

Original Research Article

Impact of training on knowledge of pharmacy students regarding animal bite management and rabies

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ABSTRACT

Background: Rabies is a highly fatal viral zoonotic disease but preventable by timely and appropriate post exposure prophylaxis. Most animal bite cases are found in rural areas where victims of animal bite don't get proper treatment due to shortage of doctors. Pharmacists are important part of primary level health care.

Methods: A cross-sectional study was conducted between February to May 2023. 100 pharmacy students, posted for their internship in ARC of MKCG Medical College were included in the study. Their knowledge was assessed by pre-test using a self-administered questionnaire. Training was given for 7days on animal bite management and prophylaxis against rabies, then post-test was administered. Data was analysed using Jamovi software.

Results: The number of correct responses to questions about animal causing rabies, correct schedule, site and mode of vaccination improved from 16 to 33, 33 to 89, 72 to 93, 68 to 88 respectively after training.

Conclusions: Training was effective in improving the knowledge regarding animal bite management and rabies among pharmacy students. Therefore, regular training should be conducted for updated knowledge of pharmacists as well as all medical professionals to achieve elimination of rabies by 2030.

Keywords: Knowledge, Pharmacy students, Rabies, Training

INTRODUCTION

Rabies is a highly fatal viral zoonotic disease caused by a ribonucleic acid (RNA) virus under the genus *Lyssavirus* and family *Rhabdoviridae*.¹ India is endemic for rabies and contribute 36% of deaths globally.² Rabies is preventable by timely and appropriate post exposure prophylaxis.³ 99% of rabies cases are dog-mediated with approximately half of cases attributable to children under 15 years age-wise.⁴ Numerous myths and erroneous beliefs surround the treatment of wounds, such as the administration of oils, herbs, and red chilies to wounds caused by rabid animals and the recommendation not to

wash the wound. Most rabies deaths are caused by ignorance, and there is typically a dearth of community awareness regarding all elements of the disease. Most animal bite cases are found in rural areas where victims of animal bite don't get proper treatment due to shortage of doctors.⁵ Pharmacists are important part of primary level health care.

Objectives

To assess the knowledge of pharmacy students regarding animal bite management and rabies. To determine the effectiveness of training based on their knowledge.

METHODS

A cross-sectional study was conducted from September 2023 to February 2024, involving 100 pharmacy students who were periodically posted in the anti-rabies clinic (ARC) outpatient department (OPD) of MKCG medical college during their internship. Participants were selected using purposive sampling based on specific inclusion and exclusion criteria.

Inclusion criteria

Pharmacy students in their internship who had not received prior formal training on animal bites and Rabies prophylaxis. Students who were willing to participate and provided informed consent.

Exclusion criteria

Students with prior training on rabies prophylaxis or animal bite management. Students who failed to attend the complete 7 days of training.

Participant's knowledge was assessed using a pre-tested, pre-designed, semi-structured, self-administered questionnaire. Training was provided by doctors and senior pharmacists over seven days, covering topics related to animal bites and rabies prophylaxis. After the training, the same questionnaire was administered to assess the post-test knowledge of the participants.

Data were analysed using MS Excel and Jamovi software. The mean knowledge scores before and after the training were calculated and Student's paired t-test was applied to compare pre- and post-test scores.

RESULTS

The study included 100 pharmacy students with age range of 19-25 years and mean age of 20.67 ± 1.175 years. Among them 75% were males and 25% were females (Figure 1).

80% of the study populations were D. pharma students (59 male and 21 female) and 20% were B. pharma students (16 male and 4 female) (Figure 2).

Number of correct responses to which animal bite causes rabies was 16% in pre-test which increased to 33% in post-test. Before training only 89% of study participants knew that "rabies is a life-threatening disease" which increased to 94% after training. 78% of study participants responded correctly regarding "causative agent of rabies" in pre-test, which increased by 14% in post-test. Before the training "mode of transmission of rabies" was known to 89% of study participants, which increased by 6% after

training. "Is it advisable to tie tourniquet around the animal bite wound", the correct response to this in pre-test was 56% which increased to 74% in post-test (Table 1).

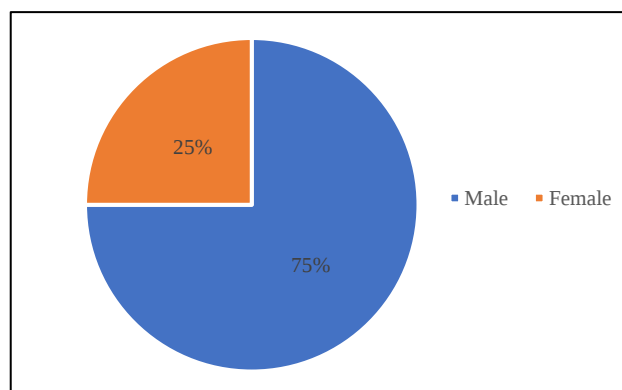


Figure 1: Socio-demographic profile.

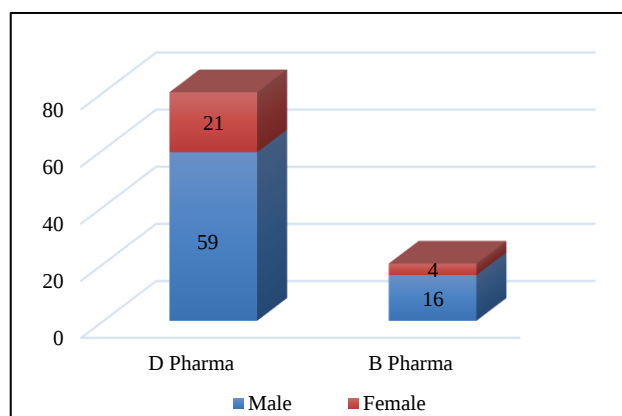


Figure 2: Distribution of study population according to their educational stream.

"Ideal duration between animal bite and seeking treatment" was known to 76% of study participants before training which increased by 20% after training. Only 33% of study participants knew the correct "dose and schedule of anti rabies vaccine" before their training, which increased to 89% after training. Correct "site & mode of injection of anti rabies vaccine" was known to 72% and 65% of study participants before training which increased to 93% and 88% respectively after training. Regarding avoidance of Non veg and sour food following rabies vaccination 53% of study participants responded correctly in pre-test which increased to 88% in post-test (Table 2).

The pretest knowledge score was 11.24 with a standard deviation 2.404 out of 16. Which increased to 13.65 with standard deviation 1.480. The z test for mean was -8.537 with p value <0.05, which shows significance in difference in means (Table 3).

Table 1: Knowledge regarding various aspects of rabies (n=100).

Questions on knowledge	Correct pre-test responses (%)	Correct post-test responses (%)	Improvement in responses (%)
Heard about rabies	97	100	03
Animal bite can cause rabies in human	98	98	00
Which animal bite cause rabies	16	33	17
Rabies is a life-threatening disease	89	94	05
Causative agent of rabies	78	92	14
Mode of transmission of rabies	89	95	06
What should be done immediately after animal bite	86	89	03
Is it advisable to tie tourniquet around the animal bite wound	56	74	18
Drinking milk of a rabid cow can cause rabies	39	54	15

Table 2: Knowledge regarding various aspects of rabies (n=100).

Questions on knowledge	Correct pre-test responses (%)	Correct post-test responses (%)	Improvement in responses (%)
Rat bite can cause rabies	78	82	04
Ideal duration between animal bite and seeking treatment	76	96	20
Dose and schedule of anti rabies vaccine given in our hospital	33	89	56
Site of injection of anti rabies vaccine available in our hospital	72	93	21
Mode of injection of anti rabies vaccine given in our hospital	65	88	23
Non veg and sour food items avoided following rabies vaccination	53	88	35
Rabies vaccine is available free of cost at government hospitals	99	100	01

Table 3: Comparison of pre and post test score among study subjects (n=100).

Parameters	Mean	SD	SE (mean)	Z-test (mean)	Significance (2-tailed)
Pre-test knowledge score	11.24	2.404	0.240	-8.537	<0.05
Post-test knowledge score	13.65	1.480	0.148		

Table 4: Improvement in knowledge among the study subjects after training (n=100).

Parameters	Paired Differences					t-value	df	Significance (2-tailed)
	Mean	SD	SE mean	95% CI of the difference				
				Lower	Upper			
(Pre-test knowledge score)- (post-test knowledge score)	-2.41	2.786	0.279	-2.963	-1.857	-8.652	99	<0.05

The mean improvement in knowledge among the study subjects after training was found to be -2.41 with standard deviation 2.786, t-value found to be -8.652, with p value <0.05 (significant) (Table 4).

DISCUSSION

Appropriate knowledge about the disease is essential for an individual to lead a healthy life. Hence educational information about a fatal disease like rabies may improve

an individual's knowledge about the disease or contribute to a change in the attitude towards it. A right knowledge and positive attitude are important for the pharmacy students to serve the patient. Our study revealed that the knowledge about rabies amongst the study participants needed to be strengthened.

About the awareness of rabies, the pharmacy students had comparatively better knowledge about the awareness of the disease, when compared to the awareness about the

mode of transmission and the prevention of the disease. As in our study, a study conducted by Dixit et al in Madhya Pradesh among the nursing students also had better knowledge about the awareness of the disease.⁶ The similarity found in the study could be due to the reason that rabies is a major public health problem in our country.

Bhalla et al in a study amongst general practitioners in Jamnagar and Majeed et al in a study amongst general practitioners in Karachi observed that while they had good knowledge regarding the infection and causative agent of the disease, correct management of cases of animal bites was specifically lacking.^{7,8} On the other hand, in our study knowledge of pharmacy students regarding both causative agent as well as management of animal bite cases are poor in pre training assessment. Similarly, a study conducted by Kakkar et al on knowledge regarding zoonosis among 364 medical students in India revealed poor knowledge about zoonosis in the study subjects; specifically, only 5.5% respondents correctly stated that rabies is transmitted by animals other than dogs.⁹ The above findings indicate poor understanding of the critical issues as regards rabies management even among general practitioners and medical students. Hence, pharmacy students should be given clear information about the management of fatal diseases like rabies.

In a developing country like India where the animal bite cases are of heavy burden, academic curriculum of all cadres of health workers should have lessons on rabies prevention and case management. This should not just be restricted to the theoretical aspects but the students needed to be given demonstrations about the management of rabies by professionally equipped persons and should include hands on training by making students visit anti rabies clinics (ARC) during the course of their study. Appropriate training material should be provided to the students and displayed at key locations in the hospitals so that rabies management issues are appropriately done.

The study revealed poor knowledge regarding the usage of rabies immunoglobulins, vaccine administration and the importance. This should be brought to awareness among the pharmacy students as category III animal bite injuries with suspect rabid animal require immunoglobulins along with vaccination, which is not practised effectively despite the availability of rabies immunoglobulins in major health centres. The present study almost finds a similar association with a study carried out in Jamnagar city among the general practitioners by Dzikwi et al where nobody knew about immunoglobulin or sera and they were not at all using them for treating patient with animal bite.¹⁰

In the pre training assessment, majority (86%) of the participants were already aware of the importance of washing the animal bite with soap and water. This may be due to the reason that the study participants were oriented

to some of the basics in first aid. Among the 100 study participants in the pre training assessment, 89 participants (89%) believed that rabies can be life threatening but 11 participants believed that rabies can be cured, whereas in a study conducted in Ethiopia among animal bite victims by Kabeta et al, 75% of the respondents concurrently believed that Rabies can be cured and this suggest that Pharmacy students have better understanding of the disease fatality.¹¹

The study evaluated knowledge only and does not assess the practical application of the skills learned. The use of purposive sampling may limit the generalizability of the results to all pharmacy students. A 7-day training period may not be sufficient to achieve long-term retention of knowledge.

CONCLUSION

In the present study, the number of correct responses answered by pharmacy students regarding animal causing rabies, correct schedule, site and mode of vaccination improved from 16% to 33%, 33% to 89%, 72% to 93% and 65% to 88% respectively after training. Score of knowledge after training increased from 11.24 ± 2.404 to 13.65 ± 1.480 out of 16, which is statistically significant with t-value of 8.652 and $p < 0.05$. Training was effective in improving the knowledge regarding animal bite management and rabies among pharmacy students. This study recommends intermittent education and training programmes should be conducted by government for all district and peripheral pharmacists. Regular health education through CME programs, seminars, conferences, workshops, technical films, hands on training has to be conducted not only for pharmacists but for all health professionals. Improvement in knowledge will make the attending health professionals 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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Ethical approval: The study was approved by the Institutional Ethics Committee

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