

Fauna and Vaccination of Pet Dogs In Mansehra Pakistan: Are People At Risk By Their Pet Best Friends

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Abstract: Dogs are domestic companion for centuries. Purpose of this study was to find the domesticated dog fauna, vaccination of pet dogs, and attacks towards owner and strangers in various designated areas of Mansehra city of Khyber Pakhtoonkhwa (KPK) province of Pakistan. One thousand self-reporting forms were distributed randomly in those areas. It was noted that people of selected area were very fond of dog and total 231 dogs belonging to 24 different breeds were found to be present. Routine of vaccination was very poor and just 10 (4.32%) dogs were vaccinated and 221 (95.67%) were not. Total 106 dogs attacked the people out of whom 23 were owners (21.7%) and 83 strangers (78.3%). In which 7 dogs: Pointer (15.09%), Dogo argentine (15.09%), German shepherd (42.45%) was more prone to attack. After this study we can suggest with confidence that people of Mansehra city are dog lovers but population need to be educated about vaccination of their pets, little pamphlets, seminars at schools and colleges will help to improve the condition. We can also get help from newspapers for spreading information to improve the society knowledge. We might need to add some of the common diseases and their care in all level of schools syllabus.

Keywords: Dog population, Breeds, Attacks, Vaccination.

1. Introduction

Dogs (*Canis lupis familiaris*) are descendent of tree climbing carnivores and the dog family canidae began to distinguish into different animals including wolves, coyotes, foxes, jackals, fennecs and jackals [1]. Each time when they were domesticated, resulted in selective breeding from original ancestor herd [2]. Dogs are the animal species which have gone through most domestication procedure and then shows signs of fast physical changes [3]. *Canis lupis familiaris* is the most structurally changeable mammalian species [4]. Although *C. lupis familiaris* is a result

of many domestication events its ancestors belonged to wolf (*C. lupus*) [5]. *C. lupis familiaris* also includes skill to react to human body language, oral instructions [2]. Almost unbelievably it is estimated that there are somewhat between 700 to 800 breeds of *C. lupis familiaris* across the global but many of them are either hardly known outside their own country or are officially not recognized [6].

Although *C. lupis familiaris* and humans are with one and other for centuries, however, the domesticated *C. lupis familiaris* still have many of wild behaviours, which often lead it to attack humans [7]. *C. lupis familiaris* bites occur much in young children [8- 9] and also have high risk of becoming serious injury or death [10]. The location of bite of *C. lupis familiaris* is mostly dependable on age. In younger children, head, face and neck are commonly attacked by dogs [11- 12]. In grown children, most common bites are on hand, feet and legs [13].

Rabies is an infection which makes the *C. lupis familiaris* ill. *C. lupis familiaris* are vaccinated against it in many Eastern and Western countries, but is not controlled up till now. *C. lupis familiaris* are infected by many course such as intracerebral, intraocular, intraneural, intramuscular, subcutaneous, also intravenous immunizations. Rabies also kills other animals like buffaloes which die due to rabid dogs attack and suspected of having rabies [14].

Injection given by intradermal routes, and ingestion of the virus hardly ever induced rabies in *C. lupis familiaris* [15]. Owners are mostly attacked due to control or competition of their pets. Some factors that cause aggressiveness in *C. lupis familiaris* are ownership for first time; failure in obedience training; pampering the *C. lupis familiaris*; not using physical punishment when it is needed; buying *C. lupis familiaris* as a gift, as guard or on desire; irregular supply of food to *C. lupis*

familiaris, or when spent very small time with them [16].

2. Materials and methods

2.1 Study area

The District of Mansehra is in, KPK Pakistan have 3 tehsils and 33 Union Councils, four Union councils, Mansehra City No 1, Mansehra City No 2, Mansehra City No 3, and Mansehra City No 4 makes up the Mansehra city. Mansehra City is headquarter of Mansehra district and is second largest city in province Khyber Pakhtunkhwa of Pakistan having approximately 0.2million population.

2.2. Sample technique and collection

A four month survey from September 2013 to December 2013 was conducted in four divisions of Mansehra city of KPK, Pakistan. Twelve areas of Mansehra city 1, six of Mansehra city 2, six of Mansehra city 3 and eight areas of Mansehra city 4 respectively were taken with the help of District council office Mansehra (Local Government Rural Development Department Mansehra). Three hundred houses from city 1, two hundred houses from city 2 and 3 and from city 4 again three hundred houses were selected by simple random sampling and survey was done in selected houses separately [17].

2.2. Data tools and sampling methods

The data tool was a self-reporting questionnaire which was given houses selected for survey. Total 1000 questionnaires were designed and distributed. Questionnaire was having three components. The first component was covering the demographics of the respondents and their sources of information. Second component was having questions related to domesticated pet dog if any, its breed, gender, age. Third component was covering information about pet dog, bites/attacks toward owner or outsiders, and vaccination of dog against rabies which is very important aspect of keeping a pet dog in house. The questionnaire was prepared in English and it was full filled by the dog owner or any house member on behalf of the owner who was unable to learn and write [18].

3. Results

3.1. Domesticated dog fauna

After the survey was completed, results for domesticated dog fauna were analyzed. Out of 1000 houses selected 214 (21.4%) houses were having domesticated pet dogs which were loved by house members and were treated as family member. There owners were found to be very fond of dogs and keeping one or more dogs. Many people were having large houses so they kept guard dog specially German shepherd on the roofs for keeping an eye on the house, so as if any stranger

comes in territory of their house the dog gave the signal by barking and attacking the new comer.

Dogs such as German hounds and Pointers were used in hunting by their owners, they are taken to large, thick and vegetative areas for hunting of pheasants and hares jackals and foxes, as in Mansehra city large organisms like wild bores and deers are not found. Dogs such as Central Asian shepherd dogs were also used by shepherds to control the herd of animals mainly goats and sheep's. These dogs not only command the animals by nipping at their feet to stay in the herd if any of them tries to separate from stock but also if any of the herd members give birth to young ones they carry their babies in fitted clothing twisted around their body on their backs. Some owners used their dogs specially Bully dogs and Pit bull terrior as fight dogs; they need a lot of food and training. They are enraged by different training methods for fighting other animals and dogs, their owners stipulate (bet) heavy on fights, it is antihuman, bashful and unrespectable phenomenon as the looser dog is killed or poisoned after the fight, one should not use living creatures in acts like these, these fighting dogs were huge, furious and massive and were very aggressive and swiftly attack on the command of their owner. In the survey 24 different breeds of dogs were examined and total 231 dogs were calculated, out of which 30 (12.98%) Pointers, 8 (3.46%) Labrador retriever, 20 (8.65%) Dogo argentine (kohati bulltair), 3 (1.29%) Breque francais (goscony pointer), 2 (0.87%) Pudel pointer, 8 (3.46%) German hound, 5 (2.16%) Anatolian shepherd dog (Boora kochi kutta), 59 (25.54%) German shepherd, 1 (0.43%) Komondor, 6 (2.59%) Central Asian shepherd dog (Sufaid koochi kutta), 8 (3.46%) Manchester terrior, 4 (1.73%) Pit bull, 1 (0.43%) Dalmatian, 3 (1.29%) Japnese spitz (Sufaid taddi kutta), 5 (2.16%) Volpino ataliano (taddi kutta), 4 (1.43%) Boxer, 18 (7.79%) Bull mastiff, 5 (2.16%) Doberman, 12 (5.19%) Dogue de brodeux (bully kutta), 2 (0.87%) Nepolian mastiff, 4 (1.73%) Rottweiler, 4 (1.73%) Siberian husky, 4 (1.73%) German spaniel, 3 (1.29%) Dutch the shepherd dog were examined, 12 (5.19%) were monglers (mixed breed) so no true examination of those dogs could be done (see Figure 1).

Percentage of dogs in four union councils

The total percentage of dogs regarding four union councils was different it can be see that the percentage of Pointer (15.0%), Labradar (4.0%), Dogo argentine (4.0%), Braque francias (2.0%), Puddle pointer (1.0%), German hound(4.0%), Anatolian shepherd (2.0%), Manchester terrior (4.0%), Dalmatian (1.0%), Japnese spitz (2.0%), Volpino italiano (2.0%), Boxer (3.0%), Bull mastiff (11.0%) and Dobermann (3.0%) is highest in union council 1. Percentage of German spanial

(1.3%), Pit bull (0.9%), Siberian husky (1.3%) and Dutch shepherd (1.3%) is highest in union council 3. Percentage of German shepherd (12.6%), Kmondor (0.4%), Asian shepherd (1.7%), Dogue de brodax (3.5%), Nepolian mastiff (0.9%) and Rotweiler (1.3%) is highest in union council 4. Union council 2 did not had highest percentage of any dog (see Figure 2).

Statistical analysis

Analysis of variance of 24 dog breeds from four UCs of Manshera city from September- December 2013 was done where value of p is less than 0.05 ($p < 0.05$) results showed that population of *C. lupis* is significantly different in 4 UC,s (see Table 1).

3.2. Dog attacks

Results of dog attacks were amazing, 106 dogs attacked the people (i.e) 23 were owners (21.7%) and strangers (78.3%). In which 7 dogs: Pointer (15.09%), Dogo argentine (15.09%), German shepherd (42.45%), Pit bull (3.77%), Bull mastiff (8.49%), Dogue de Bordeaux (4.66%) and Rotweiler (3.77%) were more prone to attacks as compared to other pet dogs (Graph: 3)

3.3. Vaccinated and non-vaccinated pet dogs

Vaccination is very important but people were found to be unaware of it. Only 10 (4.32%) dogs were vaccinated and 221 (95.67%) were not. Owners and strangers were at high risk of getting disease from their pet dogs (see Figure 4).

4. Discussion

The only animal species which has gone through most domestication procedure is dog and shows many morphological difference [3]. Human cases of rabies from dog bites comprises of a high amount of cases in China, even though the cases of human rabies has gradually decreased in current years in China. Dog's essential role in the spread of rabies indicates that controlling rabies could be a main step in discarding human rabies. The aims of work was to talk about the pathogenesis and properties of rabies virus, the proven signs and analysis of canine rabies, threshold density of host and dogs vaccination, to prevent and control canine rabies in China [19]. Present study people are not known to the fatality of rabies disease and they don't know that bites can cause serious problem to health, 4.32% dogs were vaccinated and rest of dog owners did not vaccinate their dogs, this is why people of Mansehra are at risk.

Dog rabies vaccination coverage is a main problem of developing world, these are effected by dog ecology, management factors related to rabies control in developing world. Out of 29 related studies representing 18 countries in the fast developing world, 10 out of 13 studies succeeded in vaccination coverage. Variety of electronic databases searched for published articles relating to dog rabies vaccination or dog ecology by

household survey shows that majority of vaccination operations achieved the WHO suggested vaccination coverage of 76.5% in urban areas and in rural areas 73.7%, but an absence of studies related to dog vaccination/dog ecology are in countries which have greatest problem of rabies such as India, China, and Pakistan [20]. Present study shows the poor condition of people knowledge about vaccinating their dogs, unawareness of public and high risk factors of spreading disease are always there.

Fatal attacks of dogs on humans appear to be a breed specific which may bite and cause loss of life at higher rates. Data from 1997 and 1998 was collected and it showed that 27 people died of dog bite attacks and 25 breeds of dogs were more involved including Pit bull type dogs and Rottweilers causing more than half of the deaths. Because of difficulties in determining a dog's breed with inevitability it is difficult to understand the biting behavior [21]. In present study attacks are more and people are at high risk of danger as 45.9% dogs attacked people, and dogs more prone to attack were German shepherds, pointers and Dogo argentine it was because these breeds were primary breeds kept by dog owners.

Canine rabies vaccination is delivered in Thungsong District, Thailand, as an annual campaign and also at other times through private veterinary clinics, para-veterinarians and health-care staff residing in the villages. to determine: rabies-vaccination coverage amongst the owned-dog population; basic dog-population information; and community awareness about rabies [22]. Present study shows that there is a lot of improvement needed to introduce rabies control programs in population to prevent health risk factors and to recover the status of vaccination among the population.

5. Conclusions

After this study it is concluded that people of Mansehra city are serious dog lovers but population is in need to be educated for the vaccination of their pet dogs. Dog attacks are high and knowledge about seriousness of situation is not well known. Population is at high risk of their life.

6. References

- [1] Robert, C. and Dysko. The Biology and Diseases of *C. lupis familiariss*," Chapter 11 in Laboratory Animal Medicine, 2nd Edition, James G. Fox, et. al., editors; 2002 (New York: Academic Press).
- [2] Monique, A. R., Udell, Nicole, R., Dorey., Clive, D. L. and Wynne., 2011. Can your *C. lupis familiaris* read your mind?

- Understanding the causes of canine perspective taking. *Learning & Behavior* classification and influence of sex, reproductive status and breed. *J. Appl. Anim. Ethol.*, 2011; 10, pp. 45–61.
- [3] Darwin, C.R. On the origin of species by means of natural selection, or the preservation of favoured races in the struggle for life. 1859; London: John Murra: 432.
- [4] Drake, A.G and Klingenberg, C.P. Large-scale diversification of skull shape in domestic *C. lupis familiaris*: disparity and modularity. *Am Nat.*, 2010; 175, pp. 289–301.
- [5] Savolainen, P., Leitner, T., Wilton, A.N., Matisoo-smith, E. and Lundeberg, J. A detailed picture of the origin of the Australian dingo, obtained from the study of mitochondrial DNA. *Proc Natl Acad Sci USA.*, 2004; 101, pp. 12387–12390.
- [6] Cunliffe, J. The encyclopedia of dog breeds. ISBN- 1-4-40540-204-0., 2003.
- [7] Sacks, J.J., Lockwood, R., Hornreich, J. and Sattin, R.W. Fatal *C. lupis familiaris* attacks, 1989-1994. *J.Pediatrics.*, 1996; 97(6 Pt 1), pp. 891-5.
- [8] Lang, M.E and Klassen, T. *C. lupis familiaris* bites in Canadian children: a five-year review of severity and emergency department management. *CJEM.*, 2005; 7(5), pp. 309-14.
- [9] Kaye, A.E., Belz, J.M., Kirschner, R.E. and Pediatric. *C. lupis familiaris* bite injuries: a 5-year review of the experience at the Children's Hospital of Philadelphia. *Plast Reconstr Surg.*, 2009; 124(2), pp. 551-8.
- [10] Brogan, T.V., Bratton, S.L., Dowd, M.D., Hegenbarth, M.A. and Severe, C. 1995. *C. lupis familiaris* bites in children. *J. Pediatrics.*, 1995; 96(5 Pt 1), pp. 947-50.
- [11] Schalamon, J., Ainoedhofer, H., Singer, G., Petnehazy, T., Mayr, J. and Kiss, K. et al. Analysis of *C. lupis familiaris* bites in children who are younger than 17 years. *J. Pediatrics.*, 2006; 117(3), pp. 374-9.
- [12] Bernardo, L.M., Gardner, M.J., Rosenfield, R.L., Cohen, B. and Pitetti, R. A comparison of *C. lupis familiaris* bite injuries in younger and older children treated in a pediatric emergency department. *J. Pediatr Emerg Care.*, 2002; 18(3), pp. 247-9.
- [13] Daniels, D.M., Ritzi, R.B., O'neil, J. and Scherer, L.R. Analysis of nonfatal *C. lupis familiaris* bites in children. *J. Trauma.*, 2009; 66(3), pp. 17-22.
- [14] Rehman, A. U.; Rizvi, A. U. R.; Ajmal, M. Occurrence of rabies virus in the saliva of apparently healthy dogs in Lahore. *Pakistan Journal of Zoology.*, 1988; 20 (2), pp. 173-176.
- [15] Bagel, K. Guidelines for rabies control. Veterinary Public Health Unit, Division of Communicable Diseases, World Health Organization, Geneva, Switzerland., 1987.
- [16] Guisado, P., Joaquin, Serrano, M. and Andres. Factors Linked to Dominance Aggression in *C. lupis familiaris*. *J. Animal and Veterinary Advances.*, 2009; 8(2), pp. 336-342.
- [17] Wasay, M., Khatri, I.A. and Salahuddin, N. Tetanus and rabies eradication in Pakistan; a mission not impossible. *J. Pak Med Assoc.*, 2012; 58, pp. 158-9.
- [18] Salahuddin, N., Jamali, S. and Ibraheem, K. Awareness about rabies post exposure prophylaxis in Pakistan among patients and health care workers: results from an Asian Rabies Expert Bureau study. *J. Coll Physicians Surg Pak.*, 2011; 21(8), pp. 491-4.
- [19] Zhu, W.Y. and Liang, G.D. Current status of canine rabies in China. *Journal of Environ Sci.*, 2012; 25(5), pp. 602-605.
- [20] Stacy, L. D. and Helena, M. V. Canine rabies vaccination and domestic dog population characteristics in the developing world: A systematic review. *Vaccine.*, 2012; 30(24), pp. 3492–3502.
- [21] Jeffrey, J., Sacks, M.D., Sinclair, L.M.P.H., Gilchrist, J.D.V.M., Golab, C and Lockwood, R.D.V.M. Breeds of dogs involved in fatal human attacks in the United States between 1979 and 1998. *J. the American Veterinary Medical Association.*, 2014; 217(6), pp. 836-840.
- [22] Kongkaew, W., Coleman, P., Pfeiffer, D.U., Antarasena, C. and Thiptara, A. Vaccination coverage and epidemiological parameters of the owned-dog population in Thungsong District, Thailand. *Preventive Veterinary Medicine.*, 2004; 65(1-2), pp. 105-115.

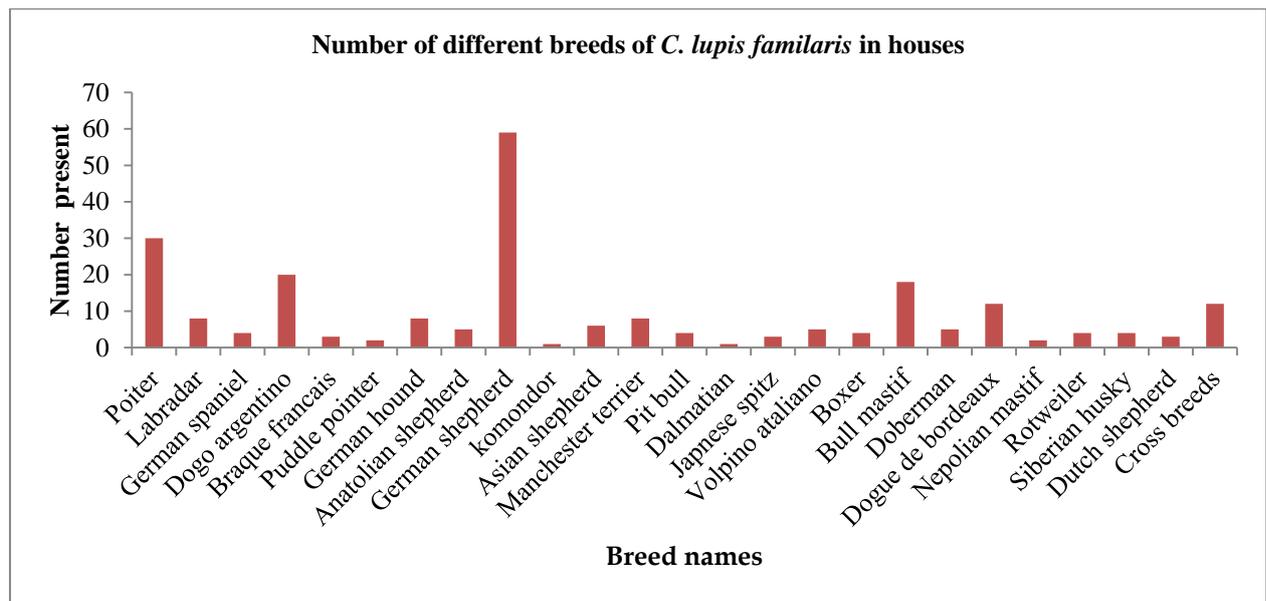


Figure 1. Number of *Canis lupis familiaris* breeds in houses

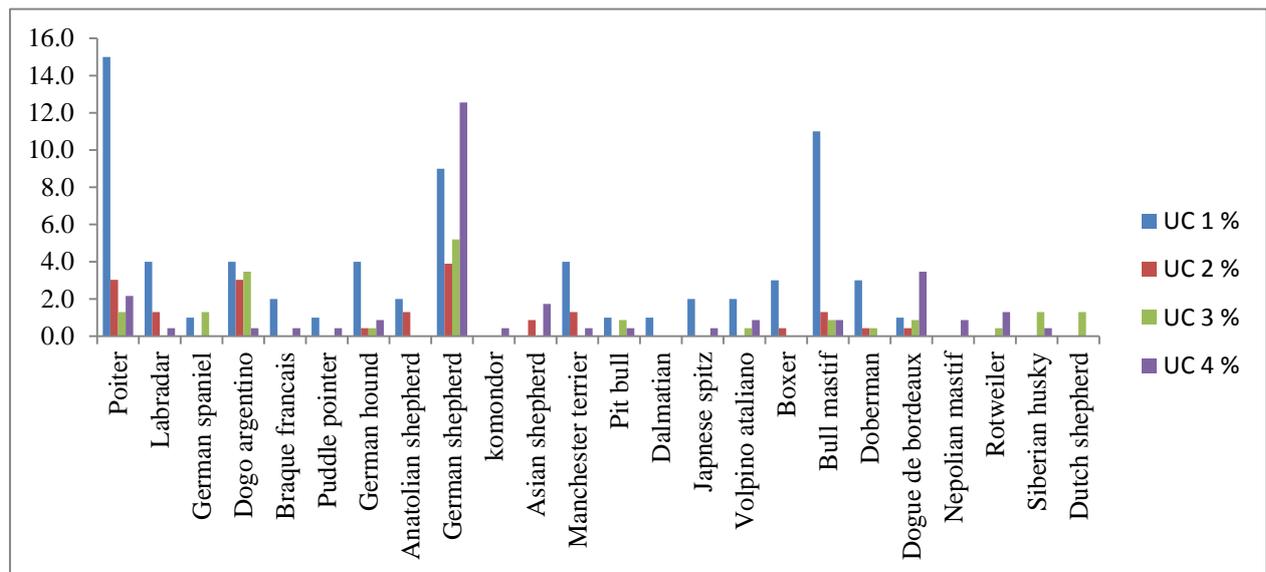


Figure 2. Total percentage of all dogs regarding four union councils

Table 1. Analysis of variance of 24 dog breeds of four UCs of Manshera city from September- December 2013.

ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	76.634211	3	25.544737	4.3594136	0.0064417	2.7035941
Within Groups	539.08989	92	5.8596728			
Total	615.7241	95				

Foot note: p<0.05

Table 2. Attacks of pet dogs towards owner and strangers.

Total dogs	231	%
Total attacks	106	45.9
Owner attacked	23	21.7
Stranger attacked	83	78.3

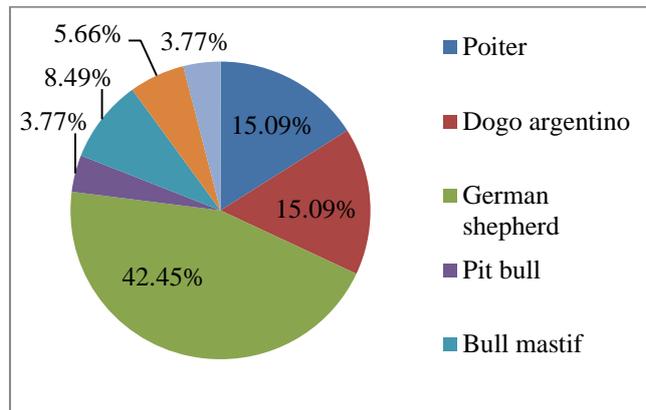


Figure 3. Pie chart showing the percentage of dogs which were more prone to attack.

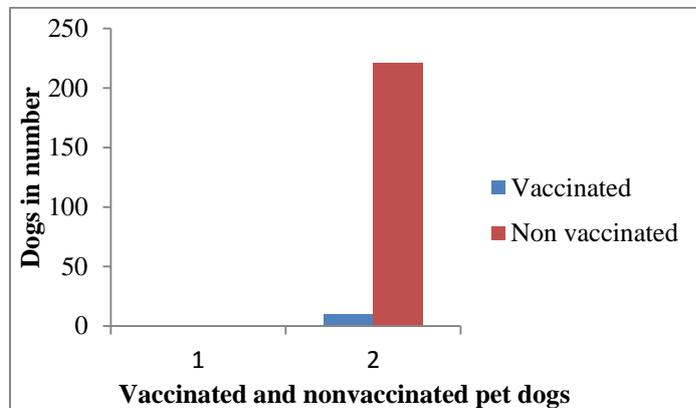


Figure 4. Vaccinated and non-vaccinated pet dogs.