

# A Cross-sectional Study on Awareness regarding Animal Bite Wound Management and Rabies Immunization among Students of a School of Nursing in a City of India

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## ABSTRACT

**Introduction:** Human rabies continues to be endemic in India. Rabies is a zoonotic disease transmitted by animal bites, mainly dogs. It is invariably fatal if proper treatment is not instituted promptly. One of the important factors associated with successful treatment is the knowledge of the nursing staff regarding the proper management of animal bites and rabies vaccination.

**Objectives:** To assess the awareness of the nursing students of Rohilkhand School of Nursing regarding animal bite wound management and pre- and postexposure prophylaxis of rabies.

**Materials and methods:** *Study Area:* Rohilkhand School of Nursing, Bareilly, Uttar Pradesh, India. *Study Design:* Cross-sectional study. *Study Duration:* January 2017 to February 2017. *Study Population:* Students of Rohilkhand School of Nursing, Bareilly, Uttar Pradesh, India. *Sample Size:* 100. *Study Tool:* Questionnaire was distributed to the nursing students for collecting the data.

**Results:** A total of 100 nursing students were studied, out of which 85% were females and 15% were males. It was observed that the majority of participants (80%) were aware regarding the immediate treatment of animal bite wound. Knowledge of the study participants regarding site of intramuscular (IM) vaccine administration in infants was found to be poor, i.e., only 31% of participants were aware regarding the correct site of IM vaccination in infants. It was also found that only 9% of participants were aware of the incurability of rabies after clinical onset, 72% were aware about the noncurable nature of rabies, and 72% were aware about the preventable nature of rabies. Knowledge of participants regarding rabies immunization showed that only 46% of participants were aware about the recommended regimen for IM vaccine administration for postexposure prophylaxis and 32% regarding the route of administration of antirabies vaccine (ARV) in pregnancy. About 94% of participants were aware about the tetanus toxoid (TT) vaccine administration postanimal bite.

**Conclusions and recommendations:** There is an apparent lack of knowledge among study participants regarding rabies and its immunization. Hence, there is a need for generating awareness regarding rabies and its immunization. The nursing students should be sensitized so that their knowledge can be

converted into appropriate practices when they will be posted in hospitals as nursing staff.

**Keywords:** Animal bite wound, Awareness, Immunization, Knowledge, Nursing students, Rabies.

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**Conflict of interest:** None

## INTRODUCTION

Rabies is a viral zoonosis that occurs in more than 100 countries and territories. Although a number of carnivores and bat species serve as natural reservoirs, rabies in dogs is the source of 99% human infections and poses a potential threat to more than 3.3 billion people. In humans, rabies is highly fatal once clinical symptoms have developed.<sup>1,2</sup> According to the World Health Organization, human rabies can be prevented completely by proper postexposure prophylaxis.<sup>3</sup> In India alone, 20,000 deaths (i.e., about 2/100,000 population at risk) and 2 million bites, mostly by dogs, are estimated to occur annually. India has 36% global and 65% Asian rabies burden in terms of cases.<sup>4,5</sup> It is estimated that in the absence of postexposure prophylaxis, about 327,000 persons would die from rabies in Africa and Asia each year.<sup>4</sup>

Local treatment of wounds is of maximal value when applied immediately after exposure (within minutes if possible), but it should not be neglected if several hours or days have elapsed.<sup>6</sup> Animal experiments have shown that local wound treatment can reduce the chances of developing rabies by up to 80%.<sup>7</sup>

In rural areas, first aid is sought from the health workers who are the first persons to come into contact with the victims of animal bite.<sup>8</sup> However, there is lack of availability of studies on the awareness of nursing personnel and nursing students regarding animal bite wound management and rabies immunization as they are the first ones to be contacted by the community in case of health-related issues.

The present study was, therefore, carried out among nursing students of Rohilkhand School of Nursing, India,

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to assess their awareness regarding animal bite wound management and rabies immunization, so that the incidence of the disease can be reduced in the near future. It was also found that no such studies have been conducted in this area in the past.

**OBJECTIVES**

To assess the awareness of the students of the Rohilkhand School of Nursing regarding:

- Animal bite wound management
- Pre- and postexposure prophylaxis against rabies

**MATERIALS AND METHODS**

*Study Area:* Rohilkhand School of Nursing, Bareilly, Uttar Pradesh, India

*Study Design:* Cross-sectional study

*Study Duration:* January to February 2017

*Study Population:* All students of general nursing and midwifery (GNM) and auxiliary nursing midwifery (ANM).

*Inclusion Criteria:* All students of GNM and ANM who were present on the day of study and who gave consent to participate in the study.

*Exclusion Criteria:* Students who were not present on the day of study and who did not give consent to participate in the study.

*Unit of Study:* Nursing student fulfilling the inclusion criteria of the study.

*Sample Size:* 100 nursing students.

*Study Tool:* A pretested and predesigned questionnaire was distributed among the nursing students for collecting the data.

*Data Analysis:* Data were analyzed using Epi Info package.

*Methodology:* The present cross-sectional study was carried out among the nursing students of Rohilkhand

School of Nursing from January 2017 to February 2017 using a predesigned and pretested questionnaire.

Data were collected after taking clearance from the Institutional Ethical Committee.

The study population was selected by convenient sampling technique.

A total of 100 nursing students, 50 out of 60 ANM students and 50 out of 60 GNM students, i.e., 100 out of total 120 nursing students, who were present on the day of study and who gave informed consent to participate in the study were included in the study.

The nursing students were approached by postgraduate students of the Community Medicine Department at the end of their classes with minimal interruption to their classes after taking permission from the principal of the Nursing College.

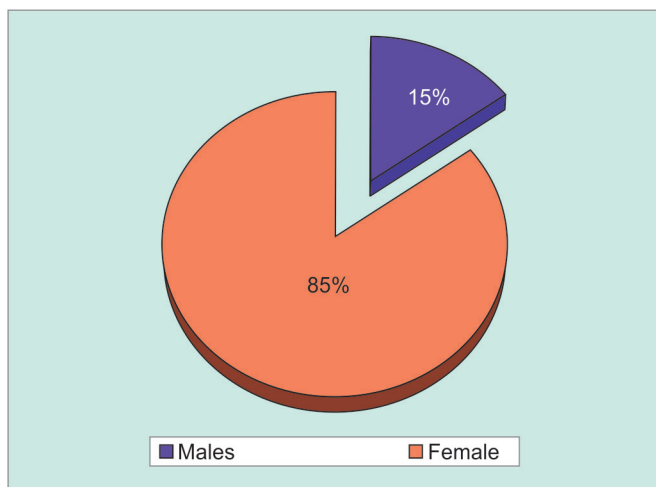
They were provided with a questionnaire after explaining to them about the purpose of the study. Written informed consent was taken from the students for participating in the study.

The questionnaire was pretested by carrying out a pilot study with a sample size of 10 to check the feasibility of the study and necessary modifications in the questionnaire were made accordingly. Collected data were entered in the MS Excel Spreadsheet, coded appropriately, and later cleaned for any possible errors in the computer software Epi Info (version 7.2). Analysis was carried out using Epi Info version 7.2.

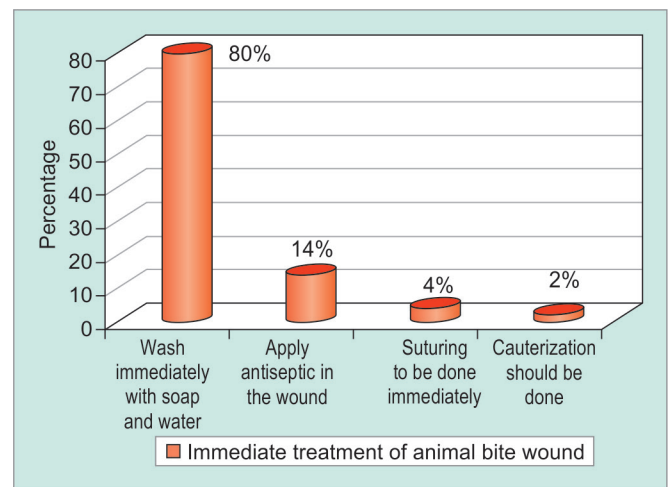
**OBSERVATIONS AND RESULTS**

Graph 1 shows distribution of study participants according to their sex. It was observed that out of the total 100 participants, the majority of study participants (85%) were females and the rest (15%) were males.

Graph 2 shows distribution of participants according to their knowledge regarding immediate treatment of animal bite wound. It was found that, out of 100 study



**Graph 1:** Sexwise distribution of study participants (N = 100)



**Graph 2:** Distribution of participants based on their knowledge regarding immediate treatment of animal bite wound (N = 100)

**Table 1:** Knowledge of study participants regarding rabies (N = 100)

Knowledge area	No. of participants aware	Percentage of participants aware	No. of participants unaware	Percentage of participants unaware
Preventable nature of rabies	72	72.00	28	28.00
Noncurable nature of rabies	26	26.00	74	74.00
Incurability after clinical onset	9	9.00	91	91.00
Fatal nature of rabies	55	55.00	45	45.00

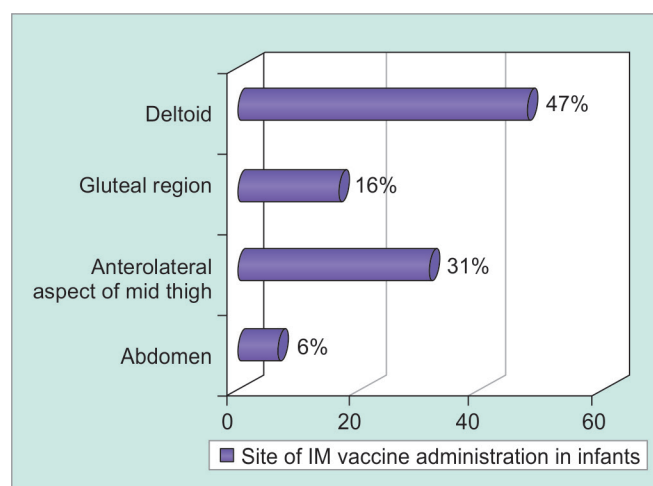
**Table 2:** Knowledge of study participants regarding rabies immunization (N = 100)

Knowledge area	No. of participants aware	Percentage of participants aware	No. of participants unaware	Percentage of participants unaware
ARV in pregnancy and lactation	62	62.00	38	38.00
Postexposure prophylaxis to prevent disease development	75	75.00	25	25.00
Booster doses to vaccinated individuals	69	69.00	31	31.00
TT vaccination after animal bite	94	94.00	6	6.00
Preexposure prophylaxis to high-risk population	72	72.00	28	28.00
Categorization of animal bite wound	67	67.00	33	33.00
Recommended regimen for IM vaccine administration for postexposure prophylaxis	46	46.00	54	54.00
Route of administration of ARV in pregnancy	32	32.00	68	68.00

participants, the majority of participants (80%) reported washing the wound with soap and water for 15 minutes as the immediate treatment for animal bite wound, followed by participants who believed that applying anti-septic in the wound should be the immediate treatment of animal bite wound (14%) while the minimum number of participants (4 and 2%) believed that suturing was to be done immediately and cauterization as the immediate treatment of animal bite wound respectively.

Table 1 shows distribution of study participants according to their knowledge regarding rabies. It was observed that, out of 100 participants, 72% of participants were aware regarding the preventable nature of rabies, 26% of participants were aware about the noncurable nature of rabies, only 9% of participants were aware that there is no treatment possibility after the clinical onset of rabies, and 55% of participants were aware regarding the fatal nature of rabies.

Table 2 shows the distribution of study participants according to their awareness regarding rabies immunization. It was observed that, out of 100 participants, 62% of participants were aware that ARV is recommended in pregnancy and lactation, 75% of participants were aware that postexposure prophylaxis can prevent disease development, 69% of participants were aware regarding administration of booster doses to vaccinated individuals, 94% of participants were aware regarding administration of TT vaccine after animal bite, 72% of participants were aware that pre-exposure prophylaxis should be given to a high-risk population, 67% of study participants were aware regarding categorization of animal bite wound,

**Graph 3:** Distribution of study participants according to their knowledge regarding site of IM vaccine administration in infants (N = 100)

and only 46 and 32% of participants were aware regarding recommended regimen for IM vaccine administration for postexposure prophylaxis and route of administration of ARV in pregnancy respectively.

Graph 3 shows distribution of study participants according to their knowledge regarding site of IM vaccine administration in infants. It was observed that 47% of respondents reported that the deltoid muscle was the site for IM vaccine administration in infants, followed by 31% of participants who reported anterolateral aspect of mid thigh as the site for IM vaccine administration in infants and the least number of participants (6%) reported that the abdomen was the site for IM vaccine administration in infants.

## DISCUSSION

The present study was a cross-sectional study conducted in Rohilkhand School of Nursing, Bareilly, Uttar Pradesh, India. Totally, 100 nursing students were interviewed, out of which 50 were from ANM 2nd year and 50 from GNM 2nd year, to study their awareness regarding animal bite wound management and rabies immunization. The present study observed that the study participants were aware about certain aspects of rabies, animal bite wound management, and rabies immunization, while their awareness regarding certain aspects of rabies was very poor.

In the present study, the majority of respondents were females (85%) and rest were males (15%). A study was conducted by Chowdhury et al<sup>2</sup> (2013) in the Government Medical College, Kolkata, India, among 80 interns; it was found that 55 were males and 25 were females.

It was observed that the majority of study participants were aware regarding immediate treatment for animal bite wound management. The reason behind this could be that the study participants were nursing students studying modern medicine and, therefore, they were aware that cleaning the wound with soap and water for 15 minutes should be the immediate treatment for animal bite wound. A study conducted by Chowdhury et al<sup>2</sup> in Government Medical College, Kolkata, India, among interns also showed similar findings in which the majority of interns (96.2%) were aware regarding immediate treatment of animal bite wound.

The present study showed that 72% of participants were aware regarding preventable nature of rabies, 26% were aware regarding the noncurable nature of rabies, 55% were aware regarding fatal nature of rabies, and very few participants, i.e., only 9%, were aware that there is no treatment possibility after the clinical onset of rabies. A study conducted by Chopra et al<sup>9</sup> in a medical institute in Lucknow, India, among staff nurses showed that only 10% of participants were aware regarding the noncurable nature of rabies and that 12% of participants were aware regarding the fatal nature of rabies.

The present study showed that 62% of participants were aware that ARV is recommended in pregnancy and lactation, 75% were aware that postexposure prophylaxis can prevent disease development, 69% were aware that booster doses should be given to vaccinated individuals, 94% were aware that TT vaccination should be given after animal bite, 72% were aware regarding preexposure prophylaxis to high-risk population, 67% were aware regarding categorization of animal bite wound, 46% were aware regarding recommended regimen for IM vaccine administration, and only 32% of participants were aware regarding route of administration of ARV in pregnancy. A study conducted by Chopra et al<sup>9</sup> in a medical institute

in Lucknow among staff nurses showed that out of 7% respondents who have suffered animal bite, only 11% took TT vaccination postanimal bite. A study conducted by Chowdhury et al<sup>2</sup> in the Government Medical College, Kolkata, India, among interns showed that 41.2% of interns were aware regarding the correct schedule of vaccine administration, and 73.8% interns knew that the site of IM vaccine administration was deltoid.

The present study showed that the majority of participants (47%) said that the deltoid muscle was the site of IM vaccine administration in infants.

The results of the present study showed that inadequate knowledge regarding site, route, and schedule of postexposure prophylaxis in general population, pediatric population, as well as pregnant females among nursing students could lead to increased risk of human rabies.

## CONCLUSION

- There was apparent lack of awareness regarding rabies immunization among nursing students.
- So, there is a need for emphasizing the public health importance of rabies, animal bite wound management, and its prevention in nursing students because nursing students are the first health caregivers who will be contacted by these patients, when they would be posted as nursing staff in the hospitals after completion of their studies in nursing schools.
- The nursing students should be sensitized so that their knowledge can be converted into proper practices when they will be posted in hospitals as nursing staff.
- The Information Education Communication activities focusing on newer rabies vaccines, their dose, and site of administration should be encouraged.

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