Journal of Entomology and Zoology Studies

Available online at www.entomoljournal.com

E-ISSN: 2320-7078
P-ISSN: 2349-6800
JEZS 2018; 6(2): 1963-1967

Received: 03-01-2018
Accepted: 04-02-2018

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Knowledge level and attitude on rabies and dog bite management among rural people

S Balakrishnan

Abstract
A survey was conducted to know the knowledge level and attitude on rabies and dog bite management among rural people attended along with their dogs for treatment of various ailments at Teaching Veterinary Clinical Complex, Veterinary College and Research Institute, Orathanadu, Thanjavur district, Tamil Nadu, India during the year 2017. A total of 50 people were surveyed. It was noted that most of the dogs were semi-owned dogs (80%) and 62% of the dogs were never given antirabies vaccine. Vaccination was regularly followed in 14% and only during the free camps in 24% of the dogs. In the present survey, people known about the fatality of rabies was 100% and dog bite as the route of transmission was 90%, but they had only 22% knowledge on under observation of suspected dog for rabies for 10 days. Awareness level on post exposure prophylaxis in dog-bitten cases was little low, *viz.*, 20% people know thorough wound washing, 32% about application of antiseptic, and 20% about administration of tetanus toxoid. Majority of the people (92%) stated that the wound should be closed. Knowledge on active immunization is 100% but follow immediately after exposure in 24% of the cases. Some people (34%) were preferred traditional treatment. Nobody knows about the passive immunization. It was concluded that eventhough people know something about rabies transmission and post exposure prophylaxix, awareness must be strengthened to increase the vaccination of their dogs regularly, thorough wound washing for 10-15 minutes, application of antiseptics, administration of tetanus toxoid, immediate active immunization by consulting the physician, not closing the dog bitten wound and need of passive immunization.

Keywords: rabies – knowledge – rural people – dog ownership status - antirabies vaccination - dog bite management

Introduction
Rabies is a most dreadful fatal zoonotic disease worldwide [1, 2], with an estimated 59,000 human deaths each year [3], many of which are in children [4]. Animal rabies continues to be a serious public health problem in India and the incidence of rabies in humans is very high [5]. All mammals are susceptible to rabies and can be infected, and domestic dogs are the major source over 99% of human rabies through dog bites [1]. Despite this it is 100% preventable by timely and appropriate post exposure prophylaxis (PEP) [2, 6]. It is essential that pet owners make sure that their animals are immunized against rabies, and that their vaccinations are kept up to date. Vaccinating dogs is a powerful and essential public health intervention to break the transmission cycle [4]. Human deaths due to rabies is estimated to be 95% in Africa and Asia, because of poor preventive and control measure against dog rabies and limited access to PEP [7]. Rabies kills about 20,000 people every year in India [8]. Although all age groups are susceptible, rabies is most common in children aged less than 15 years [8]. There is no systematic surveillance programme on rabies in India and moreover, it is not in the list of notifiable diseases. Hence, the figure may be an underestimate [2]. Lack of receiving PEP, incomplete course of PEP and very low use of rabies immunoglobulins (RIG) have played important role in the human deaths continue to happen. The poor knowledge on PEP is because of lack of awareness [9].
The dog population in India is estimated to be 25 million. Mostly they are free roaming as stray dogs or semi-owned, and which are mostly unprotected for rabies. As stated by WHO, incidences of human rabies can be controlled by elimination of rabies in dogs through regular prophylactic and annual antirabies vaccination. Ignorance about the seriousness of rabies and lack of access to affordable services for PEP is also one of the reasons for highest human deaths due to rabies in India [8]. A preliminary survey was conducted among people those who have brought their dogs to the veterinary hospital for treatment of some other ailments to know

the knowledge and attitude on rabies, dog ownership status, dog bite management and post-exposure immunoprophylaxis.

Materials and Methods

Study area

A survey was conducted at Teaching Veterinary Clinical Complex (TVCC), Veterinary College and Research Institute (VCRI), Orathanadu. Orathanadu is a Selection Grade Town panchayat, and taluk headquarters, and located longitude 79.2530889 and latitude 10.6286438 around 35 km west to the Bay of Bengal in Thanjavur district, Tamil Nadu State in the Southern part of India. The weather pattern is 35°C, wind velocity at 6 km/h and 50% humidity. The total population is 10,247 (as per 2011 census). Children are 1,078 in the age group of 0 - 6 years. The average literacy rate is 76.54%. Orathanadu has an average elevation of 2 m (6.6 ft) and lies on the south bank of the Cauvery river. This area is famous for paddy cultivation and people are mostly engaged with agricultural activities.

Survey participants

A survey was conducted to know the knowledge level and attitude on rabies and dog bite management among rural people (n=50) attended along with their dogs with various ailments for treatment at TVCC during the year 2017. A structured questionnaire was designed (Table 1) and used for collection information on ownership of the dogs, vaccination status of dogs against rabies, knowledge on rabies transmission, knowledge on dog bite management/PEP, active immunization, passive immunization and follow of traditional treatment (Table 1). The percentage was calculated and interpreted. All the surveyed people were discussed to increase the awareness and provided with pamphlets on rabies and its details to be followed in future in case of dog bite to prevent clinical incidences of rabies in animals as well as in humans.

Results and Discussion

The percentage of awareness and attitude towards rabies transmission and PEP among people surveyed in this study is presented in the Table 1.

Table 1: Survey questionnaire used to assess the knowledge level and attitude on rabies and dog bite management among the people in and around Orathanadu, Thanjavur district, Tamil Nadu, India

Parameters	Scores (%)
Ownership of the dog	
Completely owned	10 (20%)
Semi-owned	40 (80%)
Vaccination status of dogs against rabies	
Never given ARV	31 (62%)
Vaccinated at free ARV camp	12 (24%)
Regularly given ARV	7 (14%)
Knowledge on rabies transmission	
Do you know the fatality of rabies?	50 (100%)
Dog bite	45 (90%)
Also by other animals	5 (10%)
Do you observe the rabies suspected dog for 10 days?	11 (22%)
Knowledge on dog bite management/PEP	
Thorough wound washing (10-15 minutes)	10 (20%)
Wound washing less than 5 minutes	40 (80%)
Application of antiseptic: Yes	16 (32%)
Application of antiseptic: No	34 (68%)
Injection of tetanus toxoid: Yes	10 (20%)
Injection of tetanus toxoid: No	40 (80%)
Do you close the wound?	46 (92%)
Active immunization - Yes	50 (100%)
Immediate	12 (24%)
In one or two days	38 (76%)
Passive immunization	0
Follow of traditional treatment	17 (34%)

Ownership of the dogs

Most of the dogs in the study area were reported to be semi-owned (80%) and few dogs (20%) were completely owned (Figure 1) in the present survey. Only in the township area few people kept dogs as pets and for companionship. The semi-owned relationship of dogs was followed mainly in the outskirts and rural areas for house watch. Hence, the dogs were roaming in and around their territorial places for search of food and want of breeding companionship. There was competition among the dogs for fulfilling their requirement, which resulted in fighting among them and biting. The probability of disease transmission particularly rabies in livestock and human population from dogs could be higher under these circumstances. Awareness programme should be focused to all sections of the society irrespective of educational status concerned with proper pet rearing [10]. It was also reported that dog menace due to stray dogs maintained in houses for their shelter and increased threat of rabies spread due to an unsatisfactory pet care practices [8].

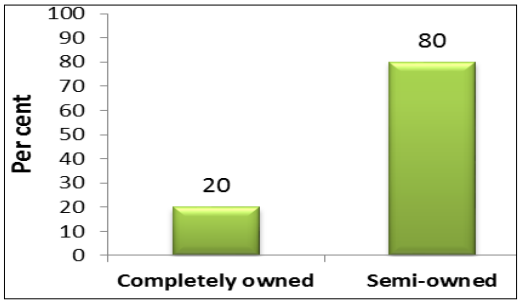

Fig 1: Ownership of the dogs in and around Orathanadu, Tamil Nadu, India

Vaccination status of dogs against rabies

In this survey people reported that vaccination was regularly followed in 14% of their dogs, only during the free camps in 24%, and remaining 62% of the dogs were never given antirabies vaccine (Figure 2). It could be due to the cost of vaccination and non availability of people to bring their dogs for vaccination as the reasons associated for non vaccination. It is suggested that the seriousness about the rabies needs to be stressed to the people to avoid spread of rabies through dog bite; and people have to be motivated through awareness programmes to increase the percentage of vaccination regularly to their dogs. In developing countries the cost of rabies vaccination is an important issue for the people with low income [11]. It was recommend that all pet dogs (and cats) in canine rabies endemic regions receive two rabies vaccine injections that is primary (third month) and booster dose (1-3 months apart) and then annual boosters, because the dogs are more active and have closer contacts with humans, often children [12]. Vaccination of all the dogs needs to be done to reduce the dog bite incidences and subsequent development of rabies in animals and human beings [12]. The findings of the present study is in accordance with earlier report stated that only 24.4% of people knew that pets need vaccine against rabies and only 5.7% of persons have opinion that immunization to dogs may be a method of control of human rabies [13]. A study reported that community dogs (39.2%) and stray dogs (44.5%) were largely responsible for attacking humans and animals, and this may be due to the high density of free roaming dogs with correspondingly fewer pet dogs, hence high level of awareness is needed regarding rabies and its prevention [14].

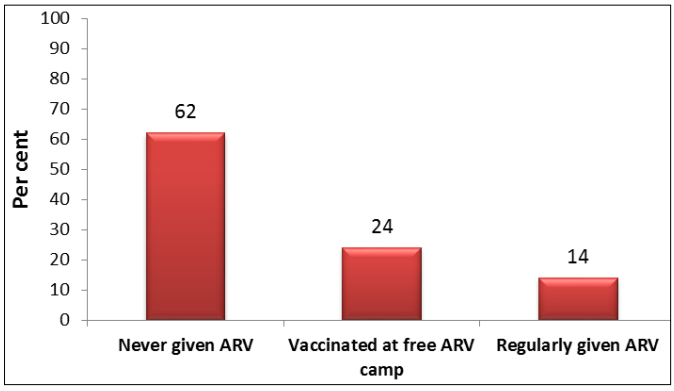

Fig 2: Vaccination status of dogs against rabies in and around Orathanadu, Tamil Nadu, India

Knowledge on rabies transmission

People have very well known about the fatality of rabies (100%) and dog bite as the route of transmission (90%) in the study. But they had only 22% knowledge about under observation for rabies (UOR) of suspected dog for 10 days (Figure 3). Fear factor to observe and non traceable of the suspected dog for rabies were the major reasons people said during the survey, which resulted in deliberate killing of the dog in first case and death by inanition in the later case. Under these circumstances, people must follow PEP strictly as per the WHO guidelines. Still awareness is needed for the people to have vigil after exposure to the rabies suspected dog or any dog bite cases. Post-exposure treatment can be safely discontinued after 10 days of observation if the responsible animal remains in good health, and if none lived longer than 10 days during UOR because of behavior changes or overt illness [12]. It was reported in a survey that all of the individuals were aware about rabies that is 98.6% knew about its transmission by dog bite; 31.1% would like to apply first aid measure; 36.4% will visit to doctor; rest either do nothing or adopt some religious practices to prevent the development of rabies; 86.6% of individuals were aware about anti-rabies vaccine and 24.4% knew that pet dogs need vaccine against rabies [13]. In a study noted that, sometimes bites may take place with provocation from children like stone throwing, beating, chasing or running at the sight of the dogs [14]. Incidence in the children less than 15 years and various social classes (socio-economic status) are important determinants of dog bite exposure [8]. In the present study 90% of the survey participants reported that dog bite is mode rabies transmission which in accordance with earlier survey reports knowledge level on mode rabies transmission [15].

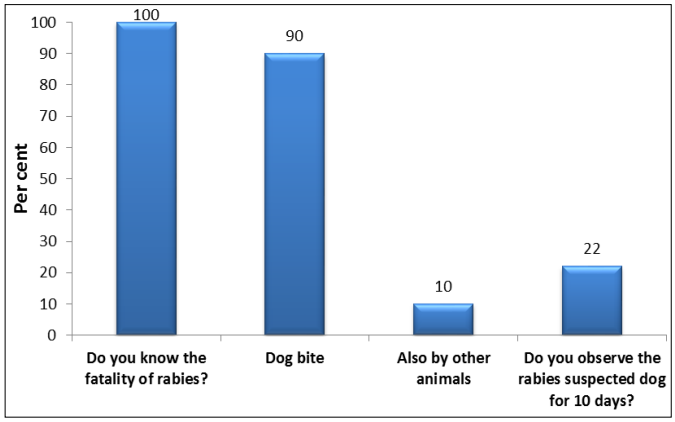

Fig 3: Knowledge on rabies transmission among people having dogs in and around Orathanadu, Tamil Nadu, India

Knowledge on dog bite management/PEP

In the present study, awareness level on post exposure prophylaxis (PEP) in dog-bitten cases was little low, *viz.*, 20% people known thorough wound washing, 32% about application of antiseptic, and 20% about administration of tetanus toxoid. Most of the people (80%) had reported that the dog-bitten wound could be washed for four to five minutes without giving importance to the wound washing for more than 10 minutes with carbolic soap water. Majority of the people (92%) stated that the wound has to be closed (Figure 4). A study reported that majority of the people (86.6%) are aware about anti-rabies vaccine but due to false beliefs in religious customs (19.2%) only 67.5% people are interested to apply it as a post-exposure prophylaxis, and there is definitely a gap in people.s knowledge, attitude, and practices about dog bite and its management [13]. The World Health Organization (WHO) recommends wound washing and vaccination immediately after contact with a suspect rabid animal which can prevent almost 100% of rabies deaths [14]. Many myths and false beliefs among the respondents associated with dog bite management and a lack of education regarding effective prevention of rabies. Furthermore, socioeconomic conditions (low level of education, financial constraints), insufficient vaccine and immunoglobulin supply to the government hospitals, distance from the dog bite victims place of residence to the government hospitals may be responsible for the low vaccine coverage among dog bite victims in this region [14].

The high level of awareness, knowledge and perception of rabies among the participants may be due to the endemicity of rabies and frequent reports of rabies incidence in the community, availability of information from various sources like government campaigns, mass media and free medical services available in government hospitals [14]. A study from

India reported that mass media are the most effective tools for conveying information to the community [16]. Building awareness is generally thought to be the first step to control rabies. To enhance rabies awareness, first of all, it is necessary to use information and education campaigns throughout the country and school-based rabies control programmes should implement thereafter. Veterinarians and physicians can play a crucial role in controlling rabies through a one-health approach by linking animal and human health [14]. An unsatisfactory pet care practices and very low awareness regarding rabies, dog population control program and management of dog bite injuries. Management of dog bites injuries was grossly inadequate [8]. A lack of awareness about prophylaxis and post bite management was the important factors associated with spread of rabies [17, 18].

Health education intervention involving a focused group like self-help group members using more than one method (lecture and video film in the present study) can be effectively used as a mode of dissemination of awareness regarding rabies [15]. Good awareness about rabies makes the dog owners as well as other people vulnerable to dog-bite injury and subsequent rabies [13, 19]. Poor knowledge and practice regarding management of dog-bite cases was one of the causes for higher incidences of rabies in India [8]. Lower awareness regarding wound treatment with water and soap was reported in the several studies [8, 13, 15, 20]. Many people are aware about the need of injection (84%) following dog bite but most of reported that single injection or tetanus toxoid vaccine is enough (66.3%), and very low awareness regarding rabies, dog population control program and management of dog bite injuries reported earlier [8] is in accordance with the present study findings.

Active and passive immunization

In the present study it was found that knowledge on active immunization was observed in 100% survey participants, but only 24% of the people said that immediately after exposure, whereas 76% of the people told in one or two days after exposure. Nobody had knowledge about passive immunization and its need (Figure 4). Animal bite patients often present with delay when wound infection is already well established. Immunoglobulin, administered at the onset of post-exposure treatment and injected into potential inoculation sites, represents a safety net for the patient till vaccine induced endogenous antibodies are formed [12]. Earlier studies reported that antirabies vaccines were received in higher percentage of dog bite cases but most of them received incomplete treatment [8, 19, 21, 22], which is in accordance with the present study findings. Similarly, the percent of people receiving immunoglobulin is also very low [8].

Follow of traditional treatment

Some people (34%) were preferred traditional treatment (Figure 4) reported in this survey. It is suggested that the herbal medicines are no way associated with PEP fowled in the rabies prevention and control. The finding of the present study is supported by the finding of several authors. A study reported that about 36.4% people would like to visit the doctor and 31% would like to apply first-aid measures without consulting a physician; and under these circumstances people either do religious customs (19.2%) such as chilli application or tobacco leaf application or tie a bell to a temple or do nothing (13.3%) [13]. More than half of the dog bite victims first sought treatment from traditional healers, and these treatments included application of oils, salt, herbs, and red chillies on the wounds, eating medicated bananas and drinking medicated water prepared by traditional healers [14]. There were also higher levels of wrong perceptions like application of turmeric powder, mud and lime to the wound [15, 23].

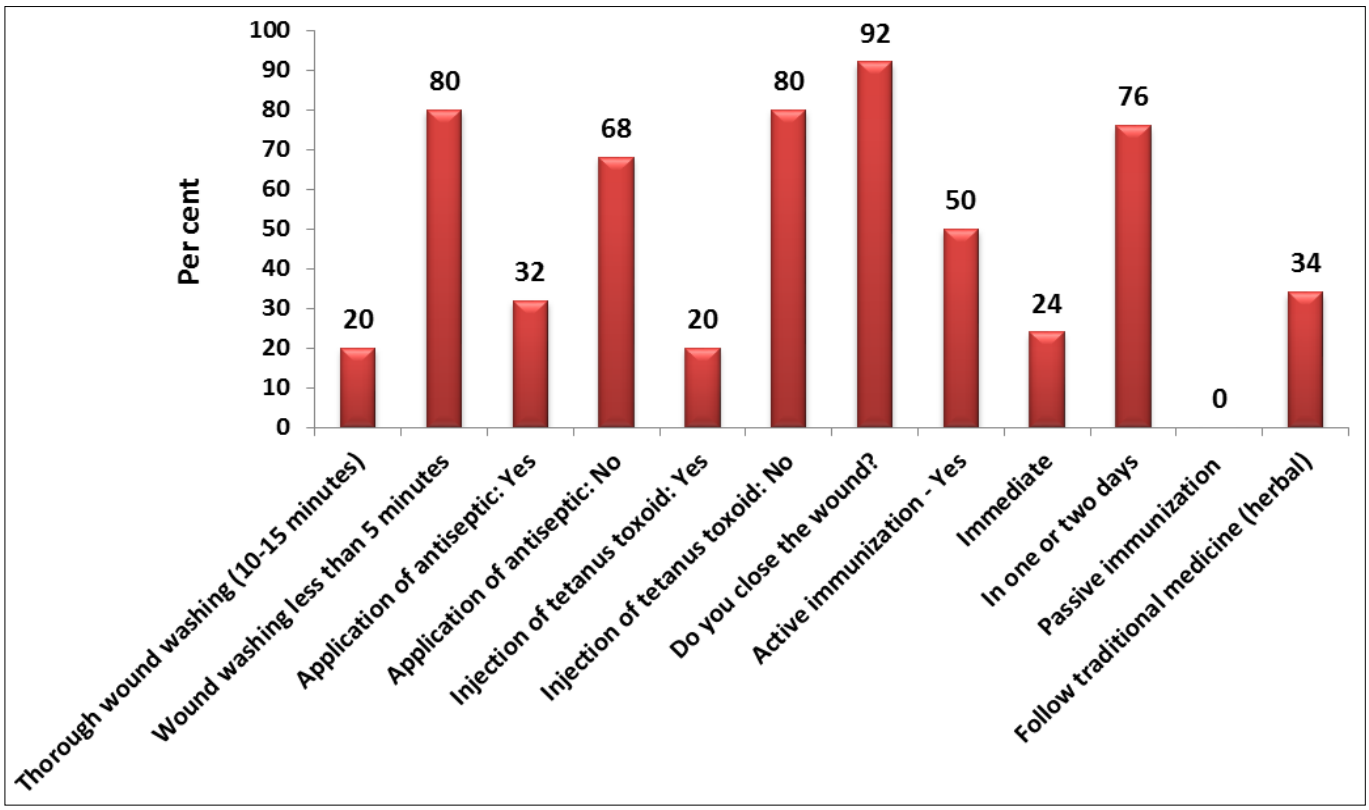

Fig 4: Knowledge on PEP, active and passive immunization, and following the traditional medicine among people having dogs in and around Orathanadu, Tamil Nadu, India

Conclusion

Rabies and its impact gaining paramount importance worldwide, particularly in South East Asian countries. India is endemic to rabies because of the rabies virus circulating in the stray dogs and wild animals. Antirabies vaccines are very well available commercially in all over India. However, the dog keepers must follow regular prophylactic vaccination schedule for their pets to prevent contraction of rabies even if there is exposure to the known rabid dog. Even though people had knowledge about the transmission of rabies and active immunization against it, attitude towards proper wound washing and its management, immediate active and passive immunization, UOR of suspected dog, and traditional treatment have to be changed. It can be achieved through conduct of awareness programme regularly to the dog owners, licensing to keep pet dogs or semi-owned dogs for antirabies vaccination should become mandate, and control of breeding of stray dog population.

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