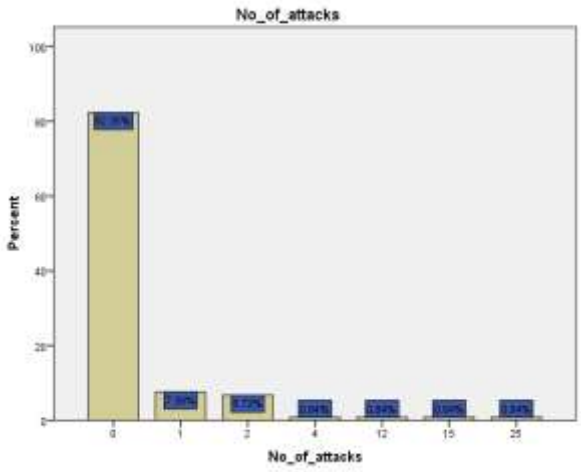

Fig. 4: Bar diagram showing no of attack and the percentage of dog making the attack

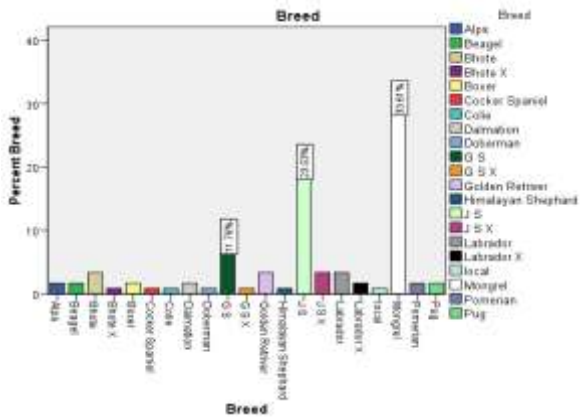

Fig. 5: Different breed of dogs kept as pet in bharatpur metropolitan city

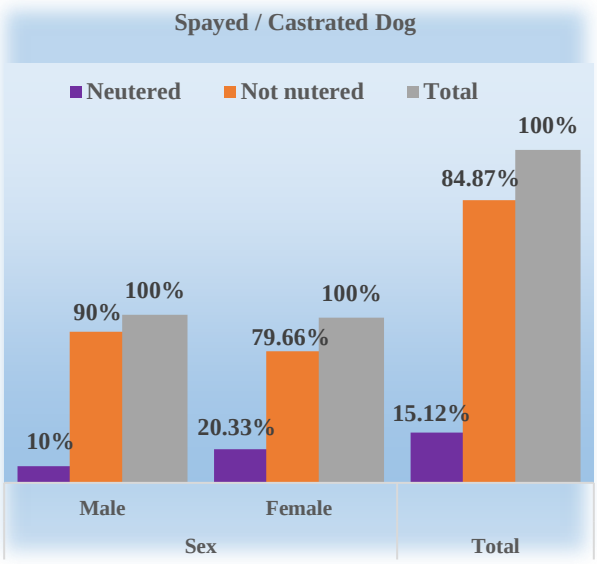

Fig. 6: spayed and castrated dog with their total population

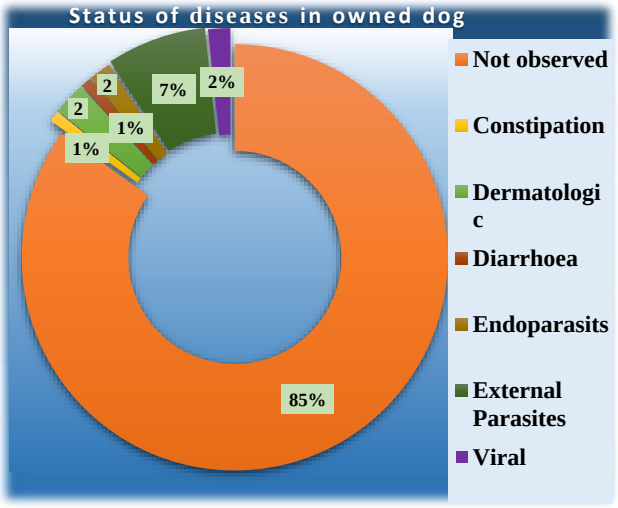

Fig.7: Pie chart showing prevalence of diseases in owned dog.

Results shows that 92.1% of respondent have knowledge on vaccination schedule y*et al*most all (94%) of dogs were vaccinated in addition, 82.4% dog were routinely de-wormed. Among all respondent 53.8% of them have knowledge about the rabies as a zoonotic disease in dog, however only some (8.4%) of them have knowledge of zoonotic disease other than rabies. Most of the pet (93.3%) were untrained while only few (6.7%) were trained pet dog.

Similarly, we can discover that, 12.5% of household were new (less than a year) to adopt dog as pet, while most of (87.5%) were adopting from long ago (more than a year). The buying cost of the dog, was ranging from 0 to 50000, yearly expenditure for the pet was found to be 0-144000 NPR similarly expenditure for the treatment ranges from 0 to 100000 NPR (Table 1).

Discussion

The survey was done to find the demography, health status and the public attitude of people in the Bharatpur metropolitan city of Nepal towards the owned dog. The finding shows that there wasn't major disease in pet (84.9), while ecto-parasite was 7.5%, and 2.5% endo-parasite infestation while the study on the stray dog in Bharatpur, shows that the ecto-parasite is 40%, and that of endo-parasite was 70% (Massei *et al*., 2017).

According to the *U.S. Pet Ownership & Demographics Sourcebook 2012,* the Americans spend mean $378 per year on their pet dogs, the cost is quiet similar to the finding which reflect that, Nepalese spend mean of $323 for their pet per year. The expenditure for the pet dog of Nepal has not been estimated before.

Nature has provided the biting capacity to every dog, which may cause injury (Bandow, 1996), the pet dog biting cases are not common in Bharatpur, but the range of biting frequency is 0-25. The number of dog biting once or twice is higher, than that of biting more than twice in their lifetime. It is thought that the pet dog would bite less than that of stray dog, but stray dog and pet dog biting rate remain equal (Agarvval & Reddaiah, 2003). A study in Socially Acceptable Behavior (SAB)-Test in dog shows that the dog aggression is not related to the stress hormone (cortisol). Desensitization to aggression observed more in day time than that of morning (van der Borg *et al*., 2010).

The number of people affected in Nepal by the hydrophobia and rabies due to dog bite in between 1992-1996 was 181 (Gongal, 2007), however they did not mentioned that they were bitten by pet or stray. It is reported that the rabies kills 100 livestock and 10-100 humans every year, and it is also described that there are 1000 livestock and 10000 humans who are receiving the post exposure vaccine of rabies (Devleesschauwer *et al*., 2016). Westgarth, Brooke, & Christley (2018) has concluded that, the data are available in hospitals are not enough to show the biting rate of dog.

Table 1: Descriptive data for the yearly expenditure, treatment expenditure and buying cost for the pet

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Cost	118	50000	0	50000	5271.19	9984.095
Expenditure of treatment	119	100000	0	100000	3364.71	12830.172
Monthly expenditure	119	12000	0	12000	2962.18	1997.434
Yearly expenditure	119	144000	0	144000	35546.22	23969.213

NOTE: Standard deviation is greater than the average, because the values are spread out over a wider range

The real data of dog biting cases are really larger than our estimation form the hospital records moreover, all biting do not require the hospitalization (Westgarth *et al*., 2018). Besides the vaccination against the canine rabies was found to reduce dramatically the number of dog human injury cases (Cleaveland, Kaare, Knobel, & Laurenson, 2006). Dog bite is observed higher in male than female and more in leg than other part of the body (Agarvval & Reddaiah, 2003).

A finding in the dog of North Carolina, USA shows that, inherited disorder is more in more popular breed of dog. The finding also clarifies that the popularity of dog is not determined by their breed characters like, aggressiveness, trainability, fearfulness, breed health, longevity and behavior quality (Ghirlanda *et al*., 2013). American Kennel Club releases top 10 most popular dog breed, and till now, the list is shown here is from top one to top ten dogs are as follows; Labrador Retriever, German shepherd, Golden Retriever, English Bulldog, Beagle, French Bulldog, Poodle, Rottweiler, Yorkshire Terrier and at last the boxer (AKC Ranks This year's Most popular Dog Breeds, 2018). Nevertheless, in Bharatpur, Nepal the most common dog breed kept as pet is unidentified cross breed (mongrel) (33.61%), second most popular breed is Japanese Spitz and the third one is German shepherd.

The most common disease that a dog can transfer is Toxoplasmosis. The disease mostly do not show signs or remain mild but it may produce congenital disorder to those who are infected in the first trimester of their pregnancy. The dog can also transfer campylobacter, salmonella as bacterial diseases; fungal infection likes ringworm is also transferred. Rabies is a viral disease, with zoonotic importance; however some arthropod born disease (scabies) are less common (Rabinowitz, Gordon, & Odofin, 2007). Same thing is reported in "Human Zoonotic Diseases transmitted by Dog and Cat" (Tan, 1997). In the survey, only 8.4% of people are aware of different disease that can be transferred to human. Though only few has knowledge of different zoonotic disease, 53.8% respondent has knowledge of rabies as a zoonotic threat. Similarly it is known that rabies is common term for most of people of Chitwan (Massei *et al*., 2017).

The survey shows that 52.94% of respondent had pet as companion animal, 26.89% has pet for protection and 20.17% shows the double purpose behind the pet keeping. Unlike, Massei et.al (2017) states that 25% of respondent has pet for the guard, 12.5% of people keep as house pet, 42% don't accept the dog as their own but take care of dog and 17% of dog were rescued from the street and kept as pet.

The study represents that 65.55% of household get their pet from their relatives and only 34.45% had paid for their pet. Beside this Massei et.al (2017) disagree with the finding, which illustrates that 65% of household get their pet from free roaming street dog and only 35% have obtained from relatives and their friends without mentioning any buying of the pet dog.

The most kept pet dog was found to have age below 1 year (21.01%), with mean age of 38.57 month having range of 43 months. The study agrees with the finding of Massie et.al (2017), which shows that the age group of 1-2 year is highest in number. In the survey carried, if we make an age group of 1-2 years it would be highest in number (40.34%).

Most of household (79%) visit to the veterinarian only when there is need to be visited, like when the dog is sick or when the sickness is not prevented from the homeopathy. 12.6% visit regularly once a year to the veterinarian. The role of veterinarian is very important in the life of a pet dog. The owner must take their pet to the veterinarian once a year, in healthy condition for vaccination (Horzinek, 2006).

It important not only for the pet but also very important for the owner and human kind to prevent most of zoonotic disease from spread and even outbreak. In the schedule dog should receive vaccine against rabies, distemper, hepatitis, parvovirus etc. within a year and some of them require booster dose. If owner don't visit even once a year, how can they complete the vaccination (How to Care for your Dog; Veterinary care, n.d.).

Conclusion

Population of dog pet owner is increasing day by day with or without knowing that pet has very important role in the treatment of mental diseases, reducing the stress, increase physical and mental health. Therefore, it is better to know the demography, health status and public attitude of owned dog. Among total pet only 15.1% of dog were nullified and male, female ratio was found to be balanced, that is 1:1. Health status was good, as most of dog owner was not reporting any of health problems in their pet; however, ecto-parasites are mostly affecting the pet. Other than rabies, only few have knowledge of zoonotic disease in dog. Every owner should be aware of all zoonotic disease of the pet dog. Thus, based on the findings of present study, it is concluded that focus should be given to animal birth control program (ABC) and above-mentioned problems while in developing health management strategies. Meanwhile, further study covering wider geography and considering the major risk factors is recommended. Additionally, study should also be done to know the extent of knowledge in pet owner about various pet related zoonotic diseases.

Author's contribution

P.L. Mahato and M. Kandel contributed equally in all stages of research work & manuscript preparation. S. Khanal, D. Subedi, B. K.C. & D. Wilson contributed in data collection. D. Wilson contributed in manuscript preparation; however, S. Khanal, D. Sapkota, B. K.C contributed in revision of

manuscript. Final form of manuscript was approved by all authors.

Conflict of Interest

The authors declare that there is no conflict(s) of interest regarding the publication of this paper.

Acknowledgement

Authors acknowledge to Agriculture and Forestry University Rampur for providing research facility. We are also thankful to all juniors and friends from Agriculture and Forestry University Rampur that helped directly or indirectly during research work and manuscript publication; especially, Aashis Tharu, Subrat Ghimire, Madhav Paudel, Munni Rauat, Dipali Gupta, Rashmi Thakur, Manisha Upadhyaya, Usha Joshi, Anju Sharma Chapagain, Balkrishna Pandey, for their physical and moral support.

References

Agarwal N and Reddaiah VP (2003) Knowledge, attitude and practice following dog bite: a community-based epidemiological study. Health Pop Perspect **26**(4):154-161.

AKC Ranks This year's Most popular Dog Breeds. (2018). AKC Ranks This Year's Most Popular Dog Breeds. Retrieved on June 28, 2019, from https://iheartdogs.com/akc-ranks-this-years-most-popular-dog-breeds/

Anonymous (2009) U.S. Pet Ownership Statistics. Retrieved June 27, 2019, from https://www.avma.org/KB/Resources/Statistics/Pages/Market-research-statistics-US-pet-ownership.aspx

Bandow JH (1996) Will breed-specific legislation reduce dog bites? *The Canadian Veterinary Journal* **37**(8): 478–481. PMC1576444

Brodie SJ & Biley FC (1999) An exploration of the potential benefits of pet-facilitated therapy. *Journal of Clinical Nursing* **8**(4), 329–337. DOI: 10.1046/j.1365-2702.1999.00255.x

Carding AH (1969) The Significance and Dynamics of Stray Dog Populations with Special Reference to the U.K. and Japan. *Journal of Small Animal Practice* **10**(7), 419–446. DOI: 10.1111/j.1748-5827.1969.tb04052.x

Cleaveland S, Kaare M, Knobel D & Laurenson MK (2006) Canine vaccination-Providing broader benefits for disease control. *Veterinary Microbiology* **117**(1): 43–50.DOI: 10.1016/j.vetmic.2006.04.009

Davis JM. & Valla FR (1978) Evidence for domestication of the dog 12,000 years ago in the Natufian of Israel. *Nature* **276**(5688), 608–610. DOI: 10.1038/276608a0

Devleesschauwer B, Aryal A, Sharma BK, Ale A, Declercq A, Depraz S, Gaire TN, Gongal G, Karki S, Pandey BD, Pun SB (2016) Epidemiology, impact and control of rabies in Nepal: a systematic review. *PLoS neglected tropical diseases* **10**(2). DOI: 10.1371/journal.pntd.0004461

Gammonley J & Yates J (1991) Pet Projects: Animal Assisted Therapy in Nursing Homes. *Journal of Gerontological Nursing* **17**(1): 12–15. DOI: 10.3928/0098-9134-19910101-05

Ghasemzadeh I & Namazi SH (2015) Review of bacterial and viral zoonotic infections transmitted by dogs. *Journal of Medicine and Life* **8**(Spec Issue 4): 1–5. PMC5319273

Ghirlanda S, Acerbi A, Herzog H & Serpell JA (2013) Fashion vs. Function in Cultural Evolution: The Case of Dog Breed Popularity *PLoS ONE* **8**(9). DOI: 10.1371/journal.pone.0074770

Gongal GN (2007) Epidemiology of reported human rabies cases in Nepal. *Journal of Institute of Medicine* **20**(3).

Horzinek MC (2006) Vaccine use and disease prevalence in dogs and cats. *Veterinary Microbiology* **117**(1): 2–8. DOI: 10.1016/J.VETMIC.2006.04.002

How to Care for your Dog; Veterinary care. (n.d.). Veterinary Treatment and Medical Care for Dogs | KAT Centre. Retrieved June 29, 2019, from http://www.katcentre.org.np/resources/dogvetcare.html

Massei G, Fooks AR, Horton DL, Callaby R, Sharma K, Dhakal IP & Dahal U (2017) Free-roaming dogs in Nepal: Demographics, health and public knowledge, attitudes and practices. *Zoonoses and public health* **64**(1): 29-40. DOI: 10.1111/zph.12280

Rabinowitz PM, Gordon Z, Odofin L (2007) Pet-related infections. *American family physician* **76**(9):1314-22.

Range F, Marshall-Pescini S, Kratz C & Virányi Z (2019) Wolves lead and dogs follow, but they both cooperate with humans *Scientific reports* **9**(1):1-0. DOI: 10.1038/s41598-019-40468-y

Tan JS (1997) Human zoonotic infections transmitted by dogs and cats. *Archives of Internal Medicine. American Medical Association* **157**(17):1933-1943. DOI: 10.1001/archinte.1997.00440380035003

van der Borg JA, Beerda B, Ooms M, de Souza AS, van Hagen M & Kemp B (2010) Evaluation of behaviour testing for human directed aggression in dogs. *Applied Animal Behaviour Science* **128**(1-4):78-90. DOI: 10.1016/j.applanim.2010.09.016

Wells DL (2007) Domestic dogs and human health: An overview. *British Journal of Health Psychology* **12**(1), 145–156. DOI: 10.1348/135910706X103284

Westgarth C, Brooke M & Christley RM (2018) How many people have been bitten by dogs? A cross-sectional survey of prevalence, incidence and factors associated with dog bites in a UK community. *Journal of Epidemiology and Community Health* **72**(4): 331–336. DOI: 10.1136/jech-2017-209330

Whitmarsh L (2005) The Benefits of Guide Dog Ownership. *Visual Impairment Research* **7**(1): 27–42. DOI: 10.1080/13882350590956439