Original Research Article

Capacity Building of Road Accident Trauma Care of Kamrup District: Learning From Focus Group Discussion and Training As Well As Skill Assessment of Nurses from Kamrup Metro and Rural District

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ABSTRACT

Background: Road traffic accident is a major global public health problem. India is not an exception to it. In north east India, situation is more complicating by lack of adequate and proper skill up gradation of health care workers working in emergency and critical care units. So, it is the need of the hour to improve the skill of these workers and to formulate a training program with the aim of improving the accident care delivery system.

Method: This paper describes lessons learned from Nurses who participated in Focus group training cum discussion on Road accident and trauma management as well as self assessment of skills of handling of victims. This training module was developed in consultation with the senior consultants of trauma care as well as following guideline of American heart associations, 2017 as well as of World health organizations. Mixed method of analysis was done.

Result: Data's were collected in the form of pre and post test, training evaluation form and responses from self assessment charts of skills. There was statistically significant mean difference between pre and post test scores (p<0.05) as well as in many areas significant gap of skills (p<0.05) were found at confidence interval 95% between the participants of the metro and rural district area.

Conclusion: The session concluded with sharing of experiences from the participants it was thematically analyzed.

Key words- Focus group, Nurses, Training, Road accidents, Skill assessment

INTRODUCTION

Road accident is one of the leading causes of death of this modern world. It is one of the major public health problem Each year approximately 1.5 million people dies of road accidents [1] and majority of whom are of young population. [2] It is said that unless controlled it will be the fifth leading cause of death by 2030. [3] Over 90% of road fatalities occur in low and middle income countries. [4] India is not an exception to it. Every 3 minute an accident is said to be taken place and in every 10 minute a death. It is being predicted that by 2020, it will be a major killer epidemic in India. [5] The situation is not different in the state of Assam too. [6] (Table1)

Table1- Comparison between India and Assam: No of death due to road accidents-

	2011	2012	2013	2014	2015	2016
India	142485	138258	137572	139671	112502	122104
Assam	2342	2291	2411	2522	2397	2572

Being as capital city and gateway of Assam, Guwahati is much significant politically and economically in this region. Guwahati is also the head quarter of Kamrup district. Kamrup metro and rural district constitutes whole population of greater Guwahati city. Vehicular traffic are also high and National highway37 passes through the city and it leads to Upper Assam districts after bifurcating at Jorabat of Meghalaya. There are number of hospitals both in government and privates in this district of Assam. People from all over north east used to come for treatment here. Most tertiary centres are located here. But still doctors per 1000 population are below national average. [7] People are being observed to be not satisfied on the quality of care in these hospitals. Emergency departments are receiving large number of accident cases each day. So, it is important for medical professionals to be up to date in competency. They should be perfect in their skills and knowledge of life support skills. There is no mandatory and regular training of paramedics is there in this part of the country on emergency skills. This current paper describes lessons learned from focus group discussions cum training on road accident trauma management held in the month of April 2018 at our university and in Agile hospitals, Guwahati. The training module is being developed in consultation with trauma consultants in accordance with American Heart Association's guidelines 2017 [8] and WHO guidelines [9] on trauma care. The training module is aimed to enhance the knowledge and skills of nurses working in emergency units of these two districts. Self assessment skill chart also given to them to know the skill gap of nurses of these two districts. The session covered 1) general awareness of road traffic accidents 2) Care in golden hour and prehospital care 3) Basic life support 4) Triage 5) Initial basic care on emergency department. Skill assessment chart covered all basic knowledge skills assoc with care of resuscitation. The current study is also done to evaluate effectiveness of such session and

to develop a training module in future to fill up the skill gap if any.

Objective

This study was done with objective to assess the skills of trauma care of the nurses of the hospitals of the kamrup districts as well as to keep them updated with the knowledge and skills and hence to formulate a periodic training program for nurses.

METHODOLOGY

First we formulated a hypothesis,

H0 1 The professional skills cannot be improved with skill development session

H1 The professional skills can be improved with skill development session

H0 2 There was no significant skill difference amongst nurses of the two districts

H2 There was significant skill difference amongst nurses of the two districts

Then a multiple choice questionnaire was prepared of 20 multiple choice questionnaire covering trauma skills [Appendix-1] and a self assessment skill sheet was given to participants [Table2]. The same questionnaire was give pre and post training to assess the knowledge gain of the participants if any.

Each correct response and skill carries one mark each.

Table2- Skill Assessment chart-

SL NO of skill	
1.	Airway insertion
2.	Endotracheal intubation
3.	Assessing GCS
4.	Performing log roll
5.	Putting neck collar
6.	Putting arm sling
7.	Simple splint
8.	Foleys catheterization
9.	operating multipara monitor
10.	Interpreting multiparamonitors reading
11.	Preparation of central line tray
12.	Reading CVP
13.	Basic X-ray interpretation
14.	Emergency ECG reading
15.	Confident on BLS
16.	Confident on ACLS
17.	Giving IV cannula
18.	Know triage

Lectures were arranged of three hour duration on power point slide presentations

on trauma care covering prehospital care, transport, Basic life support, Advanced trauma life support, Triage as well as on initial resuscitations. These are being delivered by experts of trauma care including neuro surgeon and anesthesiologist. Since in Kamrup districts most emergency and resuscitation departments are under department of anesthesiology, so this study is mainly designed by anesthesiology and critical care department of our hospital.

Pre test and post test was being conducted with the same questionnaire to assess the difference from training. A self assessment skill charts on trauma care was given to each participant.

Total n=24 nurses from different hospitals taken part in the program with equal representations from the both district (n=12 each). They were selected randomly irrespective of designation. All participants were given code number in answer sheet.

Results were assessed statistically. Paired t test was done to validate the hypothesis The feedback was recorded from the participants and thematically analyzed

Statistical Methods

The sample size was selected in such a way so that it represents the both district in equal numbers and large enough (>10% of total nursing population of each district working in emergency department) So that it represents the nursing population working in the emergency departments. The number of health care workers is less in this part of the country. Total Random sampling method was used. For analysis PSPP software was used. Mean, Standard deviation was calculated of the pre and post test score and responses of the skill assessment card. Paired t test was done to validate the hypothesis. P value from the paired t test was determined at confidence interval 95%.

RESULTS
There was significant difference observed between pre and post test (P<0.05) (Table-3)

Table3- Pre and Post test performance, n=24

	Mean	SD	t value-Paired	Df-paired	P value 2 tailed at 95%confidence interval
Pretest	7.92	3.26	-3.51	23	0.002*
Post test	11.57	4.09			

*P<0.05

T tabulated score is less then t calculated so we reject null hypothesis (H01) Again in case of analysis of skills it is found that in case of number of aspects(Table2) there were significant gap observed between two districts in paired t test (P<0.05),(Table-4). So, we reject null hypothesis (H02).

Table4- Skill difference between kamrup metro and rural-

SL' no of skills as mentioned in table-2	Mean(Metro)	Mean(Rural)	SD(Metro)	SD(Rural)	P value (95%conf Interval-2tailed)
1	0.25	0.45	.0.39	0.51	0.082
2	00	00	000	00	00
3	0.50	0.33	0.52	0.49	0.166
4	00	00	00	00	00
5	1	0.5	0.00	0.52	*0.007
6	0.33	0.25	0.49	0.45	0.586
7	0.50	0.17	0.52	0.39	*0.039
8	0.83	0.42	0.39	0.51	*0.017
9	0.67	0.25	0.49	0.45	*0.017
10	0.83	0.17	0.39	0.39	*0.001
11	0.83	0.25	0.39	0.45	*0.002
12	0.17	0.17	0.39	0.39	NaN
13	0.67	0.25	0.49	0.45	*0.017
14	0.83	0.25	0.39	0.45	*0.002
15	0.08	0.17	0.45	0.37	*0.339
16	0.83	0.67	0.39	0.49	*0.166
17	0.83	0.33	0.39	0.49	*0.007
18	0.67	0.25	0.49	0.45	*0.017

*P<0.05

Feed back

The participants n=20 describes the training as a very good in 5 point likart scale. Total n=4 participants termed it as an excellent. One participant describes it as '…..excellent talk and PowerPoint slides.. this type of training should be held regularly..'. One participant stressed on future such initiatives with hands on practice. One of the participants stressed on regular competency check of health care workers of the district. The feed backs are shown in table 5,6,

Table5- Most memorable part of the session-n=24

Part of Learning	No of responses
Audio visual slide	6
Way of Interaction	6
Doubt clearance session	4
Way of experts delivering lecture	8

Table6-Four most important skill learned as per the responses of the participants,- n=24

Basic life support skills	8
Trauma care at golden hour	6
How to triage	5
Communication with attendant	4

DISCUSSION AND RECOMMENDATIONS

The health care system in Assam comprises of Government, Semi government, Trust and privately owned hospitals. Government sectors runs in three tier system. Primary, secondary and tertiary care centres. There are two cadres of health care workers under government of Assam, health 'A' and health 'B'. Medical colleges are under health 'A' and all other are under health 'B'. Some workers are under National health mission, Government of India. District health care systems are main unit responsible for implementing the health care program. It is assumed that after being trained with such trauma skills, the nurses can train there counterpart working in secondary and primary health care facilities. The government of Assam set up three functioning level 2 trauma centres. Those are at Guwahati, Silchar and Nagaon and three functioning level 3 trauma centers at Nalbari, Bongaigaon and Diphu But these are not adequate. They are dealing with all type of trauma but the rate at which the accident has been taking place in Assam. Several studies reported that nearly half of death due to road accidents occurs in rural India where trauma cares are deficient. [10-12] It signifies that we should work for improvement in trauma care in rural areas. Except the scenario in Guwahati, in Assam in all other areas the scenario of trauma care is very grim. There were no formal training program and regular skill up gradation of health care workers. Mock et al [13] rightly pointed out that lack of training opportunities and high costs of training were the barriers of trauma care skill up-gradation of health care workers. This seems to be true and as health care workers in Assam. They have not so high salary that they can afford to go to outside Assam periodically to get trained as pointed out in our focus group study by various participants during discussion. So, it is the need of the hour to develop training module here in the state itself with the established standard guidelines. Training of basic life support skills to paramedics and medical staff is essential to improve trauma outcome. [14] Lack of trauma team, communication from onsite to corresponding facilities, ambulance and hospital staff and lack of standard protocols are also responsible for high casualties. [15-18] District hospitals often lack quality improvement program and adequate administrative tools for dealing trauma cases. [19-25] Our state is not an exception to it. The patient's medical records are also not found to be adequate as well as there was no quality improvement program in most hospitals of the kamrup district. It was found out when the participants shared experiences with experts in focus group. All these aspects were tried to address in our focus group program. In future it will be tried to cover large population and address more areas related to trauma care. It is the first step in this state in university level to arm the nursing and paramedics with skills of accident trauma care and hence to formulate a formal local periodic regular training module. There is scope of holding such type of training with

hands on experiences with artificial mannequins with more number of participants. Also, there should be uniform training program for the state and such program should be held in different part of state at regular interval.

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Appendix-1

Pre test/Post test questionnaire-

1. The ratio of CPR (Cardio Pulmonary Resuscitation) for an adult person is-
   a) 12:2
   b) 13:3
   c) 15:2
   d) 30:2
2. Heimlich maneuver is-
   a) Jaw thirst and chin lift
   b) Chin lift and jaw lift
   c) Chin lift and neck extension
   d) It is must for providing Basic life support.
3. The correct sequence of basic life support as per latest guideline of American heart association-
   a) Circulation-Airway- Breathing
   b) Airway-Breathing-Circulation
   c) Airway-circulation-breathing
   d) Breathing- circulation-airway
4. A young pillion rider was hit by a city bus in front of you and patient fell on road, the first thing you should do as a bystander-
   a) Call 108 ambulances
   b) Call and shout for help
   c) Check the carotid pulse
   d) Check for radial pulse
5. What do you mean by Field Triage-
   a) Shorting out of patient depending on priority of care on the place of accident in case of mass casualty
   b) Shorting out of patient depending on affordability of patient care
   c) shorting out of patient depending on infection risk
   d) shorting out of patient depending on affordability of patient attendant.
6. The force for chest compression should come from in performing CPR
   a) Elbow joint
   b) Shoulder joint
   c) Wrist joint
   d) Metacarpal joint
7. 24year old patient coming from Jagiroad with history of hitting his car with a tree on road while he is on driving, The pulse showing tachycardia and BP is falling. The most likely diagnosis will be
   a) Splenic trauma
   b) liver trauma
   c) Aortic injury
   d) Fracture long bone
8. A road traffic accident victim was brought to Emergency room with significant amount of blood loss. The blood group of the patient is A-ve but the blood is not available in the blood bank. The alternative blood that you will search for in the bank is –
   a) A+ve
   b) O+ve
   c) O-ve
   d) B-ve
9. The central venous pressure monitoring is useful in-
   a) Hypovolemic shock
   b) Cardiogenic shock
   c) Cardiac asystole
   d) a+b
10. Air in the thorax is known as
    a) Hydrothorax

b) Pneumothorax
c) Hemothorax
d) All of the above

11. What do you mean by 'Code Blue' –
   a) It indicates a patient requiring resuscitation or in need of immediate medical attention such as cardiac arrest or respiratory arrest etc.
   b) It indicates that a patient is cyanosed
   c) It indicates that patient is dead.
   d) It indicates that patient needs immediate operative intervention.

12. Soft tissue injury can be taken care by-
   a) Elastic bandage
   b) Application of ice
   c) Apply direct pressure over bleeding of wound
   d) b+c

13. As a paramedic/Doctor, you have reached site of car accident site you have seen that victim is unconscious and GCS is 4 and bleeding per mouth and spo2 is 92, what will you do first?
   a) Secure the airway
   b) Give bolus tranexamic acid
   c) Give Steroid.
   d) CPR

14. Depth of chest compression of CPR will be-
   a) Minimum depth of chest compression: compression depth for adults is a minimum of 5 cm/2 in. Compression depth for a child is at least ⅓ the depth of the chest size, or 5 cm for a child and 4 cm for an infant.
   b) Minimum depth of chest compression: compression depth for adults is a minimum of 4cm. Compression depth for a child is at least 4 the depth of the chest size, or 3cm for a child and 2cm for an infant.
   c) None of the above is true

d) All the above is true

15. Rate of Chest compression in CPR-
   a) 100-140/min
   b) 100-120/min
   c) 80- 90/min
   d) 60-90/min

16. Mean Blood pressure is-
   a) SBP+1/3 (SBP-DBP)
   b) DBP+1/3(SBP-DBP)
   c) DBP+2/3(SBP-DBP)
   d) DBP+2/5(SBP-DBP)

17. In resuscitation which is the most crucial in monitoring?
   a) SBP
   b) DBP
   c) MBP
   d) BP measured on left hand.

18. The color code is given in field triage, which of the following statement is true?
   a) Red- victims need immediate attention, one will not survive if not treated quickly, Green- Walking wounded, Yellow-delayed treatment and Black means expected to die
   b) Black colored one are transported last to nearest trauma center
   c) Red colored one are transported first
   d) All of the above are true

19. Golden hour in trauma victim is-
   a) Less than one hour
   b) Less than two hour
   c) Less than three hour
   d) Less than half an hour

20. Which of the following fracture causes internal bleeding most-
   a) Pelvic fracture
   b) Fracture humerus
   c) Mandible fracture
   d) Fracture tibia

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