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Original Research Article

Awareness of rabies among MBBS interns of a government medical college of North India: a cross-sectional study

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ABSTRACT

Background: Rabies is a major public health issue across the world. In India, however, it is still regarded as a disease with a low public health priority in the medical community. The disease is completely preventable if comprehensive post-exposure prophylaxis (PEP) is started as soon as possible. The majority of deaths are driven by ignorance and a lack of affordable care. It is quintessential for the medical fraternity to have adequate awareness of rabies and especially among the interns. Objectives of the study were to assess the awareness of interns regarding epidemiology, prevention and management of rabies.
Methods: An observational cross-sectional study was conducted among interns of King George's medical university, Lucknow, U. P. Informed consent was taken, and interns were enrolled. A semi-structured pre-tested questionnaire was used to assess the awareness regarding the epidemiology, immunization of rabies and animal bite management.
Results: Out of the total 160 interns who gave consent, 97% (152) were aware of the transmission mode of the rabies virus, while only a mere 37% (59) knew about the most specific prodromal symptom of rabies. Similarly, although 96% (154) of them knew who required preexposure prophylaxis, only 39% (62) knew the correct preexposure prophylaxis schedule. Regarding the first-aid animal bite treatment, 94% (150) of the interns got the answer right, but just 26% (42) of them knew which animal bite did not require PEP for Rabies in India.
Conclusions: There were significant gaps in knowledge regarding animal bite injuries and immunization among interns.

Keywords: Immunization, Interns, Rabies, Rabies immunoglobulin, Wound category

INTRODUCTION

Rabies is a major public health concern in India, though it is still regarded as a disease with a low public health priority in the health sector. Rabies is a 100% fatal disease that kills approximately 59,000 people every year throughout the world. This fatal vaccine-preventable disease claims one human life every 15 minutes and Asian countries contribute to nearly half of rabies deaths.[1]

In India, rabies still poses a significant public health threat. Based on WHO-sponsored national multicentric rabies survey, 2003, a projected estimate of annual human rabies incidence worked out approximately 20,565 cases per year.[2] The actual number of deaths could be substantially higher because rabies is not a notifiable disease in India, and there is no systematic surveillance system for either human or animal cases.[3] The majority of rabies cases (about 97%) are caused by rabid dog bites, followed by other animals such as cats, cows, monkeys,

horses, pigs, and camels.[2] Disease is entirely preventable, provided complete PEP is implemented promptly. According to WHO, proper PEP can prevent human rabies completely.[1] Inadequate knowledge of the classification of animal bite wounds leads to incorrect vaccination in different countries around the world, including India. The majority of deaths are driven by ignorance and a lack of affordable care. The medical fraternity needs to have adequate knowledge and awareness regarding rabies, especially the MBBS interns who would be going out into the community as doctors. The present study among MBBS interns would help them address the lacunae in knowledge, attitude and practices that exist among them regarding rabies prevention, management and immunization.

Objectives

Objectives of the study were to assess the awareness of MBBS interns regarding epidemiology, prevention and management of rabies.

METHODS

An observational cross-sectional study was conducted among interns of King George's medical university, Lucknow, Uttar Pradesh during January 2018-March 2018. King George's medical university takes in 250 MBBS students every year, and 270 students passed out and enrolled as interns in January. Complete enumeration was done, and information about the study was given to all the interns. Out of these, 160 interns who were willing to participate in the study were enrolled after taking informed written consent. They were given a pre-tested structured questionnaire in the English language consisting of 17 multiple choice questions, 16 had one correct response, and 1 had multiple responses with four correct answers. The questionnaire was divided into three sections viz knowledge regarding epidemiology, prevention and management of rabies. The part on epidemiology and management of rabies had four and eight multiple-choice questions, respectively, with one correct answer to each question. The section on the prevention of rabies had 5 multiple-choice questions, four out of which had one correct answer, and 1 question had option of multiple responses with 4 correct answers.

Knowledge scoring

Based on the questions, scoring was done with one mark given for each correct response. A total scoring of 20 was taken as the maximum score. Scores within 0-7 marks were considered as "poor knowledge", 8-14 as "average knowledge", and 15-20 as "good knowledge".

Data analysis

Knowledge regarding different questions is presented as frequency and percentages. Data analysis was done using SPSS software ver. 23 (SPSS-23, IBM, Chicago, USA).

Ethical consideration

Owing to ethical concerns, permission was obtained from institutional ethical committee of King George's medical university UP, Lucknow, before commencing study.

RESULTS

A total of 160 interns were included in the study. Among the participants 98 were male and 62 were female. The mean age of the participants was 23.4 (2 SD±1.8) Out of 160 interns who took part in the study, a majority (96.8%) were aware of the route of rabies virus transmission, but only 68.1% knew that transmission of rabies could occur from man to man. Among the participants, 61.3% knew about the incubation period of rabies, whereas only one-third of the participants (36.8%) knew about specific prodromal symptoms of rabies in humans (Table 1).

Table 1: Knowledge regarding the epidemiology of rabies among the interns.

Variables	Correct answer	Incorrect answer
Route of transmission of rabies virus	155 (96.88)	5 (3.12)
Incubation period depends upon	98 (61.25)	62 (38.75)
Most specific prodromal symptom of rabies in humans	59 (36.88)	101 (63.12)
Can rabies be transmitted from man to man	109 (68.12)	51 (31.88)

Though 152 participants out of 160 participants (95%) knew who requires prophylaxis in rabies, only 62 (38.8%) participants knew about preexposure prophylaxis. Almost half of participants (48.8%) did not know that PEP is not necessary for consumption of milk or meat of the infected animal. One-fourth of interns (73.8%) knew that a dog without symptoms also could transmit rabies (Table 2).

Table 2: Knowledge regarding prevention of rabies among the interns.

Variables	Correct answer	Incorrect answer
Pre exposure prophylaxis schedule	62 (38.75)	98 (61.25)
Pre exposure prophylaxis requires in	152 (95)	8 (5)
Is PEP necessary on consumption of milk or meat of infected animal	82 (51.25)	78 (48.75)
Can a dog without symptoms transmit rabies	118 (73.75)	42 (26.25)

Most of the interns (93.8%) knew about the first aid treatment for the dog bite, but 41.9% of them didn't know within what time an infectious bite should be treated. 114 (71.3%) interns knew about PEP of rabies; only 74 (46.3%) knew about in which cases PEP is contraindicated. Only 50% of the interns knew when RIG could be given after the first dose of the anti-rabies vaccine. The 70% of the interns had knowledge about the categorization of the dog bite (Table 3).

Table 3: Knowledge regarding the management of animal bite among the interns.

Variables	Correct answer	Incorrect answer
First aid treatment for dog bite	150 (93.75)	10 (6.25)
Time within which an infectious bite should be treated	93 (58.13)	67 (41.87)
PEP of rabies	114 (71.25)	46 (28.75)
PEP contradicted in	74 (46.25)	86 (53.75)
After 1st anti rabies vaccine dose, RIG can be given till	80 (50.00)	80 (50.00)
Nibbling of uncovered wound and minor abrasion without bleeding comes under which category	112 (70.00)	48 (30.00)
Rabies PEP not required in India for which animal bite in India	42 (26.25)	118 (73.75)
Treatment of cat III animal bite wound for previously unimmunized person	140 (87.50)	20 (12.50)

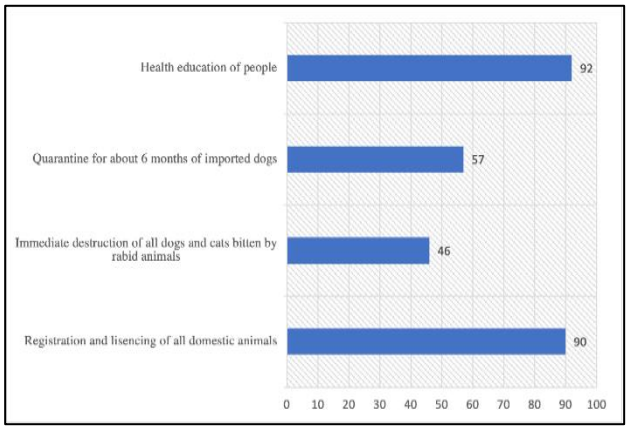

Figure 1: Measures to control rabies reported by the interns.

Health education of people and registration and licensing of all domestic dogs were the measures felt by 57.5% and 56.3% of Interns, which can control actions. Among interns, 28.8% believed that immediate destruction of all dogs and cats bitten by rabid animals would be a good measure to prevent rabies (Figure 1).

The present study shows that the percentage of the interns with good knowledge about rabies is quite less, i.e., 7.5%, whereas74.4% of the interns had average knowledge about rabies, and 18.1% of the interns had poor knowledge (Figure 2).

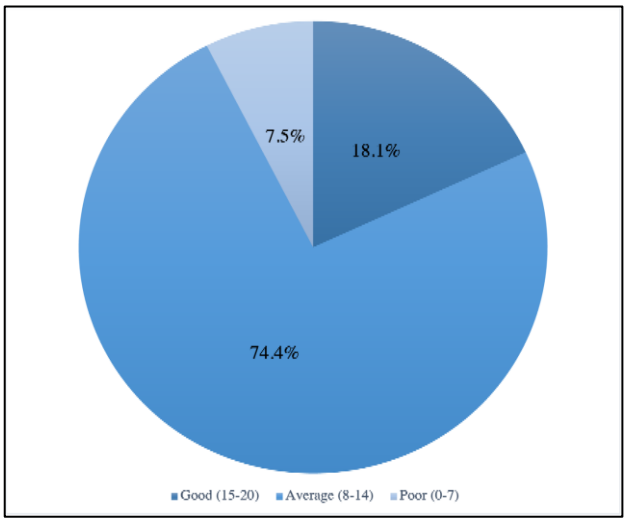

Figure 2: Knowledge scoring of the interns.

DISCUSSION

There are about 1.7% of animal bites in India every year, mostly from stray animals.[2] To prevent the development of human rabies, all physicians must have a thorough understanding of animal bite management and rabies vaccination. A group of specialists on rabies from seven Asian countries have emphasized the shortage of awareness among general practitioners concerning rabies.[9] Studies from India and other countries in Southeast Asia have stated a high level of knowledge among physicians concerning vectors, causative organisms, incubation period, mode of transmission, or the case fatality rates of the disease, but very few studies reported on the knowledge of physicians regarding animal bite management and rabies prophylaxis.[10,11]

In the present study, we could conclude that the knowledge among medical interns regarding rabies is primarily average; interns have excellent knowledge about the route of transmission, PEP and first aid treatment and insufficient knowledge regarding prodromal symptoms of rabies, preexposure prophylaxis and rabid animals. The 97% of the interns were aware of the mode of transmission of the rabies virus, while only a mere 37% knew about Rabies' most specific prodromal symptom. Similarly, although 96% of them knew who required preexposure prophylaxis, only 39% knew the correct preexposure prophylaxis schedule.

Regarding the 1st aid treatment of animal bites, 94% of the interns got the answer correct, but just 26% knew which animal bite did not require PEP for rabies in India. A study was done by Chowdhury et al among interns of a medical college in Kolkata also reported the gap in knowledge of animal bite injuries management and immunization.[4] They found that 56.3% and 72.6% of the interns could not categorize bites into single transdermal bites and licks on broken skin as category-III wounds.

The 12.5% of the interns were aware of the intradermal route of immunization while only 10% could correctly describe the PEP postexposure schedule of category I wounds and 31.2% told to give rabies immunoglobulin in category-II wounds. This is similar to a study among final year medical students and interns done by Amrita et al in Jamnagar, Gujrat; they reported that only 59% knew that rabies immunization of dogs was an indispensable preventive measure, 80% and 68% told that preexposure immunization and education of people regarding preexposure and 29% PEP were beneficial, respectively.[5] Half of the study participants (50%) were not aware of the schedule of PEP, while 29% did not know the dose of the PEP, while only about one-third (35%) knew about both the IM and ID route of administration of PEP. About two-thirds (65%) were aware that the site of administration of PEP is deltoid. They also concluded that the knowledge regarding rabies is inadequate in interns and final year students. They implied a lack of practical exposure of interns for the same.

A study was done by Das et al among medical students of government medical college, Nalhar, Nuh, reported that 36.1% of the students had correct knowledge regarding washing of the wound with soap and water.[6] Nearly 74.7% of the students knew about the mode of transmission, which was lower than the present study (96.9%). However, they reported that only 15.7% of the students had correct knowledge of categories, and only 10.8% had a proper understanding of the administration site of rabies immunoglobulin. They also concluded that medical students had theoretical knowledge regarding rabies but lacked the same practical aspect.

A study done by Mali et al among 2nd-year medical students reported almost 90% of the students knew the mode of transmission regarding rabies, which is slightly lower than the present study.[7]

In a study conducted by Garg et al among doctors in Delhi, less than half were aware of the intradermal rabies prophylaxis schedule (39.1%), site (42.2%), and dose (48.4%). The majority of unimmunized patients (81.4%) were aware of the postexposure schedule. Only 40.4% of previously immunized patients were aware of the postexposure schedule, whereas 47.8% were aware of the preexposure prophylactic schedule. They also highlighted the gaps in the knowledge and practices of doctors.[8]

A study was done among general practitioners in Pakistan by Shah et al also reported poor knowledge regarding dog bite management.[15] Another study by Monje et al among health professionals in Uganda also highlighted the lack of sufficient knowledge with respect to rabies.[12] They reported that only 44% had adequate knowledge about rabies while only one-fourth had a positive attitude concerning rabies management. And only half of the respondents had limited good practices. Similar findings were reported in a Turkish study which found that physicians had insufficient basic and clinical knowledge of rabies.[13,14]

Rabies is unvaryingly fatal and possibly the most painful and dreadful of all communicable diseases in which the infected person is tortured at the same time with thirst and fear of water (hydrophobia). Fortunately, rabies can be prevented if animal bites are managed aptly and in time. In this regard, the post-exposure treatment of animal bite cases is of prime importance.[15] To prevent the development of human rabies, all physicians must be familiar with animal bite management and rabies vaccination. Lack of understanding about animal bite management and rabies vaccination can lead to inadequate vaccinations, increasing the likelihood of human rabies development. Without proper knowledge of immunoglobulin administration, it can also lead to unnecessary vaccination and immunoglobulin administration, causing avoidable governmental or out-of-pocket expenditure of the patient.[16]

Strength and limitations

The present study is unique as we also tried to study the knowledge of wound management and immunization in addition to the knowledge regarding the epidemiology of rabies. The present study has a few limitations like small sample size and the study being done in only interns; this could limit the generalization of the findings.

CONCLUSION

Overall, the interns in the study were not well aware of animal bite management and rabies vaccination. One way to get them more acquainted with rabies is through interactive continuing medical educations, seminars and training programs during the internship to address specific knowledge deficiencies. Also, teaching hospitals should arrange proper training for interactive animal bite cases at clinic visits for students to increase their exposure to such cases early. Finally, IEC materials such as posters, charts, and pamphlets for patients and doctors should be made available and visibly displayed in hospitals.

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