Short Communication

Studies on dog population and its implication for rabies control

O.O Faleke

Department of Public Health and Preventive Medicine, Faculty of Veterinary Medicine, University of Ibadan, Ibadan, Nigeria.

Abstract

Dog population studies were carried out in Agbowo area, Ibadan, Oyo state using the street Counting Technique and Questionnaire Survey approaches. 17 dogs were observed on average through street counting technique. 719 houses and structures were identified both inhabited and uninhabited on 42 street networks. 25 households with 441 inhabitants responded positively to Questionnaire Survey. The ratio of household dogs to man and street dogs to man were 1:11 and 1:25 respectively. The level of rabies vaccination observed was 33.3% while only 5% of the dogs were immunized against canine distemper, hepatitis and leptospirosis. Four people were bitten either by their dog or other people's dog. 68% of the household dogs were outdoor most of the time and unclashed deriving their food from family food waste and scavenging about. In view of these observations there is need to embark on a nationwide dog population census for effective veterinary healthcare delivery system.

Key words: Dog population, rabies control.

Introduction

Several methods have been described and used in the past in rabies control in man and animals which include mass vaccination of animal population concerned, selective elimination, control of rabies in wild animals and pre and post exposure vaccination schedule for man (W.H.O. 1987). Despite these measures, dog rabies has become a re-emerging zoonoses in most parts of the world particularly in developing countries (Bogel *et al.*, 1982).

Lack of specific data on the population under consideration compromises the basis for sound judgement concerning birth, death and migration rates which are essential for understanding of the dynamics or behaviour of such population and devising of effective method to control or regulate its growth (Nassar and Mosier, 1980). This study was, therefore, aimed at lending credence to the need for a comprehensive national dog population census which would

make planning and delivery of veterinary health care programme in controlling zoonotic diseases to be accurate and cost effective and also to contribute to the base line information regarding the dynamism of dog population in an urban setting.

Materials and Methods

The Study Area:

Agbowo is a suburb of Ibadan city in the Ibadan North Local Government Area of Oyo State with human population of about 300,939 (N.P.C., 1992). It is bounded in the north by Barika and Orogun Area, south by the Trans-amusement park, west by the University of Ibadan and east by the Bodija Market.

Street Counting Technique:

About 90% of the streets in the study area were used. The streets were divided into 4 groups (Group I, east; Group II, west; Group III, north and Group IV, south divisions) such that each

division can be covered within 20 minutes by the observers employed. The observers went out at the same time to count the dogs within their area of jurisdiction. Each observer recorded his observation on a format provided. The exercise was carried out repeatedly in the morning between 6am and 7am for 20 days then averaged to eliminate sampling error. This is the modification of Beck's Photographic Recapture Techniques as adapted by Okoh (1988) in which visible physical characteristics such as coat colour, body marking and height were observed and recorded.

Questionnaire Survey:

The questionnaire survey was conducted on the same number of streets (42) as in street counting

Table I: *Table of number of dogs observed by street counting technique*

Day	Area				Volume
	1	2	3	4	
1	2	6	5	3	16
2	4	4	3	4	15
3	4	3	6	3	16
4	4	5	4	5	18
5	3	5	3	5	16
6	3	5	2	3	13
7	5	7	5	5	22
8	2	6	4	4	16
9	2	7	3	4	16
10	3	5	3	3	11
11	3	2	6	2	13
12	4	4	3	3	14
13	4	3	3	2	12
14	3	8	5	4	20
15	2	8	5	4	19
16	2	4	8	5	23
17	6	7	4	5	18
18	6	6	6	6	24
19	2	6	5	3	16
20	2	6	3	2	14
	69	108	86	75	338

Table II showed that the average number of streets in each group was 10 but there was considerable variation in the number of houses on each street.

The human population is not uniformly

technique and designed in such a way as to get information on the dog's sociology viz its relationship with its environment, feeding habit, usage, health status and reproduction rate. Each household was first asked whether they were keeping dog, had kept dog or not before the questionnaire were given out to fill or in some cases questions were asked directly (W.H.O., 1987).

Results

From the street counting technique, 69,108.86 and 75 dogs were observed respectively in each group over a period of 20 days. Thus the average number of street dogs equals 17 dogs (Table I).

distributed while the street dogs observed on average in each division is almost uniform. Compound dogs varied widely in distribution being lowest in group I and highest in group III. (Table II).

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Table 2 Human and dog population in surveyed area -aghowo , Ibadan

Group of Area	No of Streets	No of Houses	Human in cpd	cpd dogs	Ratio of dogs to human	Ratio of cpd dogs to houses
I	12	165	43	3	1:44	1:55
II	10	225	160	10	1:16	1:23
III	11	159	75	14	1:5	1:11
IV	9	170	163	12	1:14	1:14
Total	42	719	441	39	1:11	1:18

Note: cpd = compound

Table III showed that local breed constituted 95% of total dogs in the study area with 65% of these dogs kept as pet and 35% as guard. There is a great interaction between the dogs and man in 24 households surveyed and most of the dogs

were kept outdoor and unleashed (68%). About 88% of the dogs has a designated place of rest and 96% fed mainly on family food waste and scavenging. 33.3% dogs were vaccinated against rabies and 5% against Distemper, Hepatitis and Leptospirosis.

Table 3 Responses of dog owners to some sociological parameters

Items	Characteristics responses
Status and origin of dog	Local breed 37 (95%), cross breed 2(5%)
Interaction with dog	Mixed interaction: owners/adults – 24 households, children – 19 households friends and neighbours – 3 households, nobody play with dog – 1 household
Reproduction rate	35 dogs whelped in the past 12 months
Mortality of offspring	Total death = 21, Automobile death – 8 (38%), Diseases – 12 (57%) Others – 1 (5%)
Level of supervision	Kept indoor 7 (28%) Outdoor and leashed 1 (4%), Outdoor and unleashed 17 (68%)
Vaccination record	Vaccinated against rabies – 13 (33.3%), Vaccinated against Distemper, Hepatitis and Leptospirosis (DHL) – 2 (5%).
Sources of nutrition	Commercial – 1 (4%), family food waste and scavenging – 24 (96%)
Provision of shelter	Premises and kennels 22 (88%) free range 3 (12%)
Cases of dog biting	Total dog's bite = 4, bitten by own dog 2, bitten by other dogs 2.

Discussion

The dog population obtained cannot be classified as dynamic or static in terms of immigration and emigration because there was

no available data on dog population of the study area to compare with. This is in contrast to Nassar and Mosier (1980) that had 10 years population information to work with in Manhattan, Kansas, USA. However, there is

dynamism in the rate of birth and death which is evident in 35 puppies that were whelped within a year in the study area and 21 dogs that died or disappeared within the same period.

The population obtained through the questionnaire survey (39) is higher than that obtained through street counting (17). This tend to disagree with the view of some authors that most dogs in African cities roam the streets and are probably feral and unowned (Engmann and Engmann, 1973; Fekadu, 1982). However, our findings lend credence to Okoh's (1988) findings where household dogs surpasses the street dogs in number. The 17 street dogs may not all be strayed considering the level of supervision where majority of household dogs (68%) were outdoor unleashed most of the time and has to scavenge to substitute their feeding which in some household is inadequate. This view is supported by WHO/WSPA (1990) which submitted that sometimes the dogs that were observed to be ownerless or always present in the community may be property of a neighbour. The percentage of vaccinated dogs against rabies infection is low (33.3%) and this may be as a result of ignorance and low socio-economic status of the people of the area. The unvaccinated dogs can constitute danger of possible rabies outbreak in man and dog populations likewise there may be vaccination failure even among the vaccinated ones (Okoh, 1982; Tekena, 1990). The importance of rabies for public health, therefore is not based on number of cases but on the high mortality which is practically 100% of the patients (Acha and Szyfres, 1982). Because of the menace of armed robbers, many people are interested in dog recruitment, thus there is need to embark on a national dog population census possibly integrated to the National Population Commission Programme to obtain a baseline data on dog immigration and emigration, birth and death rates. The population figure obtained thus can be used to plan for effective mass rabies vaccination campaign and monitoring. The lack of continuity in the National Antirabies Campaign carried out by Federal Livestock Department in 1982 may be attributed to lack

information on population structure. (David West and Oluokun, 1983).

References

- Acha P.N. and Szyfres B. 1982. Zoonoses and communicable diseases common to man and animals. Pan American Health Organisation (P.A.H.O.) Scientific Publication No. 354. PP. 292 – 308
- Bogel K., Andral L., Beran G., Schneider L.G. and Wandeler A. 1982. Dog rabies elimination – a trend analysis and programme proposal. *INT. J. ZOON* 9:97 – 112.
- David West M.Z., and Oluokun S.B. 1983. The 1st national antirabies campaign in Nigeria. Abstract publ. for 111 inter. virology conf. Kuwait.
- Engmann H.M. and Engman N.I. 1973. Dog Menace in Accra – Some reflections and exhortation regarding corrective measures in kaneshie suburban region. *Ghana Medical Journal* 12: 227 – 234.
- Fekadu M. 1982. Rabies in Ethiopia. *AAIE. J. EPIDEMIOI.* 115. 226 – 231.
- Nassar R. and Moisie J.E. 1980. Canine Population Dynamics. A Study Of The Manhattan, Kansas, Canine Population. *AME. J. VET. RES.* VOL. 41 NO. 11. PP 1798 – 1803.
- National Population Commission: Human Population Figures of 1991 Census In Nigeria, (1992).
- Okoh, A.E.J., Canine Rabies in Nigeria, 1970 – 1980 Reported Cases In Vaccinated Dogs, *INT. J. ZOON* 9(2) PP 118 – 125, (1982).
- Okoh, A.E.J.: Dog Population Census In Jos, Plateau State, Nigeria. *TROP. VET.* 6. 89 – 94, (1988).
- Tekena O.H. 1990. Rabies control in Nigeria. Postgraduate Doctor Africa. Vol. 12 NO. 4, PP 90 – 95, (1990).
- World Health Organisation (W.H.O). 1987. Guideline for dog rabies control *W.H.O. DOCUMENT V.P.H./83. 43 REV. 1.*
- World Health Organisation (WHO) and World Society For The Protection Of Animals (W.S.P.A). 1990. Guidelines for dog population management. *W.H.O./ZOON.* Document 90.16.

(Received 28 April 2000; Accepted 22 July 2002)