

## KNOWLEDGE, ATTITUDE AND PRACTICES TOWARDS RABIES: A QUESTIONNAIRE BASED STUDY

DAVINDER SINGH<sup>1</sup>, SUJOY KHANNA<sup>2</sup>, JYOTI SHUNTHWAL<sup>1\*</sup> and G.R. GOWANE<sup>3</sup>

<sup>1</sup>Haryana Pashu Vigyan Kendra, Mahendergarh, <sup>2</sup>Haryana Pashu Vigyan Kendra, Karnal  
Lala Lajpat Rai University of Veterinary and Animal Sciences, Hisar-125004

<sup>3</sup>Animal Genetics and Breeding Division, ICAR-NDRI, Karnal-132001

Received: 24.05.2022; Accepted: 06.08.2022

### ABSTRACT

Rabies is an endemic and fatal zoonotic disease in Asian continent. There are many myths and false beliefs associated with rabies among general public. An efficient rabies control programme requires active participation of the public whose knowledge, attitude and practices about the disease and its management need to be thoroughly assessed. The aim of our survey was to identify gaps in the knowledge of people about rabies; evaluate their attitudes and assess their practices towards rabies and dog-bite wound management. The study population comprised of 928 respondents. Interpretation of data was done mainly using percentages. Chi square test and test of association ( $\chi^2$ ) was used to test the statistical difference. Male respondents were more likely to have better knowledge about rabies or have heard more about rabies as compared to female respondents. Respondents who own a pet, have dog as a pet and have got their pet vaccinated against rabies were found to be more knowledgeable about rabies. 64.36 % of respondents were aware of the signs and symptoms of rabies in animals. Large section (67.03%) was aware of the simple procedure of washing the wound with soap and antiseptic solution, which has potential to reduce the incidence of rabies substantially. Still, 63.67% indicated that there is no need for post-bite vaccination and 40.62% indicated that red chilli powder application will kill rabies virus infection.

**Keywords:** Knowledge, Practices, Questionnaire, Rabies

**How to cite:** Singh, D., Khanna, S., Shunthwal, J. and Gowane, G.R. (2023). Knowledge, attitude and practices towards rabies: A questionnaire based study. *The Haryana Veterinarian* 62(1): 30-34.

Rabies is an endemic disease in the entire Asian continent with India reporting the highest number of human deaths due to this fatal zoonotic disease (Meslin *et al.*, 1994). It has since long been a disease of low public health priority (Meslin, 2009). This is very unfortunate as almost 65,000 deaths across the globe and 20,000 deaths in India occur annually due to rabies, making it the country with the highest rabies fatalities in Asia and the second highest in the world (WHO, 2011). However, the true public health impact of rabies in India is unknown due to a lack of accurate data (Maroof, 2013). It is estimated that the number of deaths due to rabies may be 10 times more than that are reported (Park, 2005).

The dog population of India is estimated to be around 10 million (Livestock Census Report, 2019) and 99% of the mortality in humans is attributed to the transmission of the virus through dog-bites (Knobel *et al.*, 2005). A gross lack of awareness about the disease is one of the prime factors that leads to under-reporting of human mortality due to rabies (Sudarshan *et al.*, 2007). There are many myths about rabies and false beliefs associated with post-bite wound management. These include application of herbs and red chillies on the wounds inflicted by rabid animals and not washing the wound properly (Sekhon *et al.*, 2002).

An efficient rabies control programme is not possible without the active participation of the people whose knowledge, attitudes and practices regarding rabies

and its management is thoroughly assessed. In the wake of the increased rabies cases in India, it is important to assess the KAP of communities, not only towards rabies, its spread to humans but also towards the practices adopted towards dog-bite and rabid animals. KAP surveys can help to point out the inadequacies of the existing disease control programmes and help improve their effectiveness by managing the shortcomings. Therefore, the present study was conducted for identification of gaps in knowledge, attitude and practices (KAP) among randomly selected population of Haryana and Punjab state through online based survey methodology.

### MATERIALS AND METHODS

#### Study area

A questionnaire was developed in both Hindi and English language and shared as google form link to the randomly selected participants through email, sms, whats App etc. during the month of October, 2022. The target population was randomly selected from rural and urban background of Haryana and Punjab state belonging to age group of 16-65 years. Pretesting of the questionnaire was carried out with five veterinarians, ten veterinary students and then sent to 40 respondents for piloting. Minor corrections were made, and the questionnaire received from pilot participants, was finalised for circulation among the respondents. The data thus collected was further analysed for interpretation.

\*Corresponding author: jyotishunthwal.112@gmail.com

## Sampling procedure

A sample size of 1000 individuals for the rabies related survey was planned. The respondents were selected through random sampling. Prior to the commencement of the online survey, the study was explained to the participants through personal communication with voice calling, email and messages and the confidentiality of their answers was confirmed through a survey disclaimer.

## Questionnaire design

The aim of the KAP questionnaire was to: identify gaps in the knowledge about rabies; assess the practices towards the disease that potentially contributes to the persistence of rabies; evaluate the attitudes of the respondents towards dog bite. The questionnaire consisted of closed questions on: (a) the details of the respondents (05 questions); (b) KAP regarding rabies (12 questions of which 07 pertained to knowledge about rabies & its spread to humans; and 05 questions to attitudes and practices adopted by the respondents towards dog-bite, respectively). The questions were available to the respondents in their local language (Hindi) as well as in English and their answers were recorded online.

## Data Management and Statistical Analysis

The responses on the questionnaire sheet were transferred onto a Microsoft EXCEL spreadsheet and made compatible for subsequent analysis using the SPSS 20 software. Ten percent of the questionnaires were checked to detect data errors; no errors were observed. The questions, for which no response was received from the respondents; in those cases, another option was created to get the cumulative proportions 100 per cent.

The data were analysed using the tests of association such as Chi square test ( $\chi^2$ ) and logistic multinomial regression, depending on the requirement of the dataset. The statistical significance was tested at 5% level of significance. Odds Ratio for occurrence of incidence was tested using Wald's statistics when multinomial logistic regression was used for analysis. The results obtained from the data which was collected from sample respondents were presented in the form of tables.

## RESULTS AND DISCUSSION

The questionnaire was completed by 928 respondents (Table 1). Respondents were contacted in the study period and the response rate for the online questionnaire was estimated at 92.3% (n=923/1000). Non respondents were not further investigated.

The univariable analyses ( $\chi^2$ ) of responses pertaining to knowledge about rabies in relation to different variables is summarized in Table 1. Out of the total 928 respondents

who completed the questionnaire, 51.08% (474) were male respondents and 48.92% (454) were female respondents. The variables gender, having a pet in house, species of the pet and their vaccination status were offered to the multinomial logistic regression model to assess the participant's knowledge about rabies (Table 1). In the bivariate analyses of responses about knowledge on rabies (Table 1), male respondents were more likely to have better knowledge about rabies or have heard more about rabies (OR .91 95% CI 0.66-1.26, p=0.01) as compared to female respondents. This may be due to the better opportunities offered to males to gather knowledge regarding rabies as reported by Guadu *et al.*, 2014. Similarly, the respondents who own a pet (OR 1.56 95% CI 0.76-3.18, p=0.01), have dog as a pet (OR 1.003 95% CI 0.49-2.04, p=0.01) and have got their pet vaccinated against rabies (OR .78 95% CI 0.44-1.39, p=0.01) were found to be more knowledgeable about rabies (Table 1). In line with our report, another study from Gujarat, India (Singh and Choudhary, 2005) indicated that 98.6% of people were aware about rabies.

Only 27.85% (242) of respondents responded to have seen or encountered a rabid animal in their life (Table 2). A survey study from Ethiopia reported that 87% of the respondents had encountered rabid animal(s) which could be due to difference in incidence of rabies in the study areas (Digafe *et al.*, 2015).

Our study showed that there was good level of awareness regarding clinical signs and symptoms of rabies in animals. 64.36 % (455) of the respondents correctly selected all the signs and symptoms of rabies despite only 4.42% (41) of respondents were ever bitten by a rabid animal (Table 2). Aggression was mentioned as a clinical sign by 18.86% (155) of the respondents which is in line with the fact that furious form of rabies is the common type of rabies in animals (Kitala *et al.*, 2000). Aggression is more easily identifiable clinical symptom of rabies by most people and attracts individuals' attention as the animals tend to attack humans and other animals.

The result of the study shown that only 25.64% (141) preferred vaccination as a post bite treatment, whereas majority of the respondents (44.52%, n=272) choose no requirement for any post bite treatment. When prompted for further information, 34.55% (190) selected traditional home treatment like red mirchi application etc. as post bite remedy, 35.27% (194) of the respondents had no idea about any treatment. Whereas only 25.64% (n=141) had information about vaccination as post bite treatment. In a similar Ethiopian study, it was reported that 58.3% participants of the study had strong beliefs in traditional medicine (Ali *et al.*, 2013). Similarly, Jemberu *et al.* (2013) reported even higher (84%) reliance of respondents on

**Table 1. Test of association ( $\chi^2$ ) between various predictor variables and knowledge about Rabies in respondents of Haryana, India**

| Variable                                                  | N (%)       | Std. Error | Sig.  | OR (95% CI)        |
|-----------------------------------------------------------|-------------|------------|-------|--------------------|
| <b>Gender</b>                                             |             |            |       |                    |
| Male                                                      | 474 (51.08) | 0.163      | 0.600 | .918 (.667-1.264)  |
| Female                                                    | 454 (48.92) | 0.00       | 0.00  | 0.00               |
| <b>Do you have a pet in your house?</b>                   |             |            |       |                    |
| Yes                                                       | 247 (26.62) | .363       | .218  | 1.564 (.767-3.188) |
| No                                                        | 681 (73.38) | 0.00       | 0.00  | 0.00               |
| <b>What is the species of pet you have in your house?</b> |             |            |       |                    |
| Cat                                                       | 7 (2.83)    | .744       | .929  | .936 (.218-4.025)  |
| Dog                                                       | 169 (68.42) | .365       | .994  | 1.003 (.491-2.049) |
| Other                                                     | 71 (28.71)  | 0.00       | 0.00  | 0.00               |
| <b>Is your pet vaccinated against rabies?</b>             |             |            |       |                    |
| Yes                                                       | 52 (21.05)  | .294       | .410  | .785 (.441-1.397)  |
| No                                                        | 110 (44.53) | .365       | .000  | .210 (.103-.429)   |
| Do not know                                               | 85 (34.41)  | 0.00       | 0.00  | 0.00               |

N (%)=Total Respondents (Percentage); OR= Odds Ratio

**Table 2. Chi square test between the respondents' knowledge about sign/symptoms and practices followed for prevention and cure of rabies**

| Variable                                                                                  | N (%)       | Chi Square | P Value |
|-------------------------------------------------------------------------------------------|-------------|------------|---------|
| <b>Experience of seeing or encountering rabid animal by participant</b>                   |             |            |         |
| Yes                                                                                       | 242 (27.85) | 150.009    | **      |
| No                                                                                        | 455 (52.36) |            |         |
| May be                                                                                    | 172 (19.79) |            |         |
| <b>Signs / symptoms observed in a rabid animal</b>                                        |             |            |         |
| All of the below                                                                          | 529 (64.36) | 1076.127   | **      |
| Aggression                                                                                | 155 (18.86) |            |         |
| Excessive salivation                                                                      | 81 (9.85)   |            |         |
| Hydrophobia                                                                               | 29 (3.53)   |            |         |
| Aimless movement                                                                          | 28 (3.41)   |            |         |
| <b>Experience of being bitten by a rabid animal</b>                                       |             |            |         |
| Yes                                                                                       | 41 (4.42)   | 1435.276   | **      |
| No                                                                                        | 852 (91.81) |            |         |
| May be                                                                                    | 35 (3.77)   |            |         |
| <b>Experience of bitten by a suspected rabid animal and requirement for any treatment</b> |             |            |         |
| Yes                                                                                       | 201 (32.90) | 183.674    | **      |
| No                                                                                        | 272 (44.52) |            |         |
| May be                                                                                    | 138 (22.59) |            |         |
| <b>Knowledge on post bite (suspected rabid animal) treatment</b>                          |             |            |         |
| Vaccination and modern medicine                                                           | 12 (2.18)   | 166.291    | **      |
| Vaccination                                                                               | 141 (25.64) |            |         |
| Only modern medicine                                                                      | 13 (2.36)   |            |         |
| Traditional home treatment                                                                | 190 (34.55) |            |         |
| Don't know                                                                                | 194 (35.27) |            |         |
| <b>Knowledge on vaccination after bitten by a suspected rabid animal</b>                  |             |            |         |
| Immediately within 24 hr                                                                  | 99 (17.13)  | 716.965    | **      |
| After 2 days                                                                              | 36 (6.23)   |            |         |
| After 7 days                                                                              | 51 (8.82)   |            |         |

|                                                                                                       |             |         |    |
|-------------------------------------------------------------------------------------------------------|-------------|---------|----|
| Within 40 days                                                                                        | 24 (4.15)   |         |    |
| No need of vaccination                                                                                | 368 (63.67) |         |    |
| <b>Preference for any traditional / home / self-treatment to be undertaken after the bite</b>         |             |         |    |
| Yes                                                                                                   | 186 (32.69) | 68.206  | ** |
| No                                                                                                    | 383 (67.31) |         |    |
| <b>Immediate steps should be undertaken, if bitten by a suspected rabid animal</b>                    |             |         |    |
| Simple washing of wound with water                                                                    | 49 (5.9)    | 798.396 | ** |
| Washing of wound with water and soap or antiseptic solution                                           | 557 (67.03) |         |    |
| Treatment with oil and red chili paste                                                                | 129 (15.52) |         |    |
| Any other traditional treatment                                                                       | 96 (11.55)  |         |    |
| <b>Application of Red Chilli or any other home remedy for wound management</b>                        |             |         |    |
| No, it will further spread Rabies virus from wound                                                    | 459 (59.38) | 27.199  | ** |
| Yes, Red Chilli Powder application will kill Rabies Virus Infection                                   | 314 (40.62) |         |    |
| <b>Knowledge on treatment of Rabies</b>                                                               |             |         |    |
| No treatment is possible, once signs and symptoms appear                                              | 191 (24.06) | 213.78  | ** |
| Yes, treatment is possible after appearance of sign and symptoms of Rabies                            | 603 (75.94) |         |    |
| <b>Knowledge on prognosis for death of rabies infected animal after appearance of rabies symptoms</b> |             |         |    |
| After 7 -10 days                                                                                      | 550 (71.80) | 514.23  | ** |
| After 1 day                                                                                           | 60 (7.83)   |         |    |
| After 2 days                                                                                          | 71 (9.27)   |         |    |
| Immediately                                                                                           | 85 (11.10)  |         |    |
| <b>Knowledge on age at which first rabies vaccine is given to dogs</b>                                |             |         |    |
| At 3 months of age                                                                                    | 305 (39.20) | 473.13  | ** |
| At 1.5 month of age                                                                                   | 117 (15.04) |         |    |
| At 1 year of age                                                                                      | 60 (7.71)   |         |    |
| Do not know                                                                                           | 296 (38.05) |         |    |
| <b>Knowledge on zoonotic nature of Rabies</b>                                                         |             |         |    |
| Yes                                                                                                   | 619 (72.06) | 683.56  | ** |
| No                                                                                                    | 50 (5.82)   |         |    |
| Do not know                                                                                           | 190 (22.12) |         |    |

P value: \*: P<0.05, \*\*: P<0.01, NS: P>0.05

traditional treatment. The preference for traditional home treatment might be because of many factors including easy access to them, lack of awareness about vaccination and high cost of modern treatment.

Similarly, majority of the respondents (63.67%, 368) responded that there is no need for post-bite vaccination while only 17.13% (99) responded that vaccination must be carried out immediately within 24 hours of suspected dog bite. Only 32.69% (186) respondents indicated requirement of traditional/home/self-treatment after the bite. However, majority of the respondents (67.03%, 557) indicated that washing of wound with water and soap or antiseptic solution may prevent rabies infection. Other published surveys have also indicated that similar proportion of people felt that washing the wound with soap and water was the best option (Singh and Choudhary, 2005). Washing of rabies-infected wounds with soap and water can increase survival by 50 % (Radostits *et al.*, 2007). This treatment is cheap, readily available and feasible for all to apply.

40.62% (314) of the respondents responded that red chilli powder application will kill rabies virus infection while 59.38% (459) responded that it will further spread rabies virus from the wound. Similar to our report, Singh and Choudhary, 2005 reported that 19% of respondents after dog-bite follow certain religious customs like application of red chilli, lime, green chilli or even tobacco leaves. Tiwari *et al.*, 2019 reported that more than half of the respondents (55.4%) favoured the use of traditional healing applications, such as chilli powder and turmeric, similar to studies reported elsewhere in urban India including Delhi (51%) (Kamble *et al.*, 2016) and Dehradun (57%) (Ohri *et al.*, 2016).

75.94% (603) responded that treatment is possible even after appearance of sign and symptoms of Rabies while only 24.06% (191) respondents responded that there is no treatment for rabies once signs and symptoms appear. It is very critical to convince the community that the disease is totally fatal and non-treatable once the clinical signs are

manifested in order to encourage to look for treatment before the occurrence of the symptoms (Digafe *et al.*, 2015).

Majority of the respondents (71.80%, 550) have correct knowledge about death of dog after 7-10 days of appearing of rabies symptoms. 39.20% (305) and 72.06% (619) of the respondents have correct knowledge about age at which first rabies vaccine is given to dogs and if rabies can spread from animals to humans. Conversely, these are the positive outcomes from this study, because dogs are known to be responsible for more than 90 % of all human rabies cases worldwide (Scott, 2004).

## CONCLUSION

The study concluded that level of knowledge of respondents about the signs/symptoms of rabies in animals is sufficiently good even when the exposure to rabid animals is very low in the survey area. However, there is a lack of knowledge about post exposure practices, like immediate use of anti-rabies post exposure prophylaxis and wound management. Although, large section was aware of the simple procedure of washing the wound with soap and antiseptic solution, which has potential to reduce the incidence of rabies substantially. Still, reliance on home remedy viz. application of red chilli powder etc. for wound management is cause of serious concern. The study participants were contacted online and the group is better connected and informed about what is happening around, including animal disease situations, which may have contributed to their selective high level of awareness.

Present study identifies gap in knowledge, attitude and practices regarding rabies, which may be helpful for further development of community based awareness programme for control and eradication of Rabies in the country.

## REFERENCES

- 20th Livestock Census Report (2019). All India Report. Ministry of Fisheries, Animal Husbandry and Dairying. Department of Animal Husbandry & Dairying.
- Ali, A., Yimer, E.A. and Sifer, D. (2013). A study on knowledge, attitude and practice of rabies among residents in Addis Ababa, Ethiopia. *Ethiop. Vet. J.* **17**(2): 19–35.
- Bassin, S.L., Rupprecht, C.E., Bleck and Rhabdoviruses, T.P. (2010). In: Principles and Practice of Infectious Diseases. Edited by: Mandell, G.L., Bennett, J.E., Dolin, R. (7<sup>th</sup> Edn.), New York: Churchill Livingstone: 2249-58.
- Digafe, R.T, Kifelew, L.G. and Mechesso, A.F. (2015). Knowledge, attitudes and practices towards rabies: questionnaire survey in rural household heads of Gondar Zuria District, Ethiopia. *BMC Res. Notes.* **8**: 400.
- Guadu, T., Shite, A., Chanie, M., Bogale, B. and Fentahum, T. (2014). Assessment of knowledge, attitude and practices about rabies and associated factors: in the case of Bahir Dar town. *Global Veterinaria.* **13**(3): 348-54.
- Jemberu, W.T., Molla, W., Almaw, G. and Alemu, S. (2013). Incidence of rabies in humans and domestic animals and people's awareness in North Gondar Zone, Ethiopia. *PLOS Negl. Trop. Dis.* **7**(5): e2216.
- Kamble, B., Panesar, S., Das, A., Roy, N., Yadav, G. and Khokhar, A. (2016). Knowledge, attitude and practices related to animal bites among the residents of an urbanized village in South Delhi. *Int. J. Res. Deve. Pharma Life Sci.* **5**(3): 2164-8.
- Kitala, P.M., McDermott, J.J., Kyule, M.N. and Gathuma, J.M. (2000). Community-based active surveillance for rabies in Machakos District, Kenya. *Prev. Vet. Med.* **44**: 73-85.
- Knobel, D.L., Cleaveland, S., Coleman, P.G., Fèvre, E.M., Meltzer, M.I. and Miranda, M. (2005). Re-evaluating the burden of rabies in Africa and Asia. *Bulletin of the World Health Organization.* **83**(5): 360-8.
- Maroof, K. (2013). Burden of rabies in India: the need for a reliable reassessment. *Indian J. Community Health.* **25**(4): 488-91.
- Meslin, F., Fishbein, D. and Matter, H. (1994). Rationale and prospects for rabies elimination in developing countries. *Curr. Top. Microbiol. Immunol.* **187**: 1-26.
- Meslin, F.X. (2009). Appraisal on implementation of intradermal rabies vaccination in India- The Kerala experience. Department of Control of Neglected Tropical Diseases (NTD), Geneva, Switzerland.
- Ohri, P., Jain, K., Kumari, R. and Gupta, S.K. (2016). A study about perception of people regarding animal bite in urban area of Dehradun. *Infection.* **9**(3): 75.
- Park, K. (2005). Epidemiology of communicable diseases. Park's Textbook of Preventive and Social Medicine. (18<sup>th</sup> Edn.), Jabalpur: M/S Banarsidas Bhanot Publishers; p. 146.
- Radostits, O.M., Gay, C.C., Hinchcliff, K.W. and Constable, P.D. (2007). Veterinary medicine: a textbook of the diseases of cattle, horses, sheep, pigs and goats. (10<sup>th</sup> Edn.), London: Saunders. pp. 1384-94.
- Scott, R.P. (2004). Neurological disorders. In: Bovine medicine diseases and husbandry of cattle. Edited by Andrews, H.A., Blowey, W.R., Boyd, H., Eddy, G.R., Vol. 2. Oxford: Blackwell. pp. 908-9.
- Sekhon, A.S., Singh, A., Kaur, P. and Gupta, S. (2002). Misconceptions and myths in the management of animal bite case. *Indian J. Community Med.* **27**: 9-11.
- Singh, S.U. and Choudhary, S.K. (2005). Knowledge, attitude, behavior and practice study on dog-bites and its management in the context of prevention of rabies in a rural community of Gujarat. *Indian J. Community Med.* **30**: 3.
- Sudarshan, M.K., Madhusudana, S.N., Mahendra, B.J., Rao, N.S., Ashwath-Narayana, D.H., Abdul-Rahman, S., Meslin, F., Lobo, D., Ravikumar, K. and Gangaboraiah (2007). Assessing the burden of human rabies in India: results of a national multi-center epidemiological survey. *Int J. Infect. Dis.* **11**(1): 29-35.
- Tiwari, H.K., Robertson, I.D., O'Dea, M. and Vanak, A.T. (2019). Knowledge, attitudes and practices (KAP) towards rabies and free roaming dogs (FRD) in Panchkula district of north India: A cross-sectional study of urban residents. *PLOS Negl. Trop. Dis.* **13**(4): e0007384.
- World Health Organization (2011). Assessing burden of rabies in India. Association for Prevention and Control of Rabies in India (APCRI).