



# Awareness of Zoonotic Diseases among Dog Owners in an Urban Area of Kancheepuram District, Tamilnadu

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## ABSTRACT

**Background:** Dogs are the most companion animals of humans and hence they are the direct or indirect source of zoonotic infections. Rabies is an important zoonotic disease in which dogs are the principle reservoir. Only if the dog owners are well informed and aware of the various zoonotic diseases, they will be able to take preventive measures to tackle the same.

**AIM:** This study was done with the aim to assess the awareness of zoonotic diseases among dog owners.

**MATERIAL & METHODS:** This is a community- based cross sectional study, conducted at Kanchipuram district, Tamil Nadu with a convenient sample of 150 adults. A semi structured questionnaire was used to collect the data and was analysed using SPSS 20 version.

**RESULTS:** Among the study participants, most of the respondents were in the age group between 18 to 40 years. Around 64.7% of the participants were females and 35.3% were males. Among the zoonotic diseases, 94% were aware of rabies. About 92 % were aware that deworming is good for their pet and 92% were aware that vaccines could prevent zoonotic diseases. Around 53.3% had the source of information from family and friends and 60.7% had from veterinary doctors.

**Conclusion:** The study found knowledge gaps about zoonotic disease caused due to fleas and ticks. Regular deworming was not done by many dog owners. Veterinarians play an important role in pet owners education regarding zoonotic disease.

**Keywords:** Pets. Rabies. Leptospirosis. Salmonellosis

## INTRODUCTION

Zoonotic diseases are the infectious disease that spread between animals and humans. Zoonotic diseases are one of the major public health problems. Wide range of zoonotic infection have been documented which are transmitted from dogs. In India, approximately, there are 19.5 million pet dogs in the country and 35 Million stray dogs. Among them, only less than 10% would have been vaccinated.<sup>1,2</sup>

Dogs are the most companion domestic animals. Dogs lives in close association with humans providing them companionship and security. Dogs have contributed to the physical and social well being of

humans. So they may become the direct or indirect source of various infections in humans. Infections could be transmitted to humans through hair, food and water contaminated with dog excreta or secretion.<sup>3</sup> Dogs and cats may harbor ectoparasites, which are known to be vectors of zoonotic diseases.

Some important Zoonotic diseases are viral infections such as rabies and arbovirus, bacterial infection including Salmonella, Brucella, Yersinia pestis, Leptospira and Rickettsiae.<sup>3</sup>

**Rabies:** Rabies is one of the major acute viral diseases which cause encephalitis in man and most of other warm-blooded animals. The major causative

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agent for animal to animal transmission was found to be saliva of the infected animal. Dogs are considered to be the major reservoir of rabies infection in most of the developing countries. Around 35000 to 50000 cases of rabies occur globally every year. Around 20,000 deaths occur in India due to Rabies. Rabies disease can be effectively managed and prevented by proper wound care and vaccination.<sup>4</sup>

**Bacterial Infection:** Leptospirosis is one of the primary contagious diseases of the animals, which is occasionally communicable to man through damaged skin/ It is caused by *Leptospira interrogans*, an aerobic spirochete. Humans can get infected by all these animals when microorganism enters through mucous membrane of the host.<sup>4</sup> Salmonellosis and other food-borne illness have been with us for long, and we have had varied presentations as field outbreaks. Gastrointestinal symptoms are most common prevalent clinical manifestation of salmonella in both humans and dogs.<sup>5</sup> *Yersinia pestis* causes the disease plague. Plague is one of the major life-threatening condition of humans and animals<sup>5</sup>. Fleas are the natural vector of plague in the world.<sup>6</sup> Rickettsia are transmitted by the bite of infected ticks and mites or by contamination of the skin or mucous membranes with louse or flea faeces. Humans exposed to flea infested cats or dogs are at most risk for flea borne rickettsioses.<sup>5</sup>

Limited studies have been published about knowledge of zoonotic potential of parasitic disease by dog owners and level of risk perception by dog owners. In the previous studies there were lack of awareness regarding some of the zoonotic disease, so this itself may put them into high risk to contract zoonotic diseases. Humans share their environment with dogs, dog owners are closer with their pet, so it is necessary to study the awareness of some zoonotic disease spread by dogs.

Based on the above background, the study was conducted with the aim to find out the awareness of zoonotic diseases among dog owners in an urban area of Kancheepuram district, Tamil Nadu.

## METHODOLOGY

This is a community based cross sectional descriptive study. It was conducted in the field practice area in Anakaputhur, which is an urban area of Kanchipuram district, Tamil Nadu. The total population in the study area is about 48050 (Males 24158, females 23892). The study population composed of pet dog owners residing in the study area. The study was carried over a period 3 months from July 2019 to August 2019.

**Sample size and sampling technique:** Around 150 dog owners were selected by purposive sampling method by house-to-house visits in the study area. Those who have a pet dog of their own and residing in the study area for a minimum period of 6 months were included in the study. From the pet owners and

the frequently visited pet shops by them, snowball sampling technique was used to trace the other pet owners residing in the study area. Those study participants who are taking care of their friend / neighbor's dogs are excluded from the study.

**Data collection Tool:** Data was collected from eligible and willing participants who were personally interviewed using a pretested, semi structured questionnaire which included questions regarding the socio demographic details of the study participants, details of their pet dog and information regarding and knowledge regarding the various zoonotic diseases.

**Data Analysis:** Data was entered in Microsoft excel sheet and analysed using SPSS 20.0 version using descriptive statistics.

**Ethical clearance and informed consent:** The study was approved by the ethical committee of Sree Balaji Medical College & Hospital, Chrompet. The participants were briefed about the purpose of the study and informed consent was obtained from each participant before the interview.

## RESULTS

The age of the participants in the study ranged from 13 to 65 with males representing 35.3% and females 64.7%. Around half of the study participants were within 25 years of age. Out of the total 150 participants interviewed 46% of the participants were employed and 54% participants were unemployed/students. (Table 1)

Out of 150 participants interviewed in this study, 32% of the study participants had two or more than 2 pet dogs in their household. Among the pet dogs, 62.7% were male dogs. Among the pet owners, 87.3% of them provide home based food for their pets and 12.7% provide branded packaged food bought from shops. Around 12% of the pet owners treat their pet dogs as guard dogs with little or no attachment to them. Regarding visit to veterinary doctor, 29.3% take their pet dog to the doctor only when the dog is ill and the remaining pet owners used to take their pet dogs at regular intervals to the veterinary doctor for routine checkup. (Table 2)

**Table 1: Socio-demographic characteristics of the study participants (N=150)**

Variables	Participants (%)
<b>Age</b>	
<25	76 (50.7)
≥25	74 (49.3)
<b>Sex</b>	
Male	53 (35.3)
Female	97 (64.7)
<b>Profession</b>	
Employed/Self-employed/Business	81 (54)
Unemployed/Students/Housewife	69 (46)

**Table 2: Variables related to pet dogs as reported by dog owners: (N=150)**

Variables	Participants (%)
<b>No of Dogs Owned</b>	
1	102 (68)
≥2	48 (32)
<b>Gender of the dogs</b>	
Male	94 (62.7)
Female	56 (37.3)
<b>Feed given to dogs</b>	
Home Based food	131 (87.3)
Branded Dog food from shops	19 (12.7)
<b>Dogs were treated as</b>	
Guard dog	18 (12)
Part of family/Both	132 (88)
<b>Frequency of veterinary visits</b>	
Only when the dog is ill	44 (29.3)
3/6/12 months	106 (70.7)

**Table 3: Knowledge of zoonotic diseases among dog owners: (N=150)**

Knowledge Variables	Participants (%)
Aware about the disease transmission between humans and animals	140 (93.3)
Aware that vaccines can prevent some diseases among dogs and humans	137 (91.3)
Aware about deworming practice among dogs	142 (94.7)
Deworming done for the dog in the past 6 months	51 (34)
Vaccination done for the dog against Rabies	136 (90.7)
Aware that fleas transmit disease	79 (52.7)
Aware that ticks transmit disease	120 (80)
Source of information regarding zoonotic diseases	
Veterinary	80 (53.3)
Mass Media	32 (21.3)
Internet	48 (32)
Family and friends	80 (53.3)

Among the pet owners, 93.3% were aware that, diseases are transmissible between humans and animals. Around 91% were aware that vaccines can prevent some diseases among dogs and humans. Regarding deworming practices in dogs, 94.7% were aware and 34% practice deworming for their pets in the past 6 months. It was found that, 52.7% were aware that fleas transmit disease to dogs and 80% were aware that ticks transmit disease to dogs. Around half of the pet owners (50%) obtained information regarding zoonotic diseases from veterinary doctors and from family, friends and 32% from internet and 21.3% from mass media.

#### Reasons for veterinary Appointment:

The major reasons why dog owners visit veterinary were for vaccination purposes (74%), followed by any illness (62.7%) and for the purpose of regular health check-up (37.3%).

#### Awareness of different zoonotic disease that are transmitted by dogs:

Out of 150 participants in the study, 94% were aware that diseases are transmissible between humans and animals, only 6% were not aware. When the participants were asked to list out the diseases which are transmitted from dogs to humans they mentioned Rabies (94%), Parasitic infection (55.3%) i.e. (round worm, ring worm tapeworm), Dermatophytosis (29.3%), Leptospirosis (22.7%), tick borne diseases (22%) and Salmonellosis (16%)

#### DISCUSSION

Pets are known to reduce stress and provide a wide range of holistic benefits among the pet owners. The major pets adopted by people in India are dogs. But people are seldom aware of the diseases which can be cause by them if proper precautions are not taken. The study done among dog owners in Kancheepuram district to understand their level of knowledge about the various zoonotic diseases gave interesting results which are discussed below.

Result of this study demonstrated that Dog owners in Kanchipuram district have good awareness among some zoonotic diseases like Rabies. Around 94% of the study participants were aware that some or the other disease was transmissible between humans and animals. Similar results were obtained in a study by Cherian V et al.<sup>7</sup> In a study done by Alho AM et al, only 54% were aware that animals spread disease to humans.<sup>8</sup> In a study done by Sandhu GK et al, 65% were aware of the same and similar findings were observed in a study done by Fontaine RE et al in Georgia.<sup>9,10</sup> In a study done by Tesfaye D et al<sup>11</sup> 97% of the respondents were familiar that rabies can be transmitted from dogs to humans

In India, most of the literatures found were studies done regarding livestock owners in various parts of India. They are also considered as pet owners as they spend most of their time with livestock. The awareness was found to be extremely low as only 16.9% were aware of zoonotic disease in a study done by Bhattacharyya S in Puducherry and only 25% in a study done by Chinchwadkar P et al in Delhi.<sup>12 13</sup> These findings suggest that, pet owners have a considerably higher awareness of zoonotic diseases. This may be due the fact that most of the study participants belong to a higher socio-economic status and treat their pets as family as opposed to livestock owners. Further research is warranted to find out the gaps in knowledge and awareness among various socio-demographic sectors to understand the problem, as literature among dog owners in very sparse.

Transmission of zoonotic diseases from animals is primarily by direct contact, ingestion, indirect contact with insect vectors and contaminated inanimate objects, or inhalation of aerosolized materials.<sup>14</sup>

Though most of the study participants were aware of deworming practices for dogs, only a few (34%) practiced deworming in the past 6 months. In a study done by Alho AM et al only 19.3% practiced deworming for their pets. This shows that deworming practices among dog owners are lower.<sup>8</sup> Awareness must be created among dog owners on the benefits of deworming among them and role it plays in the prevention of parasitic diseases. The major reason the dog owners visit the veterinarian was for vaccinations followed by illness and regular checkups. Similar results were obtained in a study done by Alho AM et al.<sup>8</sup> This shows that, regular veterinary appointments to check the health of the dogs is least priority among dog owners.

In this study, it was found that most of the study participants (91.3%) were aware that vaccines can prevent animal to human transmission of diseases with major disease known to them to be rabies. This was the reason that around 90% of the study participants having vaccinated their dogs against rabies. Adequate knowledge results in adequate vaccination against diseases like rabies. Similar results were obtained in a study done by Awuni B et al in Ghana region.<sup>15</sup>

Around 47.3% of the study participants were aware that fleas transmit disease and only 20% were that ticks could transmit disease from dogs to humans. Similar results were obtained in a study by Sandhu GK et al.<sup>9</sup> This shows that health education and awareness creation which needs to be created among dog owners on the role of ticks and fleas in the transmission of zoonotic diseases like plague. Nearly 50% of the study participants cited veterinary doctors, family and friends to be the major source of information regarding zoonotic diseases. Similar results were obtained in the study done by Kiflu B et al in ethopia<sup>16</sup>, Study done by Sandhu GK et al found the major source to veterinary doctors followed by internet.<sup>9,17,18</sup>

## CONCLUSION

The study shows that there is zoonotic disease related knowledge gaps in the study population. This knowledge gaps are due to the lack of awareness about zoonotic disease caused due to fleas and ticks. Rabies awareness was higher compared to other zoonotic disease. Practices of not doing regular deworming to their pet dogs was found to be more prevalent among the dog owners. Veterinarians play an important role in pet owners education regarding zoonotic disease whereas the physicians have no time to talk about the zoonotic disease to their patients, so physicians also be encouraged to give awareness about zoonotic disease and explain about its prevention and treatment strategies. Health education and awareness creation programme should be carried with Dog owners and general public to fill the knowledge gap about prevention and treatment of

zoonotic diseases for the betterment of health for both dog and dog owners.

## LIMITATION

Since the study was done only among dog owners in the study area the lack of availability of a sampling frame affected the choice of sampling technique used.

Also due to logistic and time constraints, Convenient sampling techniques was used. The study would have had more generalizability if probability sampling techniques like simple or systematic random sampling techniques were used.

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