

Title: EFFECTIVENESS OF HEALTH EDUCATION ON KNOWLEDGE AND ATTITUDE OF FRESH MEDICAL GRADUATES REGARDING PROPHYLAXIS AGAINST RABIES

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Keywords Effectiveness, health education, prophylaxis, rabies, medical graduates

Abstract Timely and correct post exposure prophylaxis for animal bite is victims is necessary to prevent rabies. The attending doctor must have the correct knowledge and attitude to provide the same.

Background: Timely and correct post exposure prophylaxis for animal bite is victims is necessary to prevent rabies. The attending doctor must have the correct knowledge and attitude to provide the same.

Objectives: (i) To assess the knowledge and attitude on prophylaxis against rabies. (ii) To determine the effectiveness of health education on their knowledge and attitude.

Methodology: The study included all fresh medical graduates of a medical college whose knowledge and attitude on rabies prophylaxis was assessed using self-administered questionnaire. Subsequently, a standardised self-instructional manual (SIM) on prophylaxis against rabies was provided. After a month, the post test was administered to the same subjects using the same questionnaire and the knowledge and attitude was assessed to see the improvement. Descriptive statistics was computed and student paired T test was applied to compare pre & post- test score.

Results: The study included 77 fresh medical graduates. The knowledge among the study subjects improved after the health education from 9.44 ± 2.21 to 12.21 ± 2.1 out of 14, which was statistically significant with t-value of 7.382 and $p < 0.0001$. Similarly, there was a significant improvement in the attitude among the study subjects after the health education which increased from 6.51 ± 2.6 to 7.53 ± 1.1 out of 12, which was statistically significant with t-value of 3.182 and $p < 0.02$.

Conclusion: Health education was effective in improving the knowledge and attitude among the fresh medical graduates on prophylaxis against rabies.

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INTRODUCTION :

Rabies is a vaccine-preventable viral zoonosis which occurs in more than 150 countries of the world.¹ The disease is transmitted to animals and humans through close contact with saliva from infected animals through bites, scratches, licks on broken skin and mucous membranes and poses a threat to more than 3.3 billion people in the world, primarily in Asia and Africa.² It is a neglected zoonotic disease which 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.³

The magnitude and epidemiological pattern differs from country to country. It is a disease of poverty, affecting vulnerable populations and children. A combination of large human and dog populations in congested habitable areas, combined with 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.⁴ 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%.⁵ Rabies is 100% preventable through vaccination and timely immunization after exposure. It is the first zoonosis in 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 worldwide.⁴ Saving the lives of those who are bitten, will not be possible without timely and complete post exposure prophylaxis. Therefore, the attending physicians must provide appropriate postexposure prophylaxis (PEP), which includes proper wound washing, a full course of antirabies vaccination (ARV) and local wound infiltration of rabies immunoglobulin (RIG) into wounds to save lives. Timely and correct PEP is almost invariably effective in preventing rabies, even after high-risk exposure; which has to be provided by the attending physician.⁶

Knowledge, attitudes and practices (KAP) studies are important 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. In this regard, the present study was

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conducted to know the effectiveness of health education in improving the knowledge among the fresh medical graduates, who will be the future health care providers.

Subjects and Methods.

The present study was initiated after obtaining the Institutional Ethical committee clearance and was conducted at a medical college hospital, in Bangalore, India. All the fresh medical graduates of both sexes, who gave informed consent, were enrolled in the study. They were administered pre-test using a structured, self-administered questionnaire to assess the knowledge and attitude regarding prevention of rabies. Subsequently, a standardised self-instructional manual (SIM) on prophylaxis against rabies was provided to all the study subjects and were told to understand the correct prophylaxis against rabies. After a month, the post test was administered to the same subjects, using the same questionnaire and the knowledge and attitude was reassessed to find out the improvement. The overall data was analysed using SPSS version 21.0. The descriptive statistics was computed and student paired T test was used to compare pre & post- test score. Results Socio-Demographic profile: The study included seventy seven fresh medical graduates, among whom 39 (50.6%) were males and 38 (49.4%) females. Their mean age was 22.29 ± 1.36 years (Table 1).

Table 1:

Socio- demographic characteristics of the study subjects	
Socio-demographic characteristics	Values (N=77)
Mean age (\pm SD)	22.29 ± 1.36 years
Sex	Male 39 (50.6%) Female 38 (49.4%)

Knowledge and attitude 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 9.44 ± 2.21 out of 14 (Table 2). There was relatively low knowledge, on classification of bite wounds (55.9%), type of animals transmitting rabies (66.9%), correct dose of equine rabies immunoglobulin (ERIG) (66.9%) and pre-exposure prophylaxis (PrEP) (68.8%). On the contrary, there was relatively good knowledge about the burden of the disease (75.2%), importance of wound washing (80.7%), number of doses of vaccine (74.4%) and schedule of intra dermal rabies vaccine (IDRV) (75.2%). The study subjects had also good knowledge regarding the safety of rabies vaccine in pregnancy (85.3%), dose of vaccine for infants (84.4%) and site of administration of intramuscular rabies vaccine (83.5%). Similarly, the attitude score was only 6.51 ± 2.6 out of 12 during pre-test.

Knowledge and attitude after health education: The knowledge on prophylaxis against rabies improved after health education with the mean score of 12.21 ± 2.1 out of 14. There was improvement in knowledge regarding classification of bite wounds (75.9%), type of

animals transmitting rabies (79.9%), correct dose of equine rabies immunoglobulin (ERIG) (76.9%) and pre- exposure prophylaxis (PrEP) (84.8%), burden of disease (82.8%), importance of wound washing (80.7%), number of doses of vaccine (84.4%) and dose schedule of intra dermal rabies vaccine (81.2%); which were relatively less in pre-test. Similarly, the attitude on prophylaxis against rabies also improved after health education with the mean score of 7.53 ± 1.1 out of 12 (Table 2).

Table 2:
Comparison of pre-test and post-test score
Among the study subjects

Knowledge	Mean	N	SD	SE(mean)
Pre-test knowledge score	9.44	77	2.185	0.25
Post-test knowledge score	12.21	77	2.111	0.24
Attitude	Mean	N	SD	SE(mean)
Pre-test attitude score	6.51	77	2.634	0.30
Post-test attitude score	7.53	77	1.847	0.21

Overall, there was a significant improvement in the knowledge among the study subjects after the health education; which increased from 9.44 ± 2.21 to 12.21 ± 2.1 out of 14, which was statistically significant with t-value of 7.382 and $p < 0.0001$. Similarly, there was a significant improvement in the attitude among the study subjects after the health education; which increased from 6.51 ± 2.6 to 7.53 ± 1.1 out of 12, which was statistically significant with t-value of 3.183 and $p < 0.002$ (Table 3).

Table 3:
Improvement in knowledge and attitude
after health education (N=77)

Knowledge & Attitude	Pre-test		Post-test		Mean \pm SD	SE
	t-value	P-value	Mean \pm SD	SE		
Knowledge	9.44 \pm 2.185	0.25	12.21 \pm 2.111	0.24	7.382	0.0001
Attitude	6.51 \pm 2.634	0.30	7.53 \pm 1.847	0.21	3.183	0.0002

DISCUSSION

Rabies is present on all continents with the exception of Antarctica, but more than 95% of human deaths occur in Asia and Africa. It is a neglected disease of poor and vulnerable populations and occurs mainly in remote rural communities. The disease is preventable with the help of WHO recommended immunobiologicals either as pre-exposure or post-exposure prophylaxis.⁷ Unlike other infectious diseases, where vaccines are typically administered to healthy populations before onset of infection, human rabies vaccine in most cases, is administered post-exposure. In rabies endemic country like India, where every animal bite is potentially suspected as a rabid animal bite, timely and correct PEP is necessary to prevent rabies which includes proper wound washing, infiltration of rabies immunoglobulin in and around the wound, and a full course of anti-rabies vaccination, which has to be provided by the attending doctor.

The present study showed that the knowledge of fresh medical graduates who are supposed to manage these

animal bite victims was inadequate. Only 55.9% of them knew about proper classification of wounds. Similar results were shown in a previous study in India conducted by Harish et al. They found that many respondents have the concept that only big or multiple bite wounds are category III rabies exposures.⁸ Responsible physicians must follow World Health Organization recommendations for categorization of bite wounds for PEP. Similarly, the requirement for prompt and thorough wound washing was advised by 80.7% of respondents. The WHO Expert Committee emphasizes the importance of prompt local treatment of all bite wounds and scratches that may be contaminated with rabies virus, even if the person presents after delay. In this study, only 74.4% of physicians had correct knowledge concerning the number of doses of ARV, which are independent of the age of the victim and severity of the bites (single or multiple). However, it should be made clear that the type of animal (domestic or wild) should determine the number of vaccine injections required. Similarly, the present study showed that only 75.2% of responders knew the proper intradermal rabies vaccine dose / schedules. IDRV has been established as an efficacious and economic alternative to the standard intramuscular schedules. Using vaccines explicitly authorized for the intradermal route and their proper delivery requires sufficient training to ensure their correct storage, reconstitution and injection. This knowledge of RIG administration was seen in only 66.9% of the respondents. Physicians must understand that RIG must be infiltrated into and around the bite wounds, as these are ready-made antibodies which provide passive immunity and help in tiding the patient over the initial phase of the infection. Active immunity induced by anti-rabies vaccine takes up to 10 days to appear in circulation. Human rabies immune globulin is virtually unavailable in most rabies endemic countries or it is far too expensive to be used in the public sector. Equine rabies immunoglobulins are now manufactured by several institutes in India, China, Thailand, and South America. They have been tested and approved by their government regulators, are relatively inexpensive and should be used for all category III exposures.⁹ Only 68.8% of respondents knew the correct schedule for pre-exposure prophylaxis. It is important, especially for children and high risk groups like postman / courier boys, police, in canine rabies endemic regions.¹⁰ In view of the scarcity and affordability of vaccines and RIGs, one should advocate pre-exposure vaccination for certain high risk persons. Similarly, only 68.9% of the ARC physicians understood correct management of previously vaccinated and re-exposed patients. Such re-exposures to animal bites may be as high as 15% in some settings.

Individuals with previous rabies vaccination do not need rabies immunoglobulin; only two booster vaccinations with cell-culture vaccine on days 0 and day 3, administered either intramuscularly or intra dermally, are WHO recommended. Thus the knowledge and attitude among the attending doctors should be improved to provide proper PEP and thereby prevent rabies.

Therefore, health education was given to all the fresh medical graduates and both the knowledge & attitude increased after health education and the improvement in the knowledge and attitude was statistically significant with t-value of 7.382 and $p < 0.0001$ and t-value of 3.183 and $p < 0.001$ respectively.

CONCLUSION:

Health education was effective in improving the knowledge and attitude among fresh medical graduates on prophylaxis against rabies. Therefore, regular health education through CME programs, seminars, conferences, workshops, technical, films, hands on training and others has to be conducted. Thus improvement in knowledge and attitude will make the attending doctors better equipped to provide timely and complete post exposure prophylaxis, which is necessary to prevent the fatal disease and ultimately eliminate rabies by 2030.

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