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Concept Map Prebriefing Versus Traditional Prebriefing in Ischemic Stroke Management amongst EMS Students of Pune, India

Parag Rishipathak[1], Shrimathy Vijayraghavan[2], Anand Hinduja[3]

[1]Director, [2]Medical Officer, Academics, Pune, India, [3]Adjunct Faculty, Symbiosis Centre for Health Skills, Symbiosis International (Deemed University), Pune, India

Abstract

Introduction: Worldwide, stroke is the commonest cause of mortality after coronary artery disease. Majority of the stroke cases present in Emergency Department (ED). Therefore, the clinical acumen of medical staff in pre-hospital and ED in assessment of stroke is can significantly reduce the morbidity and mortality. Prebriefing helps to build confidence before exposure to the clinical scenario. This can prove to be very helpful in ischemic stroke assessment.

Objective: To study difference in competency performance amongst EMS students who participate in concept Map Prebriefing versus Traditional Prebriefing in clinical simulation scenario on Ischemic Stroke Management.

Methodology: Seventy-two PGDEMS students were chosen for the study by convenience sampling. The students were divided into two groups, A and B of 36 each after matching for age, sex and previous course grades. On the day of Simulation session, Group A was administered traditional prebriefing while Group B underwent Concept Map Prebriefing on the topic of Ischemic Stroke. The prebriefing concluded with narration of a case of Ischemic stroke. Each group was further subdivided into 6 smaller groups for ease of conducting assessment. A structured debriefing for each subgroup lasting for 20 minutes followed the Simulation session. The competency performance was scored using The LAPSS survey. The score obtained by a group could range from 0 to 8.

Discussion: The students prebriefed by the concept map methodology scored better than their peers on a number of parameters including key points in history taking. The above findings emphasize the role of comprehensive concept map prebriefing in impacting the student performance as measured by the LAPSS survey.

Conclusion: Traditional prebriefing orients the student to simulation environment but is found to be inferior to concept map prebriefing in terms of improving competency performance assessment in ischemic stroke.

Keywords: *rebriefing, Concept Map, Ischemic Stroke, high fidelity Simulation.*

Introduction

The World Health Organization (WHO) defines stroke as "rapidly developing clinical

Signs of focal (at times global) disturbance of cerebral function, lasting more than 24 hours or leading to death with no apparent cause other than of vascular origin"[1]. It is classified into two major types: Ischemic and Hemorrhagic. Ischemic stroke is by far the commonest, accounting for 85% of all strokes while hemorrhagic stroke accounts for the rest.

Worldwide, stroke is the commonest cause of mortality after coronary artery disease. In addition, it is the commonest cause of chronic adult disability. More than four-fifth of all strokes occur in developing countries In contrast to industrialized Western countries where there has been a steady decline in stroke over the

past 30 years. India is currently facing the challenge of a high stroke incidence.[3] 8–12% of patients die within 30 days of their first stroke and those that survive the first attack are at increased risk of a recurrence[4]. Hence, early assessment and management of patient is of paramount importance.

Majority of the stroke cases present in Emergency Department (ED). Therefore, the clinical acumen of medical staff in pre-hospital and ED in assessment of stroke is can significantly reduce the morbidity and mortality. Identifying signs and symptoms of a suspected stroke patient is a challenging task. Usage of standardized tools for assessment can definitively improve the diagnostic accuracy[5].

Los Angeles Prehospital Stroke Screen (LAPSS) is an 8-item survey tool consisting of four items pertaining to history taking, one item pertaining to blood glucose measurement and three items pertaining to examination for detecting unilateral motor weakness. The LAPSS allows prehospital personnel to identify patients with acute cerebral ischemia with a high degree of sensitivity and specificity. The assessment of a suspected stroke patient involves quick and accurate clinical judgement . Prompt assessment can help prehospital personnel to initiate neuroprotective drug administration in the field thereby providing treatment in the narrow therapeutic window[6].

Varying degrees of simulation have been used to teach cases of ischemic cases of ischemic stroke of EMS students. The purpose of simulation is to act as an adjunct to clinical hours, for specialty experiences ,for competency assessment, for crisis resource management or team training, and for inter-professional education[7].

Simulation experiences involve three main dimensions: pre-briefing, unfolding the scenario and debriefing. Prebriefing is the first step in a simulation based education experience.

In simulation, traditional prebriefing activities assist learners by introducing scenario objectives, and typically include communication of the patient presentation, participant roles, tasks, time allotment, and an orientation to equipment and to the general environment.[8] rebriefing helps to build confidence before exposure to the clinical scenario. There are numerous studies, which have evaluated the impact of debriefing in competency assessment, but very few studies have focused on the contribution of prebriefing in building competencies. An emerging alternative view to traditional prebriefing is utilization of concept mapping. Concept Mapping serves to connect the cognitive and reflective processes in a framework that is understandable to the learner. It enables them to use pre-existing knowledge and their assessment of a situation to develop clinical decision-making skills.[9]

This can prove to be very helpful in ischemic stroke assessment.

Objective

To study difference in competency performance amongst EMS students who participate in concept Map Prebriefing versus Traditional Prebriefing in clinical simulation scenario on Ischemic Stroke Management.

Methodology

Seventy-two PGDEMS students were chosen for the study by convenience sampling. The students were divided into two groups, A and B of 36 each after matching for age, sex and previous course grades.

On the day of Simulation session, Group A was administered traditional prebriefing while Group B underwent Concept Map Prebriefing on the topic of Ischemic Stroke.

Group A was shown a powerpoint presentation on assessment and management of Ischaemic Stroke and Group B was taught the algorithm of assessment and management of Ischemic Stroke by a concept map devised by Danielle Devine[10]

Both groups were given an orientation of the simulation lab, manikin and supplies . The prebriefing concluded with narration of a case of Ischemic stroke.

The prebriefing session lasted for 25-30 minutes for both groups followed by actual simulation session for 10 minutes. Prebriefing by both methods was conducted by the same trainer to avoid trainer bias.

Each group was further subdivided into 6 smaller groups for ease of conducting assessment. The Simulation session was followed by a structured debriefing for each subgroup lasting for 20 minutes.

The entire simulation session was video recorded with consent of the students and were later reviewed by two educators to avoid bias. The competency performance was scored using The LAPSS survey. The

score obtained by a group could range from 0 to 8.

The data was tabulated and compared for difference in means.

Result

Table 1. Traditional Prebriefing Group: The below tables show the scores obtained by each group on the items of LAPSS survey.

CRITERIA	Subgroup 1	Subgroup 2	Subgroup 3	Subgroup 4	Subgroup 5	Subgroup 6
Age over 45 years	Y	Y	Y	Y	Y	N
No prior History of Seizure Disorder	N	N	Y	Y	N	N
New onset of Neurologic Symptoms in last 24 hours	N	N	Y	N	N	Y
Patient was ambulatory at baseline	Y	Y	N	N	N	N
Blood Glucose between 60 and 100	Y	Y	Y	Y	Y	Y
Facial Grimace	Y	Y	Y	N	Y	N
Grip	Y	Y	Y	N	Y	N
Arm Weakness	Y	Y	Y	Y	Y	N
Y Score out of 8	6	6	7	4	5	2

KEY: Y indicates '**assessment done'** as per LAPSS survey

N indicates '**assessment not done'** as per LAPSS survey

Table 2. Concept Map Prebriefing Group

CRITERIA	**Subgroup 1**	**Subgroup 2**	**Subgroup 3**	**Subgroup 4**	**Subgroup 5**	**Subgroup 6**
Age over 45 years	Y	N	Y	Y	Y	Y
No prior History of Seizure Disorder	Y	N	Y	Y	N	Y
New onset of Neurologic Symptoms in last 24 hours	Y	Y	Y	Y	Y	Y
Patient was ambulatory at baseline	Y	Y	Y	Y	Y	Y
Blood Glucose between 60 and 100	Y	Y	N	Y	Y	Y
Facial Grimace	Y	Y	Y	Y	Y	Y
Grip	Y	Y	Y	Y	Y	Y
Arm Weakness	Y	Y	Y	Y	Y	Y
Y Score out of 8	8	6	7	8	7	8

Discussion

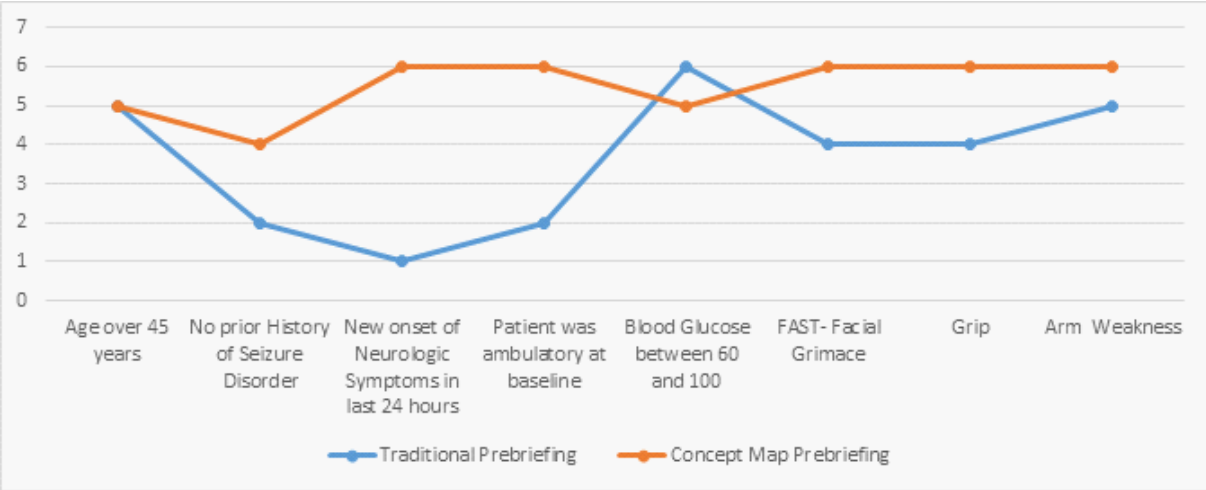

Figure 1. : Average score obtained on each parameters in Concept Map based Prebriefing versus Traditional Prebriefing Groups

As seen in figure 1. the students prebriefed by the concept map methodology scored better than their peers on a number of parameters including key points in history taking.

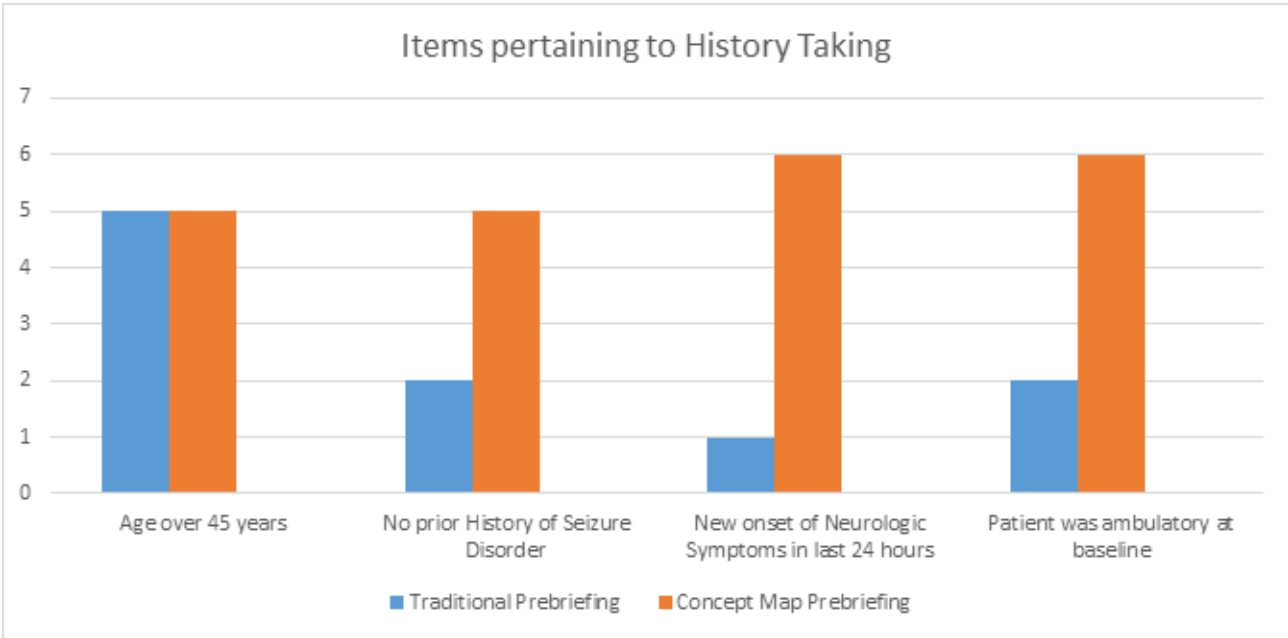

Figure 2: Items pertaining to History Taking

Five out of 6 subgroups of students who had concept map prebriefing were successful in ascertaining the age of patient as being over 45 years and history of past seizure whereas all 6 groups were successful in seeking history of existence of neurologic symptoms in last 24 hours and the information regarding ambulation of patient before the event. Contrastingly the students who underwent traditional prebriefing performed poorly on the history taking with four of the six groups failing to inquire about history of prior seizure and ambulatory status while only one group found it significant to inquire about the history of neurologic symptoms in last 24 hours.

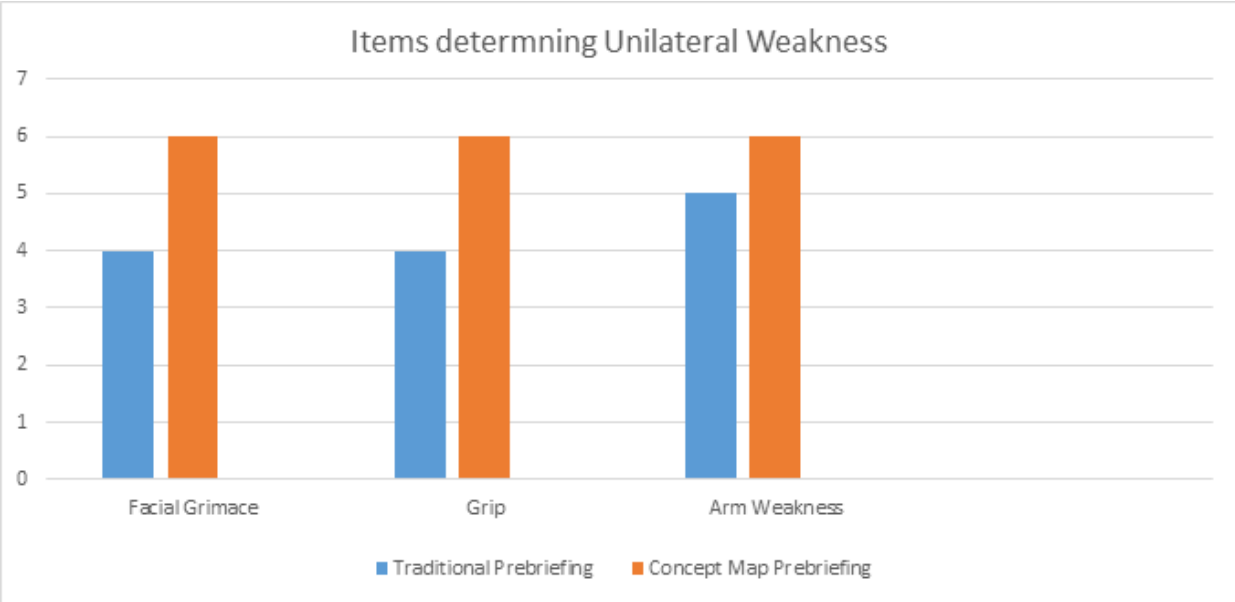

Figure 3. Items determining unilateral weakness

As seen in figure 3, in terms of clinical examination all the concept map prebriefing subgroups performed excellently and assessed all the three key parameters for unilateral weakness.

The traditional prebriefing subgroups weren't far behind in accurate assessment. Although two subgroups missed assessing the facial grimace and grip.

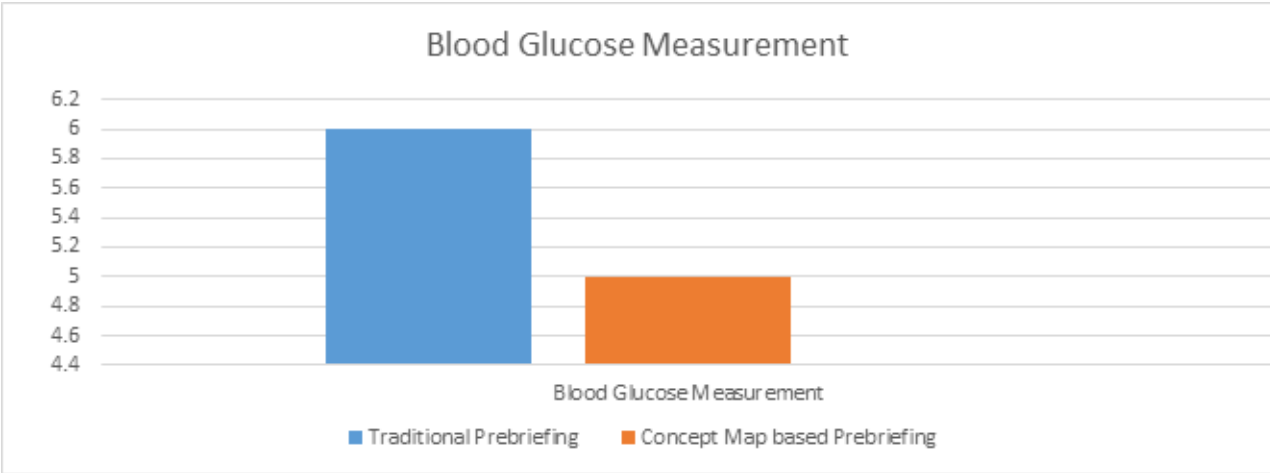

Figure 4. Blood Glucose Measurement

The concept map prebriefing subgroup did not cover the aspect of blood glucose measurement in a suspected stroke patient. This was reflected during the simulation activity when one subgroup failed to perform this action. All subgroups in the traditional prebriefing successfully carried out blood glucose measurement.

LAPSS is a reliable tool to assess competency performance in an ischemic stroke patient. The above findings emphasize the role of comprehensive concept map prebriefing in impacting the student performance as measured by the LAPSS survey.

Concept maps help users develop critical thinking and clinical judgment to support informed decision-making. It enables them to use pre-existing knowledge and their assessment of a situation to develop clinical decision-making skills. The cyclical, rather than linear nature of learning, in terms of reflecting on prior experience during prebriefing for example facilitates the continual development of decision-making skills and competent judgment in practice, and contributes to a more meaningful experience.

Conclusion

Traditional prebriefing orients the student to simulation environment but is found to be inferior to concept map prebriefing in terms of improving competency performance assessment in ischemic stroke. Further studies involving more students and multiple simulation sessions would be required to reaffirm the findings.

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Ethical Clearance: Taken from IEC, SIU

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