Continuing medical education about postexposure prophylaxis of rabies in tribal area medical college hospital of Gujarat, India: One step towards rabies elimination

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ABSTRACT

Background: Continuing Medical Education (CME) is an essential feature of the clinical practice and helps to improve the health care provider’s ability to provide quality patient care. The World Health Organization has given a global strategic plan to end human deaths from dog-mediated rabies by 2030 known as “Zero by thirty.” Methodology: A CME session was organized for staff nurses working in a tertiary medical care hospital of Valsad district about anti rabies vaccination. Ninety-one participants were administered the questionnaire about antirabies vaccine (ARV) and related practical aspects before and after the CME session. Results: Mean pre- and post-CME Score of the participants was 5.38 and 8.68 out of 10, respectively which was statistically significant. The majority of the participants could score from 5 to 6 (33, 36.2%) before CME which rose to 9 to 10 after CME (58, 63.7%). A total of 52 participants (57%) showed improvement in total score by more than 5 points after attending CME, whereas 13 (14%) showed no improvement. The maximum improvement (52.1%) was found in the fact that currently available vaccine vials are the same for intradermal (ID) and intramuscular (IM) regimes, followed by the need for immunoglobulins in category III animal bites (44.3%). Conclusion: CME showed significant improvement in knowledge regarding rabies and antirabies vaccination. The knowledge regarding the similar schedule for both adults and children needs improvement. Subsequent CME programs should focus on these aspects for the effective management of animal bite patients.

Keywords: Antirabies vaccine, health care provider, rabies, staff nurse

Introduction

International organizations working in the field of rabies had stressed upon the elimination of “Dog-mediated Rabies” by 2030 (Zero by Thirty).[1] To address the issue of rabies in India, the National Rabies Control Program is being implemented since the 12th five-year plan. The key activities envisaged under the program are training of health professionals on appropriate management of animal bite victims, intradermal (ID) route of antirabies vaccine, and immunoglobulin and education and communication (IEC) activities.[3] The lack of proper knowledge of animal bite management and rabies vaccination can lead to inadequate vaccinations resulting in an increased risk of development of human rabies. Loss of human life from rabies is intolerable when effective
postexposure prophylaxis (PEP) and immunoglobulin are available universally.\[3\]

There is a dearth of studies revealing the knowledge of health workers regarding rabies or the impact of their knowledge status following a training program on rabies.\[4\] The guidelines for PEP against rabies were revised in expert consultation by National Centre for Disease Control in 2002, 2007, 2013, and 2015.\[2\] The World Health Organization has provided new recommendations on rabies PEP in 2018.\[3\]

Continuing Medical Education (CME) supports the professional practice of nursing and the delivery of safe, evidence-based, high-quality care for patients. The ultimate outcomes of CME activities are to improve the professional practice of patient care. Hence, planning, implementation, and evaluation of CME activities need special attention. Evaluating the impact of educational activities on outcomes is an essential competency.\[1\]

The current study focuses on the effect of a CME session on knowledge of staff nurses regarding ARV. In the end, the participants were requested to attempt the pre-CME questionnaire. A total of 91 participants completed both pre and post-CME questionnaire out of 101 participants.

Thus, the survey questions were administered to attendees at two-time points: (1) shortly after the registration and (2) immediately following the CME activity (paper-pencil version of the questionnaire). Questionnaires were scored based on the number of items answered correctly. The correct response was awarded one point, and the total score was calculated (maximum score 10). Pre and post-CME Knowledge acquisition scores were compared for the individuals who completed surveys before and after the session.

The responses were entered into a Microsoft excel sheet and analyzed using Epi Info 7 software.\[7\] The proportion was calculated for a correct response to the question. Standard error of proportion (SEP) and student t-test were used as a test of statistical significance. The records were kept confidential, and the softcopy was kept in password-protected folder.

### Results

Pre-CME and post-CME questionnaires of ninety-one participants were analyzed for their knowledge score about rabies, antirabies vaccine, and immunoglobulins.

The mean pre- and post-CME score of the participants was 5.38 and 8.68, respectively, which was statistically significant (calculated “t” value 2.82) at 0.05 level of significance. The majority of the participants could score from 5 to 6 (33, 63.2%) before CME which rose to 9 to 10 (58, 63.7) after CME [Figure 1].

The majority of the participants (52, 57%) showed improvement in total score by more than 5 points after attending CME. A total of 14% showed no improvement in their score. [Figure 2]

The score of the participants regarding their knowledge about rabies was analyzed using SEP. The maximum improvement (52.1%) was found in the fact that currently, available vaccine vials are the same for ID and IM regime, followed by the need for immunoglobulins in category III animal bites (44.3%), and transmission of rabies even by vaccinated dogs (42.3%) compared to the pre-CME score. Analysis of CME scores by the contents of the CME as shown in Table 1.

### Discussion

The improvement in score was noted in 91 participants after CME. The mean pre-CME score rose from 5.38 to 8.68 post CME in the present study. In a brief report by Weiner et al\[8\] measuring CME outcomes, the participants demonstrated gain in knowledge compared with before the sessions. The participants had decay in knowledge over the 9 months after the courses; the decay was small for the clinical workshop.
In the present study, 67.8% of the participants were aware regarding the transmission of rabies by animals other than dogs before CME, which improved to 90% after CME. Knowledge about animals other than dogs as a source of infection was found in 74.1% of auxiliary nurse midwife (ANM) workers and 73.9% of multipurpose health workers (MPHWs) in the KAP study on rabies by Kishore S, et al. [9] In a study by Crastha and Thangaraj, [10] before intervention majority of the health workers knew only dogs as the animal transmitting rabies to humans, whereas in postintervention period, the majority knew that all warm-blooded animal bites can potentially transmit rabies, whereas Dixit et al. [11] reported an increase in this knowledge by 86%.

We noted that before CME, only 42 (47.7%) agreed that vaccinated dogs can also transmit rabies, whereas after CME it rose to 81 (90%). In a study by Crastha and Thangaraj, [10] 60 participants (51.3%) replied for no need for anti-rabies vaccination if the vaccinated animals bite, whereas post-training, 98 (83.8%) agreed for the vaccination.

In the present study, 73% of the participants knew that ARV is safe during pregnancy which rose to 98.9% after CME. Sudeepti Panat et al. [12] reported the knowledge of participants regarding the safety of ARV in pregnancy in 62%. Natarajan A, et al. [13] reported an increase of 78% in this regard in nursing students after the educational session.

In our study, 55.8% and 67.9% of the participants knew the correct number of doses for ID and IM schedule of ARV before CME, which increased considerably post CME. This is similar to the finding by Dixit et al. [11] A study conducted by Chowdhury et al. [3] showed that 41.2% of interns were aware of the correct schedule of the antirabies vaccine. Our finding differs from the study by Kishore S, et al. [9] where only 15.1% of ANM and 21.7% of MPHWs knew the correct schedule. Crastha and Thangaraj [10] reported a 52.1% improvement in knowledge regarding the number of doses in the postinterventional period.

Awareness about the prevention of rabies by vaccine and immunoglobulins after educational intervention increased by 22.7% and 84.2%, respectively in a study by Natarajan A, et al. [13] and from 38.5% to 100% in a study by Crastha and Thangaraj. [10] In our study, 95.6% of the participants were aware of the need for immunoglobulins in category III animal bites. Of the 996 households, 617 (62%) had owners of animals that can be infected with rabies, and only 51.6% had been vaccinated for pets. They also lack the knowledge about animals likely to be infected with rabies, neither about the antirabies programs in a study in Grenada. [14] In the present study, post-CME score reported an increase of 78% in this regard in nursing students after the educational session.
rose to 90% in the participants about the rabid animals and pet animals can transmit rabies. Similar sessions can be organized for pet owners.

N. Fenelon et al.[15] in Haiti found that only 14.2% of health care professionals (HCPs) reported having been trained regarding rabies prevention and bite management, and 77.4% were not aware of where to obtain rabies vaccine for bite victims. A total of 70% of the participants were aware that intradermal (ID) route is used for ARV in our hospital which rose to 96.7% after CME in our study.

Nguyen AK, et al.[16] concluded that there was an important gap in knowledge and awareness of public health workers about indications for rabies vaccine and immunoglobulin. They stressed the importance of frequent training of public health workers for rabies control. A 94% increase in the mean scoring was observed among final-year nursing students by Dixit et al.[11] which is quite similar to the present study. The regular CME programs directed towards the management of animal bite victims and administrative aspects in the hospital may help to bridge the knowledge gap of health care providers. General practitioners and nurses may benefit from such CME programs and in the long run, can contribute to rabies elimination.

Conclusion
CME showed significant improvement in knowledge regarding rabies and antirabies vaccination. In the majority of the components, more than 90% of the participants were able to give the correct response. The knowledge regarding the common schedule for adults and children; and the same vaccine vials that can be used for ID and IM routes still needs to be improved. Subsequent CME programs can be planned for the same, so that clinical services can be managed effectively.

Limitations
Knowledge was checked immediately after the CME so the study shows the retention ability of the participants. Further research could be planned for checking the retention of knowledge after a time lag of 1 or more months.

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Conflicts of interest
There are no conflicts of interest.

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