

Assessment of the effect of animal bite management training, among frontline healthcare workers in a rural field practice area of Bangalore Medical College and Research Institute

Sofiya Crastha, Selvi Thangaraj

Department of Community Medicine, Bangalore Medical College and Research Institute, Bengaluru, Karnataka, India

Correspondence to: Sofiya Crastha, E-mail: sofiya.crasta@gmail.com

Received: March 19, 2018; Accepted: April 26, 2018

ABSTRACT

Background: Rabies is the zoonotic disease affecting the warm-blooded animals, which gets transmitted to man through the bite of the infected rabid animals. In India, around 18000–20000 Deaths from rabies occur every year. Rabies is a highly fatal disease, but it is 100% preventable through prompt and appropriate medical care which is mostly sought from the healthcare workers in the rural and remote areas. Hence, their knowledge and practice plays an crucial role in the prevention of occurrence of rabies among the human population. **Objectives:** The objectives of the study were to assess the effect of animal bite management training on knowledge, attitude, and practices (KAP) among frontline healthcare workers in a rural field practice area. **Materials and Methods:** An interventional study was done using information, education, and communication method among 131 frontline healthcare workers using self-administered questionnaire. The KAP was assessed before and after the intervention. **Results:** Before the intervention, only 5 participants knew about the sources of infection and 87 knew it following the intervention. Misconceptions regarding the first aid treatment to be given following the animal bite management were reduced, and the proper practices of wound washing were improved following the intervention. **Conclusion:** The intervention given by health education improved the knowledge, reduced the misconceptions and changed the practices to provide the better and appropriate care following the animal bite.

KEY WORDS: Healthcare Workers; Knowledge; Attitude; Practices; Prevention of Rabies


INTRODUCTION

Rabies is the viral communicable disease caused by the *Lyssavirus* type I. It is primarily a zoonotic disease affecting the warm-blooded animals, which get transmitted to man through the bite of the infected rabid animals.^[1] Domestic dogs are responsible for transmission of the virus in 99% of the cases.^[2]

Rabies is present on all continents except Antarctica, with over 95% of the deaths occurring in Asia and African

regions.^[2] In India, around 18000–20000 deaths from rabies occur every year, contributing around 36% of the world's death from disease, around three-quarters of them occurring in rural areas.^[3] Rabies most commonly occurs in the people of lower socioeconomic status (SES) and among the vulnerable population who live in the remote areas.^[2]

Although rabies is a highly fatal disease, it is 100% preventable through prompt appropriate medical care^[4] such as immediate washing of the wound with soap and water, which can reduce the chances of developing rabies by 80%, but unfortunately, very few patients get it in right time.^[1] Through adequate animal vaccination, educating those at risk and enhancing access of those bitten to appropriate medical care such as wound wash, antiviral vaccination, and immunoglobulin can help to eliminate rabies among humans.^[4]

Access this article online	
Website: http://www.ijmsph.com	Quick Response code
DOI: 10.5455/ijmsph.2018.0308426042018	

International Journal of Medical Science and Public Health Online 2018. © 2018 Sofiya Crastha and Selvi Thangaraj. This is an Open Access article distributed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), allowing third parties to copy and redistribute the material in any medium or format and to remix, transform, and build upon the material for any purpose, even commercially, provided the original work is properly cited and states its license.

According to the World Health organization, there is a lack of knowledge among the doctors and other health professionals about the appropriate management of the animal bite victims.^[5]

One of the important aspects of the human component of the National Rabies Control Programme in India is to train the health professionals regarding the prevention of rabies.^[6]

In rural areas, accredited social health activist (ASHA), Anganwadi workers (AWW), and auxiliary nurse midwife (ANM) are the first to come in contact with a victim of an animal bite, and first aid is usually sought from them.^[7] They also act as the important sources to create and spread awareness among the population and for early referral to the health facilities for vaccination. Therefore, their knowledge, attitude, and practices (KAP) is crucial in reducing the incidence of this disease as they form an important link in the treatment of animal bite cases.

In India, most of the studies about KAP of rabies are done among the general populations or the clinicians. Studies done among the healthcare workers are rare. The studies done in Uttarakhand^[7] among the health workers showed moderate knowledge, positive attitudes but less satisfactory practices regarding animal bite management. The study done in West Bengal^[8] showed that there was a gap in the knowledge of the health workers which were filled up by giving the training to them. Hence, this study was conducted with similar objectives to assess the KAP gap among the frontline health workers and to train them, so that they can effectively manage animal bites among the people under their care and to assess the effect of training on KAP among them.

Objectives

The objectives of the study were to assess the effect of animal bite management training, on KAP among frontline healthcare workers in a rural field practice area of Bangalore Medical College and Research Institute (BMCRI).

MATERIALS AND METHODS

Study Area and Study Population

An interventional study was done using health education by Information, Education, and Communication method as the intervention tool, during April–June 2017 among the frontline healthcare workers in Nelamangala, a rural field practice area of BMCRI. The frontline healthcare workers who did not give consent for the study were excluded from the study.

Sample Size

By taking 75.3% as the knowledge about the wound wash with soap and water following animal bites for 15 min from

Kishore *et al.* study^[7] with 5% allowable errors and 95% confidence interval, using the formula $4pq/d^2$, the required sample size was calculated to be 131.

Sampling Technique

In Nelamangala rural field practice area, there were 127 ASHA workers, 42 ANM workers, and 287 AWW were present. By multistage random sampling and using population probability proportionate sampling method, a sample size of 131 was attained.

Method of Data Collection

After the Institutional Ethical Clearance, consent was taken from each individual and self-administered pre-tested and semi-structured questionnaire was used and data was collected on the knowledge, attitude and the practices regarding the animal bite management.

Following, health education was given, and post-training questionnaire was given after 1 month.

Statistical Analysis

Data were entered into MS Excel sheet and analyzed in SPSS version 16 statistical software. Descriptive statistics were presented in tables and figures. Chi-square test was used.

RESULTS

All the 131 participants were females. Among them, 37 were ASHA workers, 82 were AWW, and 12 were ANMs. Around 14 were lost to follow-up in the post-interventional period. The 117 participants were considered in the final evaluation.

Knowledge

Among 117 participants, 53 (45.3%) had received some form of training regarding rabies previously, and 105 (89.7%) had heard about the disease.

About 95 (81.2%) of the study participants knew the wound should be washed immediately with soap and water as compared with 110 (94.0%) knew following the health education. About 45 (38.5%) had heard and knew the importance of rabies immunoglobulin whereas 117 (100%) knew about it following health education. About 103 (88.0%) knew the anti-rabies vaccination was available in Nelamangala PHC as compared to 117 (100%) following training.

Majority (53.4%) of the study population were in the age group of 31–40 years [Table 1]. Majority (34.35%) of the study population were belonging to the Class III of Modified B G Prasad (2016) classification of SES [Table 2]. Before intervention majority of the health workers (106) knew only

dog as the animal transmitting rabies to humans, whereas in post-intervention period majority (87) knew that all warm-blooded animal bites can potentially transmit rabies [Figure 1]. About the sites of bites which are dangerous, the knowledge increased in the post-intervention period. Following the intervention, many (113) had known that bites anywhere in the body can be dangerous and should not be neglected [Figure 2]. Regarding the knowledge of first aid measures to be taken following animal bites, the misconceptions such as applying tight bandages and application of herbal medicines were clarified. Knowledge regarding the correct methods of first aids was improved in the post-interventional periods [Figure 3]. Only 28 (24%) knew the correct technique of washing the wound for 10–15 min under running tap water with soap and water before the intervention and 102 (87.2%) knew it following the intervention [Figure 4]. Only 9.4% of the study participants knew about both four and five doses schedules of anti-rabies vaccination which improved to 52.1% in the post-interventional period [Table 3]. Only 4.3% of the study participants knew about both intradermal and intramuscular routes of vaccination, which improved to 35.04% in the post-interventional period [Table 4].

Table 1: Age distribution of population (n=131)

Age group (year)	Number (%)
20–30	24 (18.3)
31–40	70 (53.4)
41–50	26 (19.8)
51–60	11 (8.4)

Table 2: Modified B G Prasad (2016) classification of SES (n=131)

Class	n (%)
I	7 (5.34)
II	19 (14.50)
III	45 (34.35)
IV	40 (30.53)
V	20 (15.26)

SES: Socioeconomic status

Table 3: Knowledge about doses of anti-rabies vaccine (n=117)

Number of vaccines required	Pre-intervention (%)	Post-intervention (%)
One	2 (1.7)	0
Two	5 (4.3)	2 (1.7)
Four	27 (23.0)	34 (29.1)
Five	32 (27.4)	20 (17.1)
Four or Five	11 (9.4)	61 (52.1)
Fourteen	23 (19.7)	0
Do not know	17 (14.5)	0

Attitude

Around 91 (77.8%) agreed that following the animal bites, tetanus toxoid injection is needed and 114 (97.4%) agreed following health education.

Among the participants, 60 (51.3%) told there is no need for anti-rabies vaccination if the vaccinated animals bite. 47 (40.2%) told it is required and 10 (8.5%) told they do not know about it. Post-training, 98 (83.8%) agreed that it is needed. Among the participants, 96 (82.1%) agreed that rabies is the preventable disease which was increased to 113 (96.58%). Majority, 99 (84.6%) had the misconception that rabies can be cured completely once symptoms appear, which was reduced to 36 (30.76%).

The attitude was changed significantly ($P < 0.05$) among the participants with respect to the indication of anti-rabies vaccination among pregnant and lactating mothers, following the bite by the younger animals, in cases of repeated bites and about diet restrictions in animal bite victims [Table 5].

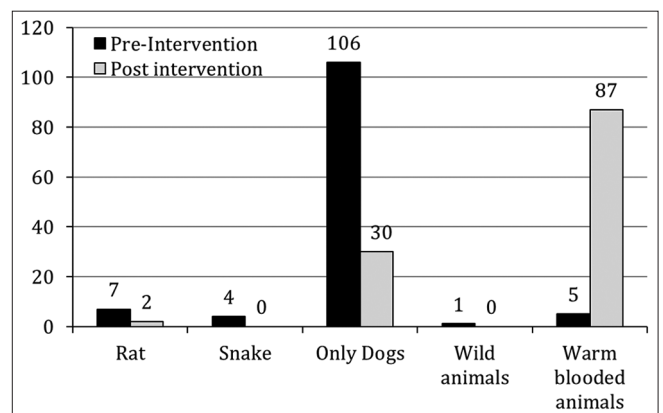


Figure 1: Knowledge about the animals transmitting rabies (*multiple responses considered)

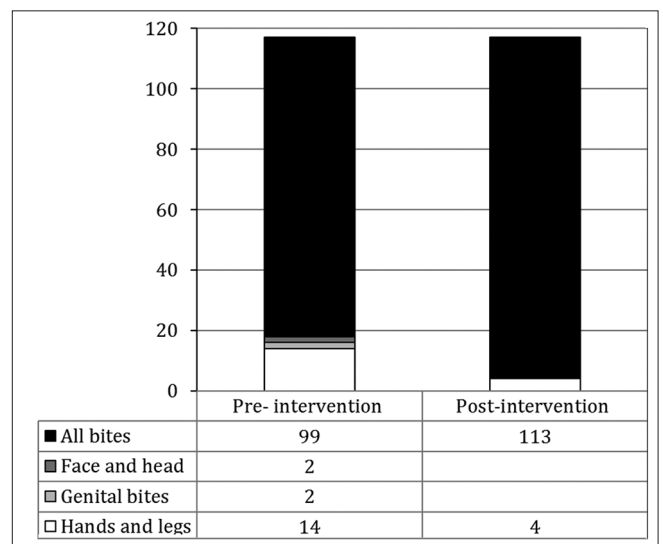


Figure 2: Knowledge about the at-risk sites of an animal bite (n=117)

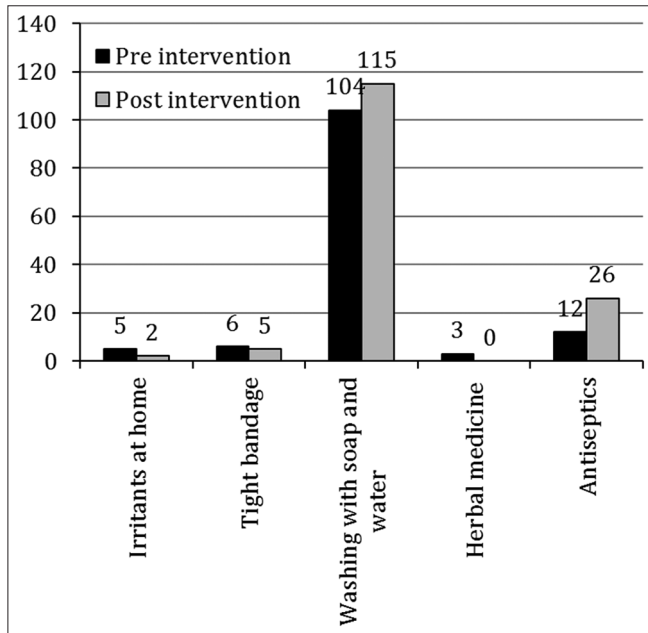


Figure 3: Knowledge about the first aid treatment following animal bite (*multiple responses considered)

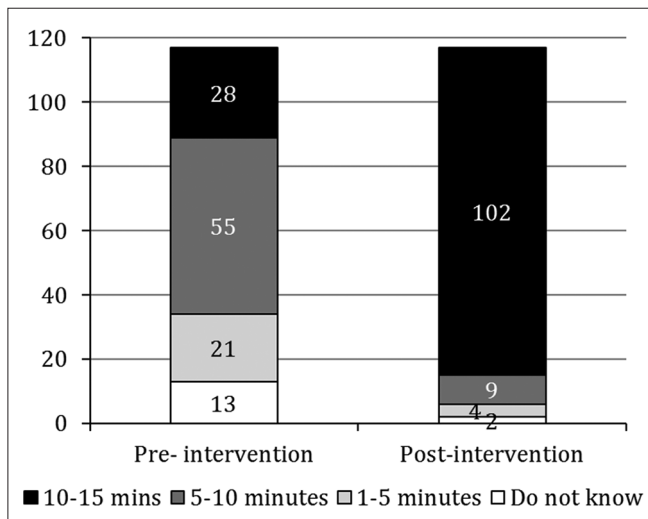


Figure 4: Knowledge about the wound cleaning duration following an animal bite

Practices

Before the intervention around 88 participants had seen animal bite victims, for whom majority 52.3% had not given any treatment. Following the educational intervention, in 1 month, around 46 participants had seen the animal bite victims, and majority had given wound wash (91.3%) and referred to the hospitals for immunization. [Figure 5]

DISCUSSIONS

In our study, it was found that there were knowledge lacunae with respect to the sources of infection; only 4.27% participants knew that all warm-blooded animals are the potential sources of infection. Majority knew only dog

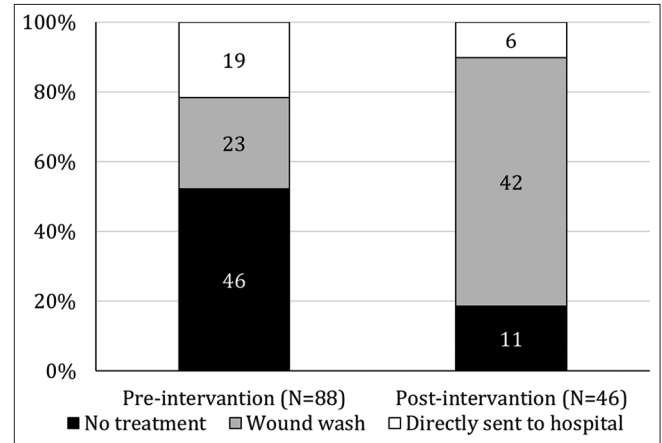


Figure 5: Practices about the treatment of rabies

Table 4: Knowledge about route of anti-rabies vaccination (n=117)

Site of vaccination	Pre-intervention (%)	Post-intervention (%)
Intradermal	36 (30.8)	42 (35.8)
Intramuscular	16 (13.7)	34 (29.05)
Both IM and ID	5 (4.3)	41 (35.04)
Abdomen	29 (24.8)	0
Do not know	31 (26.5)	0

(90.5%) as the source of infection. These knowledge lacunae can cause negligence of bites by the other warm-blooded animals. This was improved with the health education to 74.35% of the participants knowing all the potential sources of infection. Knowledge about the need of wound washing was improved from 81.2% to 94% following the intervention. The false conceptions regarding the first aid measures such as application of irritants, herbal medicines, and tight bandages were solved following the intervention to the minimum to zero levels. Wound washing technique was not properly known by majority before the intervention, which was improved from 24% to 87.2%. Even though wound washing can help to reduce the chances of developing the disease and kills the virus, insufficient and improper technique will serve no much help. Knowledge regarding the routes and dosages of the anti rabies vaccination is crucial as they can advise the victims to adhere to the Regimen. In our study, the knowledge was found to be poor 4.3% and 9.4% which increased to 35.04 % and 52.1%, respectively. The attitude was changed positively toward the need of anti-rabies vaccination among pregnant women, repeated exposures and following bites from the immunized animals. The practices were also changed significantly among the participants following the health education; wound wash was given by majority (91.3%) of the participants to the animal bite victims, following the intervention. Hence, the intervention was found to be useful in filling up the gap in knowledge, changing the attitudes and the practices of the participants.

Table 5: Attitude regarding the animal bites management amongst the health workers

Attitudes	Number (%)		P*
	Pre-intervention	Post-intervention	
Anti-rabies vaccine can be given to pregnant and lactating mothers			
Agree	71 (60.7)	107 (91.4)	<0.001
Disagree	17 (14.5)	10 (8.5)	
Do not Know	29 (24.8)	0 (0)	
Anti-rabies vaccination needed following the bites of the younger animal			
Agree	83 (71)	109 (93.2)	0.031
Disagree	21 (18)	8 (7)	
Do not Know	13 (11.2)	0 (0)	
Anti-rabies vaccine needed in case of repeated bites			
Agree	82 (70.08)	96 (82.05)	0.008
Disagree	22 (18.80)	21 (18)	
Do not Know	13 (11.2)	0 (0)	
Diet restrictions should be done to the animal bite victim			
Agree	21 (18)	10 (8.6)	<0.001
Disagree	81 (69.2)	107 (91.4)	
Do not Know	15 (12.8)	0 (0)	

*Chi-square test was used

Similar findings were found in a study by Dasgupta *et al.*^[8] on the effectiveness of health education on knowledge regarding rabies among health workers of West Bengal: The number of respondents giving correct responses to the knowledge questions regarding the rabies agent, the transmission, category of bites, management, dose, schedule, route, etc., was significantly improved following the health education. In a study by Kishore *et al.*^[7] on the KAP assessment in health workers regarding rabies disease and its prevention in district Dehradun of Uttarakhand found that all the 162 health workers had heard about the disease and all knew about the major mode of spread. The knowledge regarding the first aid; 75.3% knew need and correct method of wound washing, 22% knew about need for antiseptics, which was much higher than the knowledge among our study participants as in our study, ASHA and AWW are also included along with ANMs. In a study by Tschopp *et al.*^[9] on dog demography, animal bites management and rabies KAP in Eastern Ethiopia, showed that the source of infection was unknown by 25% of the respondents. Transmission route from animals to humans was thought to be through bites, saliva, milk, and/or meat consumption, while 37.5% did not know the route. Cure for rabies was said to be good disinfection of the bite wound, injection, and post-exposure prophylaxis (PEP). Knowledge about the number of PEP injections needed by a patient, 2 medical staff did not know, 2 said 2 injections, 2 said 14 injections, 4 said 17 injections, and 1 said 18 injections. Study by Nguyen *et al.*^[10] on awareness of rabies prevention and control measures among public health workers in Northern Vietnam showed that overall knowledge was patchy. Important gaps in knowledge were identified particularly in relation to indications for rabies vaccine and

rabies immunoglobulin and routes of exposure to rabies virus. One in 10 respondents did not know that rabies virus could be transmitted by the bite of an infected animal.

This study was carried out in a rural field practice area, as the need and role of the grass root workers are more in rural areas where majority of rabies deaths occur in India. This study mainly focuses on improving the knowledge, changing the attitude and practices among all the grass root workers such as ASHA, AWW, and ANMs who act as the first point of contact and play an important role in management cycle. Since the majority of the studies were done among the medical students, nursing staffs, and general practitioners, the results cannot be compared to their qualifications and role in management cycle is different.

CONCLUSIONS

The knowledge lacunae were found and were improved with training. The misconceptions regarding animal bite management were also improved with the health education. Practices were changed in terms of providing the wound wash before referring to the hospitals. Thus, the health education was found to act as an effective intervention in reducing the misconceptions, improving the knowledge and practices regarding the management of animal bite victims.

REFERENCES

1. Park K. Park's Textbook of Preventive and Social Medicine. 24th ed. Jabalpur: Banarasidas Bhanot Publishers; 2017. p. 294-9.
2. World Health Organization. Rabies. 2017. Available from:

- <http://www.who.int/mediacentre/factsheets/fs099/en>. [Last accessed on 2017 Dec 04].
3. World Health Organization. India's on Going War Against Rabies; 2009. Available from: <http://www.who.int/bulletin/volumes/87/12/09-021209/en>. [Last accessed on 2018 Jan 18].
 4. Centres for Disease Control and Prevention. How Can You Prevent Rabies in People? 2018. Available from: <https://www.cdc.gov/rabies/prevention/people.html>. [Last accessed on 2018 Jan 16].
 5. World Health Organization. Strategic Framework for Elimination of Human Rabies in the South East Asia Region. Geneva: WHO; 2012. Available from: http://www.searo.who.int/entity/emerging_diseases/links/Zoonoses_SFEHRTD-SEAR.pdf. [Last accessed on 2018 Jan 03].
 6. National Rabies Control Program. National Guidelines on Rabies Control. National Center for Disease Control. Directorate General of Health Services; 2015. p. 4. Available from: <http://www.ncdc.gov.in>. [Last accessed on 2018 Jan 20].
 7. Kishore S, Singh R, Ravi SK. Knowledge, attitude and practice assessment in health workers regarding rabies disease and its prevention in district Dehradun of Uttarakhand. *Indian J Community Health* 2015;27:381-5.
 8. Dasgupta A, Das S, Das MK, Kumar A, Shahbabu B, Sarkar K, *et al*. Effectiveness of health education on knowledge regarding rabies among health workers of West Bengal. *Int J Health Sci Res* 2014;4:26-34.
 9. Tschopp R, Bekele S, Aseffa A. Dog demography, animal bite management and rabies knowledge-attitude and practices in the Awash Basin, Eastern Ethiopia. *PLoS Negl Trop Dis* 2016;10:e0004471.
 10. Nguyen AK, Nguyen HT, Pham TN, Hoang TV, Olowokure B. Awareness of rabies prevention and control measures among public health workers in Northern Vietnam. *Public Health* 2015;129:1591-6.

How to cite this article: Crastha S, Thangaraj V. Assessment of the effect of animal bite management training, among frontline healthcare workers in a rural field practice area of Bangalore Medical College and Research Institute. *Int J Med Sci Public Health* 2018;7(8):620-625.

Source of Support: Nil, **Conflict of Interest:** None declared.