

**Short Communication**

**SOCIOECONOMIC FACTORS ASSOCIATED WITH NON-VACCINATION OF DOGS AGAINST RABIES IN IBADAN, NIGERIA**

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**INTRODUCTION**

Rabies is a zoonotic viral disease that affects human, domestic and wild animals. It is an acute, highly fatal disease caused by a bullet shaped, enveloped RNA virus 180-75nm known as Lyssavirus type 1 and marked by a 1mg and variable incubation period (Oboegbulem, 1994). It is transmitted to animals and humans through close contact with saliva from infected animals. Once symptoms of the disease develop, rabies is fatal to both animals and humans (WHO, 2001). In Nigeria where dog bites continue to be the main mode of transmission of the disease to man, it remains a serious public health hazard. (Thorne, 1954; Ezeokoli et al. 1984; Ikede, B.O and Adeyemi, C.A.O 1984). Reliable data on rabies are scarce in many areas of the globe, making it difficult to assess its full impact on human and animal health (WHO 2001). Since dog has been established as the predominant vector of rabies in Nigeria, the most logical and cost effective approach to rabies control is elimination of stray and ownerless dogs combined with a programme of single mass immunization in the shortest possible time, at least 80% of the entire dog population (WHO, 2001). The retrospective dog rabies vaccination evaluated at Ibadan carried out by Adeyemi (2000) showed that there is low response of dog owners to routine control of dog rabies by immunization. Effective, practicable and acceptable control strategy can only be put in place after the socio-economic facts associated with dog owners in each community have been studied. This paper reports the socioeconomic factors associated with Non-vaccination of dogs in Ibadan city, Nigeria.

**KEY WORD:** Owned-dogs, Anti-rabies vaccination, Zoonosis, Ibadan city

**MATERIALS AND METHODS**

A cross sectional study was conducted to characterize dog population and socio-economic factors associated with owners of non-vaccinated dogs against rabies in Ibadan.

A well-structured questionnaire was used to gather data of epidemiological importance from each dog owner and dogs included in the study. One hundred and forty-five dog owners were surveyed in Ibadan city, to know the status of antirabies vaccination of their dogs. Socio-economic variables used include age, sex, employment status, highest educational qualification and marital status of dog owners. Other information obtained from the household

heads includes sex, age, occupation, marital status, income, type of housing, religion, family size, means of transportation and rabies awareness. Information obtained about each dog includes age, sex, breed, source, vaccination status, purpose of being kept and the number of people bitten by the dog.

Information gathered in the survey was initially composed into tables. Some tables were mainly of averages and percentages. Association between number of non-vaccination and socio-economic variables were examined by Chi Square and ANOVA.

## **RESULTS AND DISCUSSION**

A total of 63 (43.45%) dogs were classified as non-vaccinated out of 145 included in the study. Table I presents the characteristics of non-vaccinated dog against rabies in Ibadan city. Factors that were significantly associated with non-vaccination of dogs against rabies include breed, price, management system and registration with a veterinary clinic.

Table II presents the socio-economic factors associated with owners of non-vaccinated dogs against rabies. Among the factors considered are incomes, employment status, means of transportation and awareness of rabies were of significant importance.

From the results obtained in this study it was found that cross breed dog 23 (56%) stand the highest risk of non-vaccination followed by the local breeds 25 (50%), while the exotic breeds have the lowest risk of non-vaccination 15 (28%) ( $P<0.05$ ). This is because exotic breeds belong to high-income earners and may have more veterinary care than the dogs owned by low-income earners. Also dogs valued less than N2, 500.00 (Two thousand, five hundred naira) stand a higher risk of non-vaccination when compared with dogs purchased at higher prices ( $P<0.005$ ).

The study shows that confined dogs have higher risk of non-vaccination when compared with dogs that are allowed to roam. The owners of these dogs may feel that vaccination of confined dog is a waste of money. Since these dogs are not allowed to roam therefore they cannot be exposed to rabies. They have forgotten that these confined dogs are still taken out for exercise and are going to meet other dogs when taken for treatment in veterinary clinics. Apart from having contact with other dogs, the owners are ignorant of rabies in other animals like cat and bat.

Also, none of the dogs of less than 3 months old included in this study was vaccinated. The reason for this may be that dog owners are advised to vaccinate their dogs from three

months upwards as these puppies may still be protected by antibodies passively derived from their mothers. However, their increased contact with children and adult human will increase their public health risk as rabies has been confirmed even in two months old dogs (Taiwo et al 1998). Dogs owned low-income class have higher risk of non-vaccination ( $P<0.005$ ). This may be due to high cost of vaccination and difficulty in conveying dogs to the veterinary clinic.

Furthermore, the study shows that larger population of dogs belongs to students. Youths have natural tendency to play with dogs and other animals. Also some of these dogs are left for the purpose of making money from the sales of puppies produced by the dogs. 80 out of 145 dogs sampled were females. Some of these youths keep dog because of peer group influence.

Dog owned by individuals that are not aware of danger of rabies stand a higher risk of non-vaccination when compared with dog owned by people that are aware. 107 dog owners were aware of zoonotic implication of rabies while 38 were not. 66% of dogs owned by unaware owners were not vaccinated while 35 of dogs owned by aware owners were not vaccinated ( $P<0.05$ ).

There is need to create rabies awareness by embarking on enlightenment campaign. The use of posters, leaflets, print and electronic media to create awareness cannot be over emphasized. It will go a long way in reducing the level of negligence and ignorance of the populace especially the dog owners. Furthermore, regular vaccination campaign by the Government is necessary to give opportunity to dog owners who may not be able to transport their dogs to the location of vaccination. The vaccines should be subsidized in order to be affordable to many dog owners.

An intensive health education on rabies is needed in Secondary Schools, since large percentages of dogs are owned by students. This will help to drive home the importance of anti-rabies vaccination. Play-lets can also be inculcated into the health education. The Nigerian Veterinary

Medical Association incorporating veterinary students where applicable in each community can

embark upon this health education. When this is done, the Government attention can then be sought for assistance.

TABLE I: Characteristics of Non-vaccinated dogs

Characteristics	No. observed	No(%) Non-vaccinated	Remarks
1. Age			
<3 months	6	6 (100)	(F Statistic = 1.055. P value = 0.39)
3-6 months	13	6 (46)	
7-11 months	18	9 (50)	
1-2 years	45	19 (42)	
>2years	64	23 (36)	
2. Gender			
Male	65	22 (34)	(Chi Square = 4.861, P value = 0.08)
Female	80	41 (51)	
3. Purpose of being kept			
Generation of income	32	14 (44)	(F Statistic = 1.145 P value = 0.34)
Pet	45	17 (38)	
Guard	61	31 (51)	
All the above	7	1 (14)	
4. Registration with Veterinary Clinic			
Registered	92	27 (29)	(F Statistic = 12.642 P value = 0.00)
Not registered	53	36 (68)	
5. Breed of Dog			
Local	50	25 (50)	(Chi square = 8.01, P value = 0.02)
Exotic	53	15 (28)	
Crossbred	42	23 (55)	
6. Source of Dog			
Bought	99	45 (46)	(Chi square = 1.82, P value = 0.77)
Gift	32	13 (41)	
Born in the House	12	5 (42)	
Picked on the Street	02	0 (0)	
7. Price (₦)			
<1,000	32	22 (69)	(Chi square = 18.49, P value = 0.02)
1,000 5,000	29	16 (56)	
6,000 10,000	10	2 (20)	
11,000 20,000	18	5 (28)	
>20,000	10	0 (0)	
8. Management System			
Roaming	81	28 (35)	(F statistic = 3.055, P value = 0.03)
Confined	24	14 (58)	
Both	40	21 (52)	

**TABLE II: Characteristics of Non-vaccinated Dogs Owners**

<b>Characteristics</b>	<b>No observed</b>	<b>No(%) Non-vaccinated</b>	<b>Remarks</b>
<b>1. Gender</b>			
Male	121	51 (42)	(F Statistic = 0. 500 P value = 0.48)
Female	24	12 (50)	
<b>2. Total Household Monthly income (N)</b>			
<15,000	28	20 (71)	(F Statistic = 5. 875 P value = 0.004)
15-40,000	61	22 (36)	
>40,000	56	21 (38)	
<b>3. Means of Transportation</b>			
Public vehicle	42	27 (64)	(F Statistic = 10. 904 P value = 0.004)
Private vehicle	103	36 (35)	
<b>4. Highest Educational Qualification</b>			
None			(F Statistic = 1. 626 P value = 0.19)
Primary	4	3 (75)	
Secondary	11	7 (64)	
Tertiary	79	35 (44)	
Tertiary	51	18 (35)	
<b>5. Religion</b>			
Islam			(F Statistic = 0. 73 P value = 0.48)
Christianity	19	9 (47)	
Traditional	125	53 (42)	
Traditional	1	1 (100)	
<b>6. Employment Status</b>			
Employed			(F Statistic = 3. 023 P value = 0.05)
Not employed	42	12 (29)	
Students	8	5 (63)	
Students	95	46 (48)	
<b>7. Type of Housing</b>			
Single room			(F Statistic = 1. 164 P value = 0.33)
A room and parlor	12	12 (100)	
2/3 bedroom flat	27	14 (52)	
Duplex	73	31 (43)	
Duplex	43	16(37)	(F Statistic = 4. 500 P value = 0.01)
<b>8. Rabies A wareness</b>			
Yes			(F Statistic = 4. 500 P value = 0.01)
No	107	37 (35)	
No	38	25 (66)	

## REFERENCES

- ADEYEMI ISAAC and KARL ZESSIN (2000): Retrospective dog rabies vaccination evaluation at the University of Ibadan Nigeria 1988-1992. *Veterinarski ARHIV* **70** (5): 223-330.
- EZEOKOLI C. D., OGUNKOYA.A. B. O., BERN. G., BELINO. E. D. ANDEZE. E. U. (1984): The epidemiology of rabies in Kaduna State, *Bull. Animal Health & Production. Afr.*, **32**:378-384.
- IKEDE, B. O. AND ADEYEMI. C. A. O. (1984): Animal rabies in south west Nigeria, 1969-1983. *Bull Anim Health Prod. Afric.*, **32**:243-248.
- OBOEGBULEM, S. I. (1994) :Rabies in Man and Animals. *Fidelity Publishers Enugu* 238 pages
- TAIWO V. O., ANTIA. R. E., ADENIRAN. G. A., ADEYEMI. I. G. ALAKIA. O. O. AND OHORE. O. G. (1998): Rabies in dogs and cats in south western Nigeria. Laboratory Reports (1985-1995) *Trop.l Vet.*, **16**: 9-13.
- THORNE, A. L. C. (1954): The problems of rabies in Nigeria. *Bull. Epizoo. Dis Afric.*, **2**: 265-267.
- WORLD HEALTH ORGANISATION (2001): Rabies Fact Sheet No. **99**: 1-4.