



# Effectiveness of Health Education on Knowledge Regarding Prophylaxis against Rabies in School Children

Ravish S Hardanahalli<sup>1</sup>, Jayanthi Srikanth<sup>1</sup>, Gangaboraiah Anandaiah<sup>2</sup>, Rachana Annadani<sup>3</sup>,  
Veena V<sup>4</sup>, Rupsa Banerjee<sup>5</sup>

**Financial Support:** None declared

**Conflict of Interest:** None declared

**Copy Right:** The Journal retains the copyrights of this article. However, reproduction is permissible with due acknowledgement of the source.

## How to cite this article:

Hardanahalli RS, Srikanth J, Anandaiah G, Annadani R, Veena V, Banerjee R. Effectiveness of Health Education on Knowledge Regarding Prophylaxis against Rabies in School Children. *Natl J Community Med* 2017; 8(6):311-314.

## Author's Affiliation:

<sup>1</sup>Asso Prof; <sup>2</sup>Prof, Dept of Community Medicine, KIMS, Bangalore; <sup>3</sup>Asst Prof, Dept. of Community Medicine, SS Institute of Medical Sciences, Davanagere; <sup>4</sup>Asst Prof, Dept. of Community Medicine, BGS Global Institute of Medical Sciences, Bangalore; <sup>5</sup>Senior Resident, Dept. of Community Medicine, Vardhaman Mahavir Medical College, New Delhi

## Correspondence

Dr. Ravish H Shankaraiah  
drravishhs@rediffmail.com

**Date of Submission:** 16-01-17

**Date of Acceptance:** 03-06-17

**Date of Publication:** 30-06-17

## INTRODUCTION

Rabies is a viral zoonosis that occurs in >100 countries in the World. It is transmitted to humans and other animals through close contact with saliva from infected animals i.e. bite, scratches, licks on broken skin and mucous membranes.<sup>1</sup> Although a number of carnivorous animals serve as natural reservoirs, dogs are the main source of human infections and poses a potential threat to > 3.3 billion people Worldwide.<sup>2</sup>

A combination of large human and dog populations in congested habitable areas combined with

## ABSTRACT

**Introduction:** School children are at risk for exposure to dogs because of their playful nature and unable to protect themselves. Seeking timely and correct post-exposure prophylaxis is necessary to prevent rabies. In this background, the present study was conducted to assess the knowledge of school children and to know the effectiveness of health education on improvement in their knowledge.

**Methods:** The study included 121 high school children of an urban poor locality in Bangalore. All of them were administered pre-test using a self-administered questionnaire in the local language and the knowledge was assessed. Later, health education session was conducted regarding prevention of rabies. Subsequently, 3 months later, post-test was administered to the same study subjects. The data was recorded and analysed. The descriptive statistics was computed and the student paired T - test was used to compare pre & post- test score.

**Results:** The mean score of knowledge in the pre- test was 12.02 out of 20 and after health education session, the post- test score increased significantly to 16.94.

**Conclusions:** Knowledge on prophylaxis against rabies improved after health education. Therefore, health education sessions should be conducted in all the schools, to prevent rabies among this vulnerable group.

**Key words:** health education, knowledge, prophylaxis, rabies, school children.

widespread poverty has led to more exposures in World Health Organization (WHO)'s South East Asia Region, than in any other part of the World. More than 1.4 billion people in this Region are at risk of rabies infection. Therefore, it continues to be a major public health and economic problem throughout the Region.<sup>3</sup> India is also a rabies endemic country, where animal bites to humans are a major public health problem and an estimated 17.4 million animal bites occur annually which accounts to an incidence of 1.7 %.<sup>4</sup>

In urban areas, the disease is mainly transmitted by dogs, being responsible for 96% of animal bite

cases.<sup>5</sup> Children are the most frequently exposed age group, representing 50% of human exposures in canine rabies infected areas.<sup>6</sup> Children playing outdoors are particularly vulnerable to dog bites, since unvaccinated dogs are commonly observed on the streets and on/around public places and school playgrounds. Therefore, they are more likely to be bitten by dogs, and are also likely to be exposed more severely, through multiple bites in high-risk sites on the body. Severe exposures make it more difficult to prevent rabies unless access to good and immediate medical care is available.

The exposed children should have correct knowledge regarding the immediate measures to be taken after the exposure and to seek post exposure prophylaxis (PEP) from the health care facility. Timely and correct PEP, which includes thorough wound wash, full course of anti rabies vaccine (ARV) and local infiltration of rabies immunoglobulin (RIGs), is almost invariably effective in preventing rabies, even after high-risk exposure.<sup>7</sup>

Knowledge, attitudes and practices (KAP) studies have been widely used, around the World for different applications in public health, based on the principle that increasing knowledge will result in changing attitudes and practices to minimize the disease burden. Therefore, the present study assessed the knowledge of school children regarding prophylaxis against rabies and also the effectiveness of health education in improving the knowledge among these subjects. The improved knowledge will help themselves and also other younger children, whom they can advise regarding post exposure prophylaxis to prevent rabies.

## SUBJECTS & METHODS

The present study was done after getting the Institutional Ethical committee clearance. The school authorities were briefed regarding the purpose of the study and written permission was obtained from them, before starting the study.

The study was conducted in the Government School of an urban poor locality which comes under the community practice area of the Department of Community Medicine, Kempegowda Institute of Medical Sciences (KIMS), Bangalore, India. It was conducted from September 2015 to December 2015 as a part of World Rabies Day, 2015 activity.

**Subjects:** One hundred and twenty one students of both sexes, aged between 14 and 16 years who had attended the school on the World Rabies Day, were enrolled in the study.

**Methods:** All the study subjects were administered pre-test using a pretested, structured, self-administered questionnaire in the local language

and the knowledge was assessed by allotting a score of one to each correct answer and zero to wrong answer and the sum of the scores was calculated. The mean score of the subjects for the pre-test was determined. Similarly, for each knowledge question, the number and percentage of study subjects giving correct answer was also calculated. Later, health education session was conducted by the faculty of community medicine, by showing a 45 minutes video on prophylaxis against rabies produced by Rabies in Asia (RIA) foundation and was explained in detail regarding the same for another 45 minutes; later, any questions from the students were answered. Subsequently, 3 months later, post-test was administered to the same students using the same questionnaire and the knowledge at that point of time was assessed. The mean knowledge score of the study subjects were compared for pre- and post-test. The overall data was analysed using SPSS version 21.0. The descriptive statistics was computed and the Student paired T-test was used to compare pre & post-test score.

## RESULTS

**Socio - Demographic profile:** Total 121 high school children were included in the study. Among them 57 (47%) were boys and 64 (53%) girls. Their mean age was 14.29 years  $\pm$  1.36 years. Majority of the children i.e., 109 (90%) belonged to lower socio economic class as per modified Kuppaswamy's socio-economic status scale (Table 1).

**Table 1: Socio- demographic characteristics of the study subjects**

| Socio-demographic characteristics                               | Values           |
|---|------------------|
| Mean age in years ( $\pm$ SD)                                   | 14.29 $\pm$ 1.36 |
| Sex   |                  |
| Male  | 57 (47.1%)       |
| Female  | 64 (52.9%)       |
| Socio Economic Status<br>(modified Kuppaswamy's classification) |                  |
| Upper Class   | 12 (9.9%)        |
| Lower class   | 109 (90.1%)      |

**Table 2: Comparison of pre-test and post-test score among the study subjects (N =121)**

| Knowledge Score | N   | Mean  | SD    | SE (mean) |
|-----------------|-----|-------|-------|-----------|
| Pre-test        | 121 | 12.02 | 2.164 | 0.197     |
| Post-test       | 121 | 16.94 | 1.640 | 0.149     |

**Table 3: Improvement in knowledge among the study subjects after health education (N =121)**

| Knowledge Score | Mean $\pm$ SD    | SE   |
|-----------------|------------------|------|
| Pre-test        | 12.02 $\pm$ 2.16 | 0.19 |
| Post-test       | 16.94 $\pm$ 1.64 | 0.14 |

t value 29.301; p <0.001

**Knowledge before Health education:** The present study showed that, the knowledge on prophylaxis against rabies was low in the pre-test with the mean score of 12.02 +2.16 out of 20. There was relatively low knowledge on animals transmitting rabies (66.9%), dangers of animal bitewounds (55.9%), need for prophylaxis against rabies (66.9%), importance of wound washing (50.7%) and availability of pre-exposure prophylaxis services (68.8%). On the contrary, there was relatively good knowledge about the importance of the disease (75.2%), number of doses of vaccine (74.4%) and availability of rabies vaccine (75.2%). Similarly, the study subjects had good knowledge regarding the safety of rabies vaccine (85.3%) (Table 2).

**Knowledge after Health education:** The knowledge on prophylaxis against rabies improved after health education with the mean score of 16.94 + 1.64 out of 20. There was improvement in knowledge regarding dangers of animal bites (75.9%), animals transmitting rabies (79.9%), need for post exposure prophylaxis against rabies (76.9%) and availability of pre-exposure prophylaxis (84.8%), importance of the disease (84.8%), importance of wound washing (85.7%) and availability of rabies vaccine (86.2%); which were relatively less in pre-test (Table 2).

Overall, there was a significant improvement in knowledge among the study subjects after the health education; which increased from 12.02 ± 2.16 to 16.94 ± 1.64, which was statistically significant with t-value of 29.301 and  $p < 0.001$  (Table 3).

## DISCUSSION

Rabies is a neglected zoonotic disease (a disease that is transmitted from animals to humans) caused by the rabies virus. The neglected disease indicates that, it is insufficiently addressed by Governments and the International community, and that, they are best defined by the people and communities they affect the most i.e., poor people living in remote rural areas and urban slums of the developing World.<sup>8</sup>

Rabies is a 100% vaccine-preventable disease.<sup>9</sup> Therefore, it is the first zoonosis on the list of neglected diseases targeted for regional and eventually global elimination and is the disease most amenable to control, as the tools for prevention i.e., post exposure prophylaxis are available.<sup>10</sup> Therefore, in rabies endemic country like India, where every animal bite is potentially suspected as a rabid animal bite, the treatment should be started immediately.<sup>11</sup> However, people should have the knowledge on PEP and should approach the physician as early as possible. Children who are playful in nature & playing outdoors are particular-

ly vulnerable to dog bites, since unvaccinated community dogs are commonly observed on the streets and on or around public places and school playgrounds. Therefore, they should have the correct knowledge regarding, where to seek post exposure prophylaxis immediately after exposure.

In the present study, the knowledge on correct PEP against rabies was not complete; there was relatively low knowledge regarding animals transmitting rabies (66.9%), dangers of animal bites (55.9%) and importance of wound washing (50.7%). Similarly, a study from Mandya on awareness regarding prevention of rabies among medical school entrants showed that the knowledge on post exposure measures was not adequate with only 56.04% knew about the importance of wound washing.<sup>12</sup> Other studies on perception of paramedical students on prevention of rabies from Orissa & Mandya also showed that the knowledge on washing wounds was only 51% and 56.1% respectively.<sup>13,14</sup> These results showed that, the knowledge is relatively incomplete among the students regarding the first step of post exposure prophylaxis i.e., washing wounds with soap & water.

Another study from rural community of Gujarat also showed that only 31.1% of the subjects knew about washing of wound as a first aid measure immediately after the bite.<sup>15</sup> Therefore, health education regarding the importance of immediate wound washing in cases of animal bites, which is important to wash away the virus deposited on the surface of the wound, thereby helps in preventing rabies has to be given.

Similarly, the knowledge of students regarding need for post exposure prophylaxis (66.9%), availability of pre-exposure prophylaxis services (68.8%) was also not adequate. Similarly, a study from Mandya et al among the general population also showed that, the knowledge of general public regarding seeking early post exposure prophylaxis was only 57.9%.<sup>16</sup> Another study among the residents from Gwalior also showed that, only 36.7% of them were aware of seeking correct post exposure prophylaxis.<sup>17</sup> Likewise, other study among the general community from Delhi showed that, only 56.3% sought proper post exposure prophylaxis after the dog bite.<sup>18</sup> Another study from West Bengal in a rural area showed that the perception of people regarding animal bite and its management showed that, only 73.2% would like to consult the doctor for post exposure prophylaxis.<sup>19</sup> On the contrary, a study from Meerut showed that only 7% of the rural population had knowledge about post exposure prophylaxis.<sup>20</sup>

All these studies showed that, it is essential to provide proper health education to the community regarding the immediate post exposure prophylaxis

in order to prevent the fatal disease. The present study showed that, there was a significant improvement in the knowledge among the children after health education with  $t$  - value of 29.301 and  $p < 0.001$ . This improvement in knowledge is very essential and important for changing their attitudes and practices regarding the disease prevention.

## CONCLUSION

Health education was effective in improving the knowledge on PEP against rabies among school children. Therefore, regular health education sessions have to be conducted to all schools, which can be done by various means such as including in the school curriculum, audio-visual presentations and lectures by medical personnel. This will help in preventing rabies among the vulnerable group and to minimize the disease burden, which in turn helps in eliminating the disease.

## REFERENCES

- World Health Organization. Rabies vaccines: WHO position paper, Weekly Epidemiological Record, No. 32, 2010, 85: 309-20.
- Epidemiology and burden of rabies, World Health Organization 2015. Available at: <http://www.who.int/rabies/epidemiology/en>. accessed on 29.1.2017.
- WHO South East Asia region: Strategic Framework for Elimination of Human Rabies Transmitted by Dogs in the South-East Asia Region: World Health Organization, Regional office for South East Asia; 2012.
- Sudarshan M K, Madhusudana S N, Mahendra B J, Rao N S, AshwathNarayana D H, Abdul R S, et al. Assessing the burden of human rabies in India: results of a national multi-center epidemiological survey. *Int J Infect Dis* 2007; 11:29-35.
- National guidelines for rabies prophylaxis and intra-dermal administration of cell culture rabies vaccines, National Institute of Communicable Diseases, Ministry of Health & Family welfare, New Delhi, India. 2015.
- WHO Expert Consultation on Rabies. First report. Technical Report Series No. 931. Geneva: World Health Organization; 2005.
- WHO Expert Consultation on Rabies. Second report. Technical Report Series No. 982. Geneva: World Health Organization; 2013.
- World Health Organization. Human and dog rabies prevention and control. Report of the WHO/ Bill & Melinda Gates Foundation consultation. Annecy, France. 2009, p. 9
- Prevention of rabies, World Health Organization 2017. Available at: <http://www.who.int/rabies/prevention/en>. accessed on 29.5.2017.
- Ravish HS, Rupsa B, AshwathNarayana DH, Rachana AR. Safety of equine rabies immunoglobulin in children. *APCRI Journal* 2014;16(1):7-9.
- Ravish HS, Jayanthi S, AshwathNarayana DH, Rachana A, Veena V, and Malatesh U. Pre-exposure prophylaxis against rabies in children: Safety of purified chick embryo cell rabies vaccine (Vaxirab N) when administered by intradermal route. *Human Vaccines* 2013;9(9):1910-13.
- Vinay M, Sheethal MP, Mahendra BJ. Awareness regarding rabies and its prevention among first year medical students of Mandya. *APCRI Journal* 2012;13(2):13-15.
- SR Haldar, DM Satapathy, D Jena, RM Tripathy. Perception of paramedical students on rabies and its prevention. *APCRI Journal* 2012;13(2):25-26.
- Jahnavi, Manjunath M, Mahendra BJ, Ananthachari KR, Vinay M, Harish BR. Paramedical students perception regarding prevention of rabies. *International Journal of Current Research and Review* 2014;6(5):9-12.
- U.S.Singh, S.K. Choudhary. Knowledge, attitude, behavior and practices study on dog bite and its management in the context of prevention of rabies in a rural community of Gujarat. *Indian Journal of Community medicine* 2005; 30(3):84-90.
- Jahnavi R, Vinay M, Mahendra B J, Ravikumar MS, Raghini R. Knowledge regarding rabies prophylaxis among residents of Mandya district. *APCRI Journal* 2014;16 (1):16-19.
- Ranjana T, Priyesh M, Leena B, Vikash D, Anjali S, Abhishek G, et.al. A study to assess knowledge, attitude, behavior and practices regarding rabies in posh colonies of Gwalior district, Madhya Pradesh. *APCRI Journal* 2013;15 (1):16-19.
- Ichhpujani RL, Mala chhabra, Veena Mittal, Bhattacharya D. Knowledge, attitude, behavior and practices about animal bites and rabies in general community. *Indian Journal of Communicable Diseases* 2006; 38(3):355-62.
- ArnabGhosal, SouravNaiya, Tanushree Roy, Soumalya Roy, Deepanjan Roy, AparajitaDasgupta. Perception regarding animal bite: A community based study in a rural area of West Bengal. *APCRI Journal* 2016;17(2):18-22.
- Jairaj SH, Rahul B, Choudhary S, Roopa H, Pawan P. a comparative study of perception of people regarding animal bite and its management in rural and urban areas of Meerut district. *APCRI Journal* 2011;12(2):16-18.