

# Impact of trauma workshop on knowledge, attitude and practice conducted on undergraduate MBBS students.

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## Abstract

In India the organized trauma care services are restricted only to tertiary care centres and golden hour trauma care is often delayed. We decided to create awareness among the MBBS students by teaching basic trauma management skills since they are the first responders to a trauma victim brought to any hospital setup. This would help improve primary trauma care.

**Aim:** To assess the improvement in knowledge, attitude and practice after primary trauma care workshop in MBBS students

**Methods and Material:** A one day primary trauma care workshop was conducted in our institute for two consecutive years during the annual academic undergraduate conference 2018 and 2019 respectively. The MBBS students enrolled were given a questionnaire to solve before and after the workshop. They received a lecture on triage and hands-on practice on Primary survey, log roll & cervical spine stabilization, Airway management, Intravenous fluids & shock management and Basic life support.

**Statistical analysis:** The pre and post workshop questionnaires were statistically analyzed by paired t-test using software version SPSS 20.0 and a P value of < 0.05 was considered statistically significant.

**Results:** Pre workshop 9.9% and 10.5% of the students had above average total score in 2018 and 2019 respectively which increased to 67.6% and 78.5% post workshop. The mean Knowledge, Attitude and Practice scores also improved individually.

**Conclusion:** We should include such workshops in the undergraduate curriculum, it would improve primary trauma care and will reduce trauma related morbidity and mortality.

**Keywords:** Trauma workshop, Primary trauma care, developing countries

## INTRODUCTION

Trauma is the leading cause of death in individuals younger than 45 years.<sup>1</sup> Ministry of Road Transport and Highways stated that trauma led to 1,50,785 deaths and 4,94,624 injuries in India in 2017, giving us a daily average of 1,317 accidents and 413 deaths with an hourly count of 55 accidents and 17 deaths. The commonest cause of death in a trauma victim is hemorrhage while the most preventable cause of death is

hypoxia. These can be managed with simple interventions like maintaining a patent airway, administration of adequate intravenous fluids and applying direct pressure over the bleeding site.<sup>2</sup> These can be taught to undergraduate students in a structured teaching programme. The golden hour trauma care is often delayed as the organized trauma care services are restricted only to tertiary care centers, in developing countries. Trauma injuries are always a neglected epidemic representing only the tip of the iceberg.<sup>3,4</sup>

Yates et al stated that junior doctors are the primary care givers who assess and treat the trauma victims but Price and Huges<sup>5,6</sup> in 1998 suggested that junior doctors may not have received adequate training in resuscitation and trauma medicine which in turn will affect the mortality and morbidity associated with trauma. The undergraduate curriculum seems to be deficient in trauma topic exposure and there is no defined minimum requirement that Indian medical colleges are expected to follow for undergraduate training in trauma management.

## Material and methods:

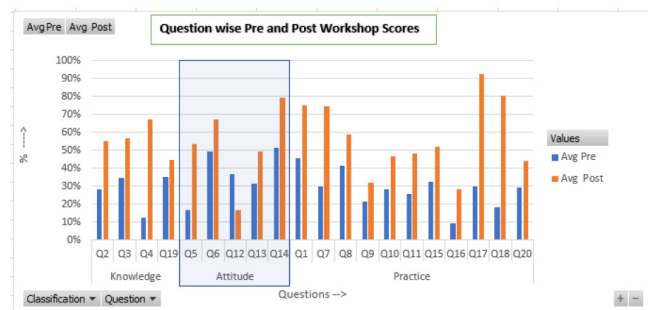
The announcement of a one day primary trauma care workshop to be conducted during the annual academic undergraduate conference in our teaching medical institute was done among the undergraduate medical students across India. The workshop was held for two consecutive years dated 8th August 2018 and 19th August 2019 respectively. Final year medical students who enrolled for this workshop were selected after obtaining their consent to participate in our study. The population was heterogeneous representing various medical colleges across the nation. The approval to perform this study was obtained from the institutional ethic committee. The participants were given a questionnaire to solve before and after the workshop. The questions were related to primary trauma care. 20 multiple choice questions with one correct response out of four given options were formulated after being authenticated by the Head of Department of Anaesthesia, Surgery and Orthopaedics. They were knowledge, attitude and practice based questions and some space was provided for comments about the workshop. Those who solved and submitted both the questionnaires were included in our study. The sample size for our study was 142 and 185 students in 2018 and 2019 respectively. Our study is the first to assess the knowledge, attitude and practice of undergraduate MBBS

students in Maharashtra (India) towards Primary Trauma Care. An initial lecture on Triage was conducted by a senior faculty from AIIMS, New Delhi with the help of multimedia network. Didactic lectures were delivered about head trauma, abdominal and thoracic trauma and spine injury. A video clip of manual inline stabilization, helmet removal and log roll was demonstrated which was prepared and enacted by the anaesthesia residents of our institute. Later the students were divided into 4 groups and rotated every 30 minutes for hands-on practise on each of the workstations which comprised of the following:

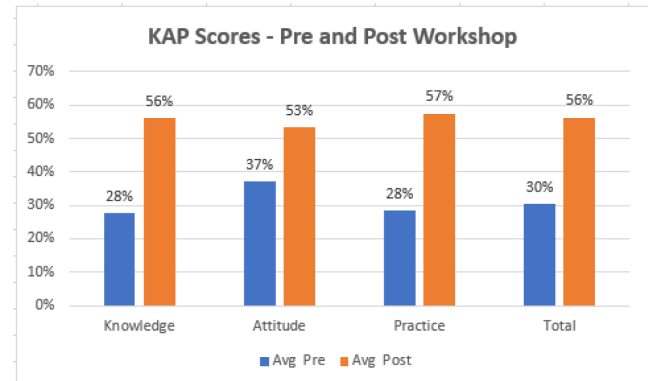
1. Rapid trauma survey, Primary survey and secondary survey – in different trauma scenarios were taught and practiced. Log roll (transferring trauma victim on spine board) and cervical spine stabilization, (in line neck immobilization, helmet removal) – demonstrated on normal individuals and practiced in small groups.
2. Airway management – methods were demonstrated and practised individually. Head tilt, chin lift, modified jaw thrust manoeuvre, use of oropharyngeal and nasopharyngeal airways, bag and mask ventilation, use of laryngeal mask airways and endotracheal intubation on mannequins.
3. Intravenous fluids and shock management – Discussion on the pathophysiology of shock, different types of shock and their management highlighting the composition of the commonly used crystalloids and colloids was done. Devices used to develop a vascular access like different sizes of intravenous cannula, central line were demonstrated. Intra-osseous access was practised on chicken bones.
4. Basic life support – According to AHA 2015 protocol adult, pediatric and neonatal resuscitation algorithms were taught and practiced hands on by each participant on mannequins. Management of choking with demonstration of Heimlich's manoeuvre was also done.

**Statistical analysis:** The pre and post workshop questionnaires were statistically analyzed for Knowledge, Attitude and Practice scores and Total KAP score by paired t-test using software version SPSS 20.0 and a P value of < 0.05 was considered statistically significant.

## Results:



Pre-workshop 10.2% of the students had an above average Total score, which increased to 73% post-workshop. (score >10 correct answers out of 20).



The mean Knowledge score improved post workshop by 28%, P value: < 0.001

The mean Attitude score improved post workshop by 16%, P value: < 0.001

The mean Practice score improved post workshop by 30%, P value of < 0.001

The mean Total score improved by 25%, P value of < 0.001

### Knowledge questions-

- Q.1) Which is not a component of ITLS primary survey?
- Q.2) AVPU scale is used to assess-
- Q.3) Sample history includes all except-
- Q.4) Clinical features of neurogenic shock in cervical spine trauma-

### Table 6: Attitude questions-

- Q.5) Which of the following is not a load and go situation?
- Q.6) Which of the following should not be done on the scene?
- Q.12) If you find a trauma victim lying on the side of road; your first action would be -
- Q.13) Your first action after seeing profuse bleeding from an amputated limb?
- Q.14) What will you do if you find an Road Traffic Accident victim in the middle of the road?

### Practice questions-

- Q.1) What is platinum 10 minutes and when it starts?
- Q.7) How frequently ongoing examination is to be done in critical patients?
- Q.8) Which pulse to be checked in Trauma Patients?
- Q.9) Sellick's manoeuvre is done for?
- Q.10) How will you check the correct size of oropharyngeal airway?
- Q.11) Most common Preventable cause of death in Trauma -
- Q.15) Type and dose fluid to be given in a fluid resuscitation in the trauma victim -

- Q.16) Rate of ventilation in adult intubated patient -  
 Q.17) Rate of chest compression: ventilation in an adult in one rescue scenario is  
 Q.18) Ideal depth of each chest compression in adults -  
 Q.20) Correct site for needle decompression in tension pneumothorax -

#### Discussion:

The present study was done to evaluate whether an indigenously developed Primary Trauma Care course in the undergraduate curriculum could play a similar role in India. Its immediate effect on trauma related knowledge, attitude & practice on final year MBBS students attending the yearly national undergraduate conference was assessed and their opinion for requirement of such a workshop in UG curriculum was noted.

Injury related mortality was classically described previously as a tri-modal distribution, with immediate deaths occurring at the scene, early deaths due to hemorrhage and late deaths from organ failure.<sup>3</sup> The development of trauma systems have improved the pre-hospital care, early resuscitation and critical care which have altered this pattern. The new concept of bi-modal distribution of trauma related deaths has emerged. The elimination of late peak denotes the advancements in resuscitation and critical care that have reduced organ failure.<sup>3</sup>

The key to trauma care is careful patient assessment and performing timely critical interventions which can be achieved only by practice. We must identify the best methods to get the most out of the few minutes that emergency care providers have to save the victim's life.

The aim of our Primary Trauma Care workshop was to introduce students to the basic concepts of trauma care resuscitation. It involves identification of life threatening injuries by rapid trauma survey, primary and secondary assessment. This should be followed by management of airway obstruction, shock, cervical spine immobilization, log rolling & basic life support for cardiac arrest patients.

The components of trauma management must be included in the undergraduate curriculum creating a major challenge to the medical academicians. As of now many trauma topics are taught in a system oriented approach and lacks focused discussion on comprehensive trauma management. Hence there is an urgent need to include dedicated trauma workshop/course in the undergraduate curriculum.

Primary pre-hospital care of life threatening emergencies is the most important and first part of trauma care system. Therapeutic interventions as well as assessment done in Golden Hour or Platinum 10 minutes will significantly reduce morbidity and mortality associated with trauma.<sup>3,4</sup>

Yates et al<sup>13</sup>1992, Price & Huges<sup>14</sup> 1998, Carely & Driscoll<sup>2001</sup><sup>15</sup> stated that - junior doctors are amongst the first to assess and provide initial hospital care to poly-trauma victims. Despite this it has been suggested that junior doctors may not

have received adequate training in trauma resuscitation and thus care offered by them during the golden hour may be inadequate. Available evidence suggests that training of the front line emergency health care providers is a critical element of the impact that trauma care systems can have in the low & middle income countries<sup>11</sup>.

Knowledge plays an important role in the attitude & behaviour of a person. It is necessary to plan for the promotion of knowledge to bring a change in the attitude, create a desirable performance and to examine their knowledge and attitude through a purposeful educational program.<sup>16</sup>

It has been successfully demonstrated that standard advanced trauma life support course can be taught to UG students<sup>13</sup>. Those who have undergone such training with OSCE (Objective Structured Clinical Examination) perform better than those who have not<sup>13,14</sup>.

Advanced trauma life support (ATLS) was first introduced in USA in 1970<sup>16</sup> and 1986 International ATLSR Promulgation program was started in 1986<sup>17</sup>. This program has shown to improve mortality as well as mortality associated with trauma by significantly improving resuscitation skills, knowledge and attitude of trauma care givers. Medical colleges in Canada & USA have requested to teach ATLS course to their senior medical students and they have been conducted successfully<sup>18</sup>.

The students who have attended the complete ATLS course including lectures, skill stations OSCE exam & demonstration perform better than those who only attend didactic lectures. ATLS guidelines mandates 84% passing marks for certification, unfortunately this is a major factor in minds of students that they fear of not getting the certificate after spending so much of money<sup>16</sup>. In India there are also limited recognized centers with very low frequency of yearly ATLS courses. To maintain the standard they accept only 16 students per course which in turn will not suffice the requirements of students. This is an expensive process and not feasible in developing countries like India as the setup has drawbacks<sup>17,18</sup> like lack of resources, trained human resource and trauma management education. Many educators have observed that the surgical skills taught in ATLS course are too advance for undergraduate medical students.

The committee on trauma recommended developing a module that will teach basic concepts of trauma care without costly infrastructure, technology support & trained faculties<sup>9</sup>. Such a course e.g. TEAM (Trauma Evaluation and Management) has already been included in the undergraduate curriculum of the medical colleges in Canada & USA<sup>9</sup>. The role of this TEAM course has already been evaluated in the UG curriculum of Trinidad & Tobago<sup>10</sup>, University of Toronto medical colleges in Costa Rica & Jamaica.<sup>11,12</sup>

In most medical colleges, many of the postgraduate students from surgery and anaesthesia branches undergo ATLS course. Inclusion of Primary Trauma Care course in the undergraduate

curriculum can prepare these students for ATLS course and all those students who do not enter into surgical field for post-graduation but they at least would get exposed to basic concepts of trauma management .

The examination questions used in our study were primarily for the purpose of testing the effectiveness of the module and not for testing the performance of the students. Consideration should be given to forming a set of such multiple choice questions which will test the important and basic concepts in trauma management.

It appears from the students comments and their improved performance following the Primary Trauma Care course that such a course can improve their knowledge, attitude and practice. It should be included and made mandatory for all undergraduate students before they are posted as interns in emergency department. It will definitely improve morbidity and mortality associated with trauma in future.<sup>19</sup>

Repeated requests are also been made in UK to formally include the trauma management module in undergraduate curriculum as large proportion of undergraduate students in UK have not or received very little training in trauma management.<sup>18</sup>

Massod Jawaid et al in 2013 in Pakistan in thier study concluded that trauma skill scenario score showed marked improvement with median score of 3.5 pre-workshop and 9.5 post-workshop, while the knowledge score post workshop was >70%.<sup>21</sup>

Jameel ali et al in their study stated that there was no difference in the pre-test scores between the control and experimental groups but the experimental group showed a statistically significant improvement in MCQ score after the TEAM module.<sup>9,10,11,17</sup>

According to a study done by Marie-Caroline Nogaro in sub-Saharan Africa, overall the median pre-course MCQ score was 70% which increased to 87% post-course. The clinical confidence of the candidates also demonstrated a significant improvement following the course.<sup>20,21</sup>

Amiri et al in thier study showed 26% improvement in written test scores post-Primary Trauma Care course in a group of 64 candidates.<sup>22</sup>

#### **Conclusion:**

All the scores showed positive change indicating an improvement post workshop.

Hence if we include such workshops in undergraduate curriculum, it will improve primary trauma care and trauma related morbidity and mortality.

This can be achieved by teaching simple manoeuvre which can treat and prevent the most common preventable causes of death in trauma victims.

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