

## Post-Exposure Antirabies Vaccination Status Following Formal Health Education Sessions among Animal Bite Cases Attending Antirabies Clinic of a Rural Tertiary Care Institute of Haryana: An Observational Study

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### ABSTRACT

**Background:** Rabies is a highly fatal completely preventable viral zoonotic disease of the central nervous system occurring in more than 150 countries and territories. People who have been given health education are more likely to learn about healthy behaviors and communicate effectively with health care providers about their health related issues. Hence this study was planned among animal bite cases following formal health education sessions given in antirabies clinic to elicit out their post exposure antirabies vaccination status.

**Methodology:** Record based cross-sectional observational study, carried out among the new patients attended formal health education session in anti-rabies clinic Bhagat Phool Singh Government Medical College for Women Khanpur Kalan, Sonapat during study period (1<sup>st</sup> June 2017 to 31<sup>st</sup> December 2017). The study variables included status of animal, wound toileting done after animal bite, TT vaccination, and adherence to required schedule of post exposure antirabies vaccination. Percentages, proportions and chi square tests were applied for drawing inferences and obtaining conclusion [p value <0.05 was taken as statistically significant].

**Results:** Majority of victims were males (62%) and major source of exposure was dog(91%). 78% cases reported were of category II and 70% animal bite cases had washed their wound after animal exposure. However 26% had applied topical applicants on their wound site. 139 (52%) animal bite cases following formal health education session had completed post exposure vaccination. The association of sex predilection, residential place and category of wound after

animal bite with ARV completion was found statistically significant (p value < 0.05).

**Conclusions:** Formal health education sessions given to animal exposed cases improved the post exposure vaccination status. Strengthening on conducting regular formal health education sessions in the antirabies clinic as well as at the community level was to be done.

**Key words:** Formal health education session, animal bite cases, post-exposure vaccination status.

### INTRODUCTION

Rabies is a highly fatal completely preventable viral zoonotic disease of the central nervous system occurring in more than 150 countries and territories. It is a responsible for an estimated 59 000 human deaths and over 3.7 million disability-adjusted life years (DALYs) lost every year. Out of these more than 95% of human deaths are occurring in Asia and Africa regions.<sup>[1,2]</sup> Rabies is almost invariably fatal once clinical signs occur, as a result of acute progressive encephalitis. Rabies occurs mainly in underserved populations, both rural and urban area.<sup>[3]</sup> It is transmitted to humans usually by bites or lick of rabid animals; dogs are the main source of human rabies deaths, contributing up to 99% of all rabies transmissions to humans. Most cases occur in Africa and Asia, with approximately 40% of cases in children aged <15 years. Every year, more than 15 million people worldwide receive a post bite vaccination which is estimated to prevent hundreds of thousands of rabies deaths

annually.<sup>[4,5]</sup> Though 100% fatal, rabies, following bite of suspected rabid animal can be easily prevented by proper post exposure treatment which includes three things- thorough washing of wound by soap and water, local administration of anti-rabies immunoglobulin and active immunization by anti-rabies vaccine (ARV).<sup>[6]</sup> Currently the Govt. of India approves the use of Cell culture vaccines (CCVs) for active immunization free of cost. It can be administered both by intramuscular (IM) and intra-dermal (ID) routes. ID route being more safe, efficacious and economical than IM routes. As intra-dermal regimen involves multiple site injection and complete course of vaccination comprise of 4 doses on 4 different occasions (Day 0, 3, 7, 28) irrespective of status of animal, patient compliance and strict adherence to the schedule is a determining factor for treatment success.<sup>[1,7]</sup>

People who have been given health education are more likely to learn about healthy behaviors. They might be more able to understand their health needs, follow instructions, advocate for themselves and their families, and communicate effectively with health care providers.<sup>[8]</sup> They are more likely to learn about health and health risks, improving their literacy and comprehension of what can be complex issues critical to their wellbeing. People who are more educated are more receptive to health education campaigns. Health education can also lead to more accurate health beliefs and knowledge, and thus to better lifestyle choices, but also to better skills and greater self-advocacy. Health education develops effective habits, and may improve cognitive ability. The skills acquired through health education can affect health indirectly or directly (through ability to follow health care regimens and manage diseases), and they can affect the ability of patients to navigate the health system. Thus the individuals given health education may be more able to understand health care issues and follow treatment guidelines.<sup>[9,10]</sup>

A study was published in the same institute of this region<sup>[11]</sup> reported only a small proportion (15.8%) has completed post-exposure vaccination and prevalent cultural practices of applying topical applicants on wound (among 34.2%). The study recommended strengthening Information, Education and Communication (IEC) programme by conducting formal health education sessions regarding merits of wound washing, local wound management and completion of post exposure prophylaxis to control the deadly Rabies. Thereafter formal health education sessions conducted on fixed day strategy and nonformal health advice was given regularly as per schedule already followed to animal exposed cases attending antirabies clinic of the tertiary care institute. Hence this study was planned among animal exposed cases to elicit out their post exposure antirabies vaccination status following formal health education sessions given in antirabies clinic.

### **Objective**

To find out the post exposure antirabies vaccination status following formal health education sessions among animal bite cases

### **METHODOLOGY**

This record based cross-sectional observational study was conducted in Immunization cum antirabies clinic, BPS GMC for Women Khanpur Kalan, Sonapat. All of the new animal bite cases attended formal health education session in anti-rabies clinic during study period i.e. 1<sup>st</sup> June 2017 to 31<sup>st</sup> December 2017 were taken as study participants.

Study variables included gender, place of residence, status of animal, wound toileting done by study participants after animal bite, category of wound, TT vaccination already taken before coming to the institute, adherence to required schedule of post exposure antirabies vaccination.

Cases with incomplete records were excluded from study and statistical analysis was done using Statistical Package for the Social Sciences (SPSS; Windows version

22.0) software. Percentages, proportions and chi square tests were applied for drawing inferences and obtaining conclusion. Record based anonymous study conducted in same department so ethical clearance not required.

## RESULTS

A total of 4509 animal bite cases reported in antirabies clinic during study period and following fixed day strategy (on every Tuesday) 286 animal bite cases has been given formal health education in antirabies clinic. 18 cases were excluded from the study due to incomplete record.

**Table-1: Profile of animal bite cases attending antirabies clinic (n=268)**

Attribute	N (%)
<b>Gender</b>	
Males	166 (62)
Females	102 (38)
<b>Residence</b>	
Rural	187 (70)
Urban	81 (30)
<b>Source of exposure</b>	
Dog bite	244 (91)
Other animals also (Monkey bite/Cat bite etc)	24 (09)
<b>TT vaccine</b>	
Already taken from outside	209 (78)
Given in antirabies clinic	59 (22)
<b>Status of animal</b>	
Live	228 (85)
Dead	13 (05)
Unknown	27 (10)
<b>Category of wound</b>	
Category I	0 (0)
Category II	209 (78)
Category III	59 (22)
<b>Wound washed with soap and water immediately after animal exposure</b>	
Yes	188 (70)
No	80 (30)
<b>Application on wound after animal bite</b>	
Nothing applied	198 (74)
Red chilli/Oil/Ash/Turmeric etc applied	70 (26)

**Table-2: Post-exposure antirabies vaccination status of study participants (n=268)**

Antirabies vaccination status	
All four doses taken (completed)	139 (52)
Three doses taken	78 (29)
One/two doses taken	51 (19)

**Table-3: Association of post-exposure vaccination status with socio-demographic attributes (n=268)**

Socio-demographic attributes	Completed	Not completed	Total
<b>Sex</b>			
Males	104 (63)	62 (37)	166 (100)
Females	35 (34)	67 (66)	102 (100)
Total	139 (52)	129 (48)	268 (100)
df=1, p-value < 0.05			
<b>Location</b>			
Rural	73 (39)	114 (61)	187 (100)
Urban	66 (81)	15 (19)	81 (100)
Total	139 (52)	129 (32)	268 (100)
df=1, p-value < 0.05			
<b>Category of wound</b>			
IInd	93 (44)	116 (56)	209 (100)
IIIrd	46 (78)	13 (22)	59 (100)
Total	139 (68)	129 (32)	268 (100)
df=1, p-value < 0.05			

## DISCUSSION

This study assessed the sociodemographic attributes, status of biting animal, wound toileting done by study participants after animal bite, TT vaccination already taken before coming to the institute, adherence to required schedule

of postexposure antirabies vaccination following formal health education session in antirabies clinic. The study also explored the relationship of postexposure vaccination status of anti-rabies vaccination with gender, residential place and category of wound. All the patients coming to anti-

rabies clinic received the anti-rabies vaccine free of cost. It was observed that the victims were largely males 166 (62%) (male/female ratio was 1.7:1) and the major source 244 (91%) of animal exposure was dog [Table-1]. Similar observations were found in a various studies that males affected were more [12-14] and dog bites caused maximum morbidity. [12-15] The overall male/female ratio of animal bite victims among Asian countries was 1.6:1. [16] However in a WHO survey conducted in India male/female ratio was found to be 2.19:1. [17] This might be related to occupational or behavioral factors or due to outdoor activity that place among males make them in contact with the animal vector i.e. dog.

The present study recorded that 209 (78%) cases were found to be of category II while 59 (22%) were of category III wound. A very low response was recorded for category III exposure (7.6% cases) in a study conducted by Sahu KK et al in Lukhnow. [18] However in contrast to that, studies conducted by Ichhpujani RL et al and Gogtay NJ et observed that response regarding category III exposure was much higher among 63% and 78.3% animal exposed cases respectively. [12,13] This might be because of the fact that institution situated in deep rural area and postexposure antirabies vaccine is provided free of cost. Hence the people having minor complaints are also reporting to the institute.

In the present study it was observed that before coming to anti-rabies clinic, 188 (70%) animal exposed cases washed their wound with soap and water or water alone after exposure and 70 (26%) animal bite cases had applied one or more topical applicants in the form of red chilli, ash, oil and others on the wound site. In a study conducted by Shelke SC et al found that wound washing practices after exposure were lower (33.76%) than that of our study and observation regarding application of Indigenous products like chilli powder, turmeric powder and lime at the bite site was higher (37%). [14] In a multi-centric

study carried out in Mumbai revealed that wound washing practices (58.5%) and topical applicants on wound by animal exposed victims was 10.8% which were lower than that of our study. [12] The practices of applying topical applicants on wound varied from one region to another because of cultural practices and awareness related to wound washing. Although WHO recommendations include immediate wound washing and advised nothing to be applied topically on wound. [1] However in the previous study conducted in the same institute, was found among 34.2% cases. No much difference observed might be due to that the animal exposed cases had already applied topical applicants before coming to the institute for formal health education sessions given to them in antirabies clinic. The slight improvement observed might be corresponds to raised awareness among communities with time.

In the present study 139 (52%) of animal bite cases attending antirabies clinic has completed post exposure vaccination after animal bite. In year 2016 a study was published by Majra JP et al [11] in official journal of Association of prevention and control of rabies in India Volume XVII, issue II which revealed an overview of epidemiology of animal exposed cases attending anti-rabies clinic. The study reported only a small proportion (15.8%) has completed post-exposure vaccination. Now it was observed that vaccination status has improved (52% cases completed all the four doses). It might be due to formal health education sessions conducted regularly via fixed day approach strategy in antirabies clinic. However over the time period awareness level is also raised in community regarding health issues. But it's an important observation that certainly post exposure vaccination raised (completed by 52%) after starting formal health education session among animal exposed cases. In the present study post exposure antirabies vaccination completion following health education session was more among males

than that of females. The association of sex predilection with ARV completion was found statistically significant (p value <0.05) [Table-3]. It indicates that women in this deep seated rural area might be due to their social status and inability to take decision independently has prevented them for completion of vaccination. In the present study those animal bite cases belonging to urban area had completed post exposure antirabies vaccination following health education session was more than that of residing in rural area. The association of place of residence with ARV completion was found statistically significant (p value <0.05) [Table-3]. It might be due to the fact that approachability, limited transport facilities in this rural area. In the present study Category IIIrd animal bite cases had completed post exposure antirabies vaccination following health education session than that of Category II persons. The association of Category of wound with ARV completion was found statistically significant (p value <0.05) [Table-3]. It might be due to the fact that among category III bite cases, formal health education session made the patients more aware and concerned about severity of the disease i.e. rabies.

## CONCLUSIONS AND RECOMMENDATIONS

Formal health education sessions given to animal exposed cases improved the post exposure vaccination status attending antirabies clinic. Hence need of hour to achieve Goal of Rabies elimination by 2030 by strengthening of Information, Education and Communication (IEC) programme and conducting regular formal health education sessions in the antirabies clinic as well as at the community level regarding merits of wound washing, local wound management and completion of post exposure prophylaxis.

**Conflict of interest:** Nil declared.

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How to cite this article: Verma RK, Majra JP, Babita. Post-exposure antirabies vaccination status following formal health education sessions among animal bite cases attending antirabies clinic of a rural tertiary care institute of Haryana: an observational study. *Galore International Journal of Health Sciences & Research.* 2019; 4(2): 107-112.

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