



AWARENESS OF ZOONOTIC DISEASES AMONG PET OWNERS IN WA MUNICIPALITY OF GHANA

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Abstract

Cats and dogs are the most common household pets. Although their importance cannot be over emphasized, their interactions with humans may result in the infection of zoonotic diseases. The awareness of zoonosis is a prerequisite for an efficient disease prevention. The study was conducted to determine the awareness of zoonotic diseases among pet owners in Wa municipality. Interviews were conducted using a semi-structured questionnaire, among different groups of respondents within Wa municipality, consisting of two urban and two rural localities. Out of the 100 respondents who were interviewed, about 76 (76%) of the respondents indicated their awareness of zoonoses of dogs and cats. Majority (98.7%) of those who indicated their awareness of zoonoses of dogs and cats, could only mention rabies. Most (93.3%) of the respondents who stated rabies as zoonosis were able to list some of the symptoms of the disease. The overall results suggest that the level of knowledge of zoonoses of cats and dogs in Wa municipality is low. From the results, there is the need for awareness creation on zoonoses of dogs and cats as well as proper management of these pets, with efforts from veterinary, human and public health professionals as the main actors.

Keywords: Awareness, Cat, dog, Knowledge, Zoonoses

Introduction

Across the globe the ownership of pets is very common and the proportion differs from country to country. In most parts of the world majority of households own pets (Downes et al., 2009). Globally, the two most common household pets are dogs and cats, which directly or indirectly serve as sources of many human pathogenic infections (Pereira et al., 2016). The relationship between humans and these pets began long ago. The first domesticated species by man is dog, which started in prehistoric times, about 120-150 centuries ago and with cats about 50 centuries ago (Morey, 1994). Dogs stay in close proximity with humans, and providing them with security and companionship, among others (Paul et al., 2010), while cats are kept

for companionship and control of mice among others. However, these pets can transmit numerous infectious diseases to man (Leonard, 2014). Worldwide, 61% of human pathogens are classified as zoonoses (Schneider et al., 2011). In developing countries, majority of our dogs are categorized as free-roaming and are given insufficient veterinary care as well as poor husbandry conditions, resulting in great public health issues with these dogs being a potentially uncontrolled reservoir for zoonotic diseases (Day et al., 2012). There are over 300 recognized canine zoonoses (Cleaveland, et al., 2002). Canine zoonotic diseases resulting in subclinical infections in dogs, having complex disease presentation could be costly and difficult to

diagnose and control (Otranto and Dantas-Torres, 2013).

The eleventh killer disease in the world is rabies (Elelu et al., 2019). About 17,400 people were reported to have died worldwide in 2015 due to rabies alone (GBD, 2015). Over 99% of the cases of rabies in humans are due to the exposure with dogs (Chomel, 2014). The disease is one of the neglected tropical diseases, and it affects mainly the people in the rural areas (WHO, 2020). Africa and Asia are the continents which collectively recorded more than 95% of human deaths caused by rabies globally (WHO, 2010). This can be attributed to inadequate knowledge of zoonoses of pets. Children, elderly people, pregnant women, the immunocompromised, pet owners, veterinarians and breeders have greater risk of contracting zoonotic diseases (Robertson et al., 2000). A higher proportion of the disease risks which are associated with pet contacts could be minimized or even eliminated by simple measures, such as limited contact with the animals and proper animal husbandry. The awareness of the risk of zoonosis is a prerequisite for an efficient disease prevention (Stull, 2012). To date very limited studies have been conducted to determine the level of knowledge of zoonoses associated with cats and dogs' owners in Ghana, including that of Amissah-Reynolds et al. (2016) which focused on owners' awareness of zoonoses of helminths in dogs at Mampong, Ashanti region.

Recent reports from various public health units throughout the country with Wa not being an exception indicate that, there are incidences of zoonoses of carnivorous pets such as rabies (Afakye et al., 2016), it is therefore imperative to ascertain pet owners' knowledge of zoonoses in Wa municipality.

The objective of the study was to determine the awareness of zoonotic diseases among pet owners in Wa municipality

Materials and Methods

Study area

The study was conducted in Wa Municipality. The municipality shares administrative boundaries with Wa East District to the east, Nadowli District to the north, and Wa West District to the west and south (GSS, 2014). The municipality lies within longitudes 9°32'W to 10°20'W and latitudes 1°40'N to 2°45'N (GSS, 2010). Wa is the capital of Wa municipality, which is also the Upper West regional capital in Ghana. The Wa municipal has a total land area of about 579.86 square kilometers, representing approximately 6.4% of the entire land in the Region. The municipality is one of the eleven administrative areas (District Assemblies) which make up the Upper West Region (UWR) of Ghana. The population size of the district is 107,214 people which represents 15.3% of the total population of the region (GSS, 2014).

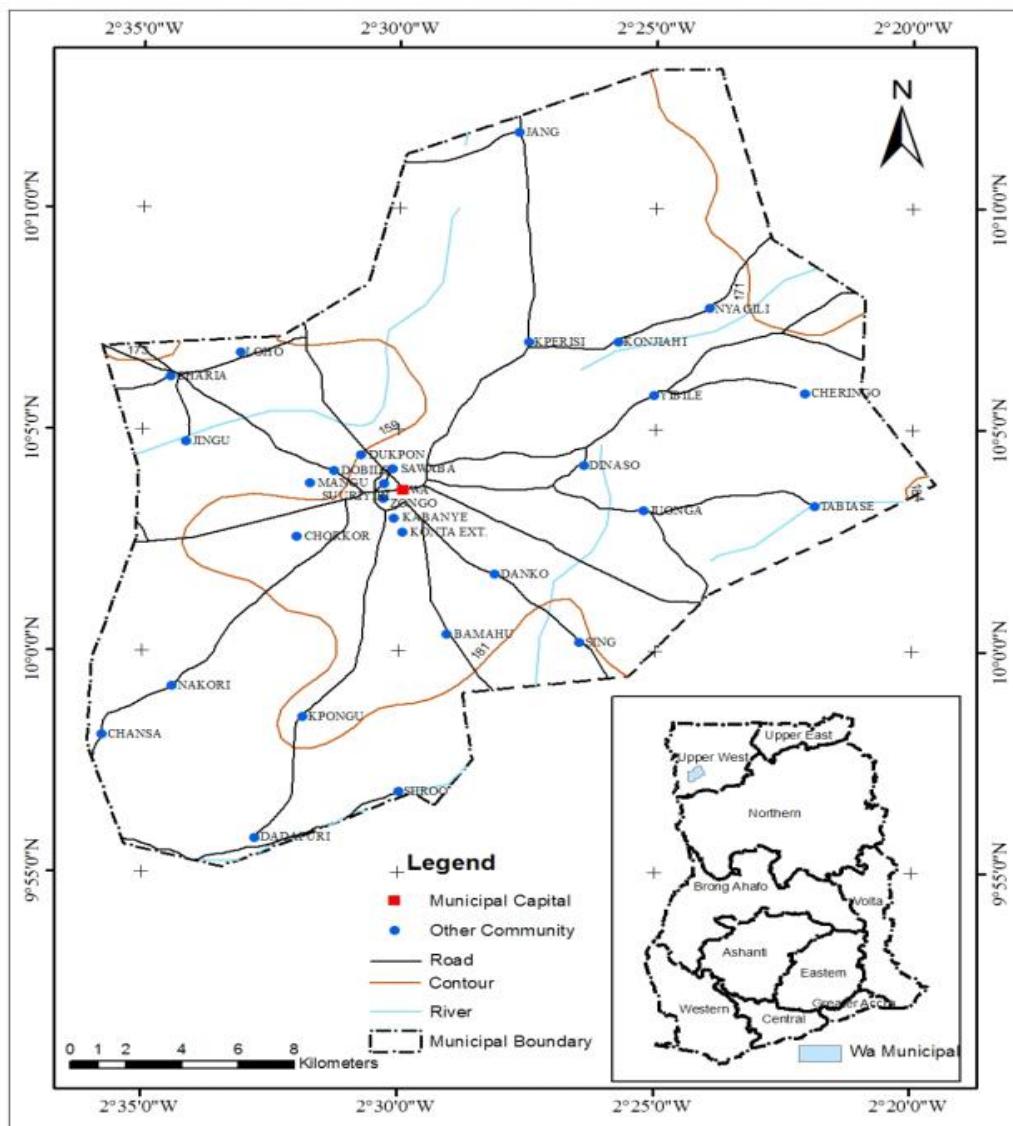
Sampling techniques and data collection

Interviews were conducted with the help of semi-structured questionnaires to obtain the data from the respondents. A series of multi-sampling techniques were used. The first involved a stratified sampling technique, which was used to group the communities in the Wa municipality into two strata. These were the rural and the urban and they were grouped with the help of secondary data from Wa municipal assembly. Localities with less than 5,000 human population were categorized as rural while localities with a minimum of 5,000 persons were classified as urban (GSS, 2010). The second was by using a simple random sampling technique to sample two (2) communities from each stratum. The localities selected were Kperisi and Charia as the rural communities while, Wa Zongo and Wa Dobile were selected as the urban localities. The third sampling technique used, was a snow ball sampling technique, this was used to select 25 cats and dogs' owners from each of the four localities. A total of one hundred (100) dogs and cats' owners were selected using the various sampling techniques mentioned above.

Data analysis

The data was analysed using the descriptive statistics of the Statistical Package for the Social Sciences (SPSS version 20). Blank and “not applicable” responses were eliminated from the analysis. The results were then presented in the form of figures and

tables showing frequencies, percentages among others. Chi-Square analysis was used to decide whether the degree of knowledge of zoonoses varied significantly between some selected variables (eg. Location and literacy level of the respondents). Significant difference was declared at a P -value <0.05 .



Source: Ghana Statistical Service (GSS)

Figure 1: Map of Wa Municipal of Ghana

Results

Demographic Characteristic of the Respondents

The study brought to light that, most (82%) of the respondents were within the age group of 25-60 years while, the least (7%) had their age group between 15 and 24 years. Most (55%) of the respondents used in the study were males while the remaining (45%) were females (Table 1). Majority (88%) of the respondents were married while the remaining (12%) were single with none of them divorced (Table 1). High (59%) illiteracy rate was observed, with the remaining (41%) being literate (Table 1).

Table 1: Respondents' demographic Characteristics

Variables	Frequency(Percentage)	Chi-square	P-Value
<i>Gender</i>		1	0.317
Male	55(55)		
Female	45(45)		
<i>Age group(Years)</i>		106.82	<0.001
15-24	7(7)		
25-60	82(82)		
60+	11(11)		
<i>Marital status</i>		57.76	<0.001
Single	12(12)		
Married	88(88)		
<i>Educational Status</i>		3.24	0.072
Literate	41(41)		
Illiterate	59(59)		

Figures in brackets are the percentages of the respondents.

Pet Information

The present study revealed that most (59%) of the respondents kept only dogs, 23% kept only cats and 18% kept both dogs and cats (Figure 2). Most (66.2%) of them kept only one dog, 24.7% kept two dogs, 6.5% kept three dogs while only 1.3% each kept four and five dogs. Most (78%) of the respondents who kept cats, kept only one cat, 12.2% of them kept two cats, 2.4% of them kept three and four cats each and the remaining (5%) kept five cats.

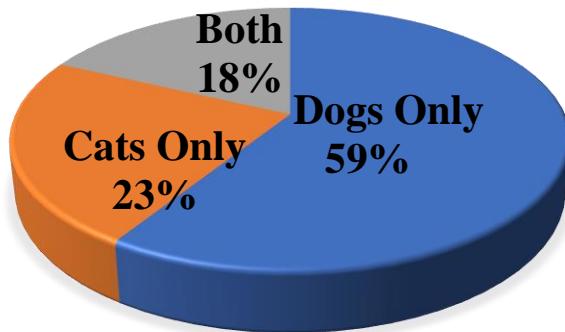


Figure 2: Pets kept by the respondents.

Awareness of zoonoses of dogs and cats

Majority (76%) of the respondents said they were aware of zoonoses of their pets while the remaining (24%) indicated that they were not aware of zoonotic diseases associated with dogs and cats (Table 2). Out of the respondents who indicated their awareness of zoonoses of their pets, about 1.3% of them could not give any example of a zoonotic disease associated with cats and dogs, while the remaining (98.7%) indicated rabies as the only disease they were aware of (Table 2). About 6.7% of the respondents who indicated rabies as the only zoonotic disease could not give any sign associated to rabies. Those who were able to mention at least one sign of rabies in dogs and cats, most (64%) indicated aggressiveness only, 2.7% stated aggressiveness and excessive barking while 26.6% indicated aggressiveness and foaming as the signs usually associated with rabies (Table 2). Fifteen percent (15%) of the respondents indicated that they have ever been told by a physician and/or their staff of the possibility of contracting zoonosis from their pets while the remaining 85% stated that they had not received any information about zoonoses of pets from a physician or any of their staff (Table 2). Majority (57%) of the respondents stated that, they have never been spoken to about zoonoses of cats and dogs by veterinary staff while the remaining 43% indicated that they had been told of zoonoses of cats and dogs by veterinary staff (Table 2). Only 26% of the respondents indicated comfortability with their degree of knowledge with regards to zoonoses of dogs and cats while majority (74%) indicated their discomfort, based on their level of knowledge of zoonoses of cats and dogs (Table 2).

Table 2: Awareness of zoonoses of cats and dogs

Variable	Frequency (%)	Chi-square	P-value
<i>Awareness of zoonoses of dogs and cats</i>		27.04	<0.001
Yes	76(76)		
No	24(24)		
<i>Zoonosis of dogs and cats known to the respondents</i>			
Rabies only	75(98.7)	63.05	<0.001
Don't know	1(1.3)		
<i>Signs of rabies</i>		46.06	<0.001
Aggressiveness only	48(64)		
Aggressiveness and excessive barking	2(2.7)		

Aggressiveness and foaming	20(26.6)		
Don't know	5(6.7)		
<i>Physicians or any of their medical staff discuss zoonoses of cats and dogs</i>		49	<0.001
Yes	15(15)		
No	85(85)		
<i>Veterinary staff ever discussed zoonoses of cats and dogs</i>		1.96	0.162
Yes	43(43)		
No	57(57)		
<i>Comfortability of knowledge of zoonoses of dogs and cats</i>		23.04	<0.001
Yes	26(26)		
No	74(74)		

Figures in brackets are the percentages of the respondents.

Individuals most at risk of acquiring zoonosis

Majority (70%) of the respondents had children below 5years of age in their households, while 44% of the respondents indicated having people above 64years old leaving within their households. Fewer (33%) respondents had pregnant women in their households (Table 3).

Table 3: Individuals most at risk of acquiring zoonosis

Variables	Frequency (%)	Chi-square	P-value
<i>Presence of children under 5 years old in the household</i>		16	<0.001
Yes	70(70)		
No	30(30)		
<i>Presence of adults of at least 65 years in the household</i>		1.44	0.23
Yes	44(44)		
No	56(56)		
<i>Presence of pregnant women in the household</i>		11.56	0.001
Yes	33(33)		
No	67(67)		

Figures in brackets are the percentages of the respondents.

Effect of some variables on each other

Majority ($\chi^2 = 7.895$, df= 1, p= 0.009) of the rural (64%) and urban (88%) respondents were aware of zoonoses of dogs and cats. Location had a significant effect on the knowledge of zoonoses of pets (Table 4).

Table 4: Effect of location of respondents on their awareness of zoonoses of cats and dogs.

Parameters	Yes	No	Total
Rural	32(64)	18(36)	50(50)
Urban	44(88)	6(12)	50(50)
Total	76(76)	24(24)	100(100)

($\chi^2=7.895$, df= 1, p= 0.009). Figures in brackets represent percentages of respondents.

Most of the literates (75.6%) and illiterates (76.3%) were aware of zoonoses of dogs and cats. No statistical significance ($\chi^2=0.006$, df= 1, P= 0.939) was seen between literacy level and the awareness of zoonoses of the pets by the respondents (Table 5). This means that the awareness of zoonoses of dogs and cats in Wa municipality is not influenced by the literacy level of the respondents.

Table 5: Effect of literacy level on awareness of zoonoses of dogs and cats by the respondents

Parameters	Yes	No	Total
Literate	31(75.6)	10(24.4)	41(41)
Illiterate	45(76.3)	14(23.7)	59(59)
Total	76(76)	24(24)	100(100)

($\chi^2=0.006$, df= 1, P= 0.939). Figures in brackets represent percentages of respondents.

Discussion

Among the diseases which could be transmitted to human beings by dogs and cats, rabies is one of the commonest and most significant infection. In Ghana, rabies is endemic and happens to be a great public health concern (Adomako et al., 2018).

Awareness of zoonoses of dogs and cats is necessary to enable us minimize the risk these animals pose to us.

The study revealed that most of the respondents were male, this is consistent with the findings of Pfukenyi et al. (2009) who reported 65% of their respondents being male, and this may be attributed to similar cultural practices as their survey was conducted in Zimbabwe, an African country. The findings of this present study may also be attributed to cultural values that give an upper hand to the male. In Ghana it is a norm for the male in a household to receive visitors, no matter how young he is. The Sissalas (a tribe in Ghana) have a saying

which literally means “no male is small”, in that regard any visitor that comes to the house even if he or she meets the females, they are expected to direct the person to the male, unless there is no male around, this was noticed during the data collection. The present study in terms of gender of the respondents however, contradicts the work of Sandhu & Singh (2014) who indicated that 55% of the respondents were female, this may be associated to their high perception of gender equity as the survey was conducted in the United States of America (USA). Also, the difference between the proportion of male and female respondents could be as a result of the males using more of cats and dogs, particularly the use of dogs for hunting purposes. The results brought to light that majority of the respondents kept dogs, and this may be attributed to the increase in the need by man for security, as there is continuous increase in criminal activities (Okoro,

2020). Also, it is perceived that some of the human guards may connive with others to rob or harm the people they are supposed to protect. It was therefore not surprising that most of the urban respondents kept relatively more dogs than cats. It was also not surprising that every nine out of ten respondents who kept dogs, kept them for security reasons only. This finding of the study is not consistent with the findings of Alho et al. (2018), who conducted their study in Qatar. This inconsistency may be attributed to the difference in the geographical areas.

Majority of the respondents kept their pets in an open environment, this may be attributed to financial constraints and/or poor knowledge of pet management. The study revealed that 76% of the respondents indicated their awareness of zoonosis of cats and dogs. This finding of the current study is consistent with a study conducted in De Kalb County of Georgia state, USA by Fontaine & Schantz (1989) who reported that only 63% of pet owners indicated their awareness of zoonoses. When asked further, other than rabies, this proportion of pet owners could not name a single disease, which was zoonotic in nature. This finding is not consistent with the findings of Zhang et al. (2016), where the respondents mentioned other zoonotic diseases apart from rabies. This may be associated with the category of respondents used, as they used only animals and human health care providers in their study, these people have relatively higher knowledge of zoonosis as compared to non-health professionals.

This was not surprising because most of the ethnic groups have local names associated with rabies, for example, the Waalas refer to a rabid dog as “bag’ane” while the Sissalas call it “Vah Nyuor” or “Vah Gingatinor”. With these local names of rabies, it is easy for the inhabitants to know of the disease especially when mentioned in their local dialect. This finding of the present study is consistent with the findings of Bingham et al. (2010) who indicated lack of awareness among dog owners regarding zoonotic canine diseases by the respondents in Texas. Also, the present study is consistent with the findings of Sandhu & Singh (2014) who reported

that 65% of the respondents knew of zoonoses of dogs. Amissah-Reyn *et al.* (2016) also reported low knowledge of zoonoses among dog owners, which agrees with the present study. This low level of awareness of zoonoses among cat and dog owners, potentially put them at higher risk of contracting infections. The findings of the present survey also agree with Pfukenyi *et al.* (2009) who reported that about 77% of owners of pets, were aware of zoonoses of their pets.

The present study indicates that majority of the respondents were not informed of zoonoses of dogs and cats by veterinary staff, this agrees with the findings of Pfukenyi *et al.* (2009) who reported that about 55% of the owners of pets indicated that veterinarians at no point discussed the potential hazards of zoonoses, or only discussed them when asked, this might be attributed to inadequate veterinary staff across the country as showed by Cheneau (1985). Only 15% of the respondents in this present study indicated ever receiving information about zoonoses of their pets from physicians, this is not surprising as the findings are consistent with the findings of Fontaine & Schantz (1989) as well as Bingham *et al.* (2010), who reported that only 25% of the respondents indicated ever being asked by a physician whether they own a pet. Also, the finding of the current study is consistent with the findings of Stull *et al.* (2012) which stated that only 22% of their respondents had ever been asked by their physicians if they owned a pet. This is a worrying situation, because for the physicians to be able to accurately educate people about zoonoses of pets, they need to know whether the individual they are speaking to, has a pet or not. The inadequate involvement of the physicians was not astonishing as numerous previous studies have concluded that often physicians depend on veterinarians for educating the public on zoonotic diseases (Grant & Olsen, 1999; Von- Matthiessen *et al.*, 2003).

Only 26% of the respondents in this present study indicated being comfortable about their level of knowledge about zoonoses of dogs and cats, this is however inconsistent with that of Stull *et al.* (2012), who revealed that 70% of the respondents indicated

comfortability with their level of knowledge of zoonoses contracted through pets-contact. They also reported that 65% of the respondents indicated their comfortability with their level of knowledge of ways to avoid some zoonotic diseases, which is also not consistent with the present study. This might be attributed to differences in geographical areas as the low proportion of respondents in the present study who indicated their comfortability with regards to zoonoses of dogs and cats is a clear indication that although about 76% of the respondents said they knew about zoonoses of these pets, their level of knowledge is not encouraging and hence of great concern to every individual in the society.

The study showed that the level of education did not have any effect on the level of knowledge of zoonoses of dogs and cats by the respondents, this is not surprising because our educational curriculum does not have any provision to teach non-health workers about zoonoses of pets.

Both rural and urban respondents kept their pets in an opened environment, where these pets had a higher chance of being infected with diseases that can be transmitted to man. It is assumed that when your level of knowledge of zoonoses is high, you will reduce factors that will predispose you to acquire these zoonotic diseases. More urban respondents were aware of zoonoses than those in the rural sector, this may be associated with their easy accessibility to hospitals, clinics, internet, radio and television where they have a higher chance of hearing about zoonoses than those in rural areas.

Conclusion

The study was carried out to determine the knowledge of pet owners on zoonotic diseases of dogs and cats in Wa municipality. Most (76%) of the respondents indicated their awareness of zoonoses of dogs and cats. However, apart from rabies the respondents could not mention any zoonotic disease of dogs and cats. Respondents' ability to mention some symptoms of rabies and management of pet bites was found to be very poor. A further indication of the respondents not well-informed about zoonoses of dogs and cats was deduced when majority (74%) of the respondents

indicated their discomfort with regards to their level of knowledge of zoonoses of dogs and cats. It is therefore a fact from the study that, the general level of knowledge of zoonoses of dogs and cats in Wa municipality is low.

It is recommended that further studies should be carried-out to assess people's knowledge of zoonoses of cats and dogs in various parts of the country to bridge the information gap pertaining to zoonosis of these pets in Ghana. Veterinarians and physicians as well as their staff especially, should spend time discussing zoonoses of dogs and cats to the people as the study showed that very few respondents were informed of zoonoses of dogs and cats by these public health workers. There should be collaboration between veterinary staff and other public health workers to ensure that necessary information is shared between appropriate institutions and individuals for effective disease control and prevention.

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