



## TRIAGE DECISIONS OF MEDICAL STUDENTS, USING A MULTIPLE CASUALTY SCENARIO PAPER EXERCISE.

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### ABSTRACT

**Background:** The term "triage" originated from the French word "Trier" which means to sort, pick out, classify or choose. In the emergency department context, triage is formal process of immediate assessment of all patients who present seeking emergency care. The present study was done to assess improvement in the level of knowledge after giving triage training to MBBS students from different semesters. **Aims & objectives:** To study the effect of triage education on Medical students following a short training course. **Materials & methods:** This is a college based before and after type of study conducted during the period Jan 2019- Sep 2019. The study population comprised of students from three batches i.e. 2016, 2017 and 2018. They were given the training and a questionnaire containing 14 case scenarios was filled up before and after the training sessions. Subjects were required to assign a priority for treatment, from one of five possibilities for each case. The exercise was designed to contain a range of casualties representing all five triage categories. Subjects were required to complete the exercise independently without conferring with colleagues or using reference materials. A time limit of 14 minutes was imposed (1 minute per case). Each case was scored as correct, incorrect-over triage, or incorrect-under triage and no answer using Australian triage scale (ATS). **Result:** Overall correct responses increased in all the batches.

**KEYWORDS :** Triage, Medical Students, Emergency

### INTRODUCTION:

The World's Population is expanding so is the transmission of diseases. With increasing means of transportation one can easily travel long distances within a span of few hours. Unfortunately communicable diseases have also made their way to spread rapidly and have become far reaching. The frequency of pandemic has become an issue in the whole world. It takes only few hours for viruses having pandemic potential to spread from one country to another. In such situations it has become imperative for health care providers to prioritize the huge number of cases who present in the emergency department. Triage is one such strategy to deal with the emergency situation especially when resources are limited.

Triage has gained more relevance in today's scenario of COVID-19 times when even medical students were called for to provide assistance in hospitals. Even while giving management guidelines for the COVID-19 situation, triage was realized to be one of the key strategies.

Unfortunately no specific guidelines exist in India pertaining to triage for emergency health situations. The goal of triage is to prioritize patients who require the most urgent care and increase efficiency when resources are insufficient to treat all patients at once.<sup>1</sup> Actual need of triage system is "connect every patient to the right resources at the right place and in the right amount of time according to their need.

The present study aimed to determine the accuracy of theoretical triage decision making among medical students through a paper exercise.

Currently, the commonly used protocols around the world to classify risk in urgent/emergency services are: Australasian

Triage Scale (ATS), Canadian Triage & Acuity Scale (CTAS), Emergency Severity Index (ESI) and Manchester Triage System (MTS). All these protocols use standardized triage acuity scales including five levels of priority.<sup>2</sup> No standard scale exists for health care measurement. Each institution has autonomy to use the most adequate scale for its needs.<sup>3</sup>

### AIMS & OBJECTIVES:

To study the effect of triage education on Medical students following a short training course.

### MATERIALS & METHODS:

This is a college based before and after type of study conducted at Dr. Baba Saheb Ambedkar Medical College & Hospital, Rohini, Delhi. The study was done during the period Jan 2019- Sep 2019. The study population comprised of students from three batches i.e. 2016, 2017 and 2018 who gave consent to participate in the study. They were given the training and a questionnaire containing 14 case scenarios was filled up before and after the training sessions.

### Data collection tool:

Structured self administered questionnaire was prepared giving brief casualty details of 14 individual case scenarios, including sufficient information to identify a priority for treatment for each casualty using the triage sieve algorithm. Subjects were asked to complete the questionnaire. A short training in the form of a lecture having brief information about triage was given to all the study participants. The questionnaire was filled before and after the training session. Subjects were required to assign a priority for treatment, from one of five possibilities; priority 1-resuscitation, priority 2-emergent, priority 3-urgent, priority 4- less urgent/semi urgent and priority 5- non urgent based upon the descriptor for each case according to Australian Triage Scale. The exercise

was designed to contain a range of casualties representing all five triage categories. Subjects were required to complete the exercise independently without conferring with colleagues or using reference materials. A time limit of 14 minutes was imposed, given that triage decision making in the emergency department must be rapid if it is to be of value in sorting large numbers of injured. Each case was scored as correct, incorrect-over triage, or incorrect-under triage and no answer.

**Australian triage scale (ATS)<sup>2</sup>**

**Level 1 Resuscitation (Priority {P} 1):**

Immediate attention with maximal utilization of resources to prevent loss of life, limb, or vision.

**Level 2 Emergent (Priority {P} 2):**

High risk for rapid deterioration, loss of life, limb, or eyesight if treatment or interventions are delayed.

**Level 3 Urgent (Priority {P} 3):**

Symptoms and risk factors for serious disease do not indicate a likelihood of rapid deterioration in the near future. Abnormal vitals signs for these grey area patients may upgrade or downgrade the priority.

**Level 4 Less Urgent (Priority {P} 4):**

Chronic complaints, medical maintenance, or medical conditions posing no threat to loss of life, limb, or eyesight.

**Level 5 Non Urgent (Priority {P} 5):**

Patients in this category are currently stable and require no resources such as labs or x-ray.

**DATA ANALYSIS:**

The data was analyzed using Wilcoxon Signed Ranks Test using SPSS software version 16.

The data on the qualitative indices for before and after the training, were analysed along with their corresponding changes.

**RESULTS:**

Total 119 students took part in the exercise. Most of them belonged to 2018 batch i.e. the junior most batch (Table 1). Age and gender were not disclosed.

From the table number 2 it can be very well concluded that the percentages of correct responses increased in all the batches, while the increase was maximum for second year students and the first year student showed minimum improvement.

**Table 1 Number of students semester wise**

Semester	Frequency	Percent
2016	19	16 %
2017	27	22.7%
2018	73	61.3%
Total	119	100.0%

According to Tables 2, the overall percentage of correct responses of the participant increased from 36.84 % to 43.98%, from 41 % to 50.52% and from 31.21% to 35.02% in first, second and third year students respectively.

**Table 2. Distribution of responses according to the semesters**

MBBS years	Pre training correct responses	Pre training over correct	Pre training under correct	Pre training no answer	total pre training responses	Post training correct	Post training over correct	Post training under correct	Post training no answer	Total post training response
2016	98	76	89	3	266	117	70	79	0	266
	<b>36.84 %</b>	28.57%	33.45%	1.12%	(100%)	<b>43.98%</b>	26.31%	29.69%	0%	(100%)
2017	155	112	111	0	378	191	106	80	1	378
	<b>41.00%</b>	29.62%	29.36%	0%	(100%)	<b>50.52%</b>	28.04%	21.16%	0.26%	(100%)
2018	319	345	315	43	1022	358	307	343	14	1022
	<b>31.21%</b>	33.75%	30.82%	4.20%	(100%)	<b>35.02%</b>	30.03%	33.56%	1.36%	(100%)

**Table 3. Distribution of responses in pre and post training sessions with mean score for third year students**

2016			
	Pre training (Mean ± SD)	Post training (Mean ± SD)	P value
Correct	98(5.16±1.642)	117(6.16±1.893)	0.123
Over triage	76 (4.00±1.599)	70(3.68±2.029)	0.581
Under triage	89(4.68±2.212)	79(4.16±2.478)	0.585
No answer	3(0.16±0.501)	0(0.00±0.000)	0.180

**Table 4. Distribution of responses in pre and post training sessions with mean score for second year students**

2017			
	Pre training (Mean ± SD)	Post training (Mean ± SD)	P value
Correct	155 (5.74±1.973)	191(7.07±2.252)	<b>0.015</b>
Over triage	112(4.15±2.537)	106(3.93±2.252)	0.832
Under triage	111(4.11±2.326)	80(2.96±1.720)	<b>0.006</b>
No answer	0(0.00±0.00)	1(0.04±0.192)	0.317

**Table 5. Distribution of responses in pre and post training sessions with mean score for first year students**

2018			
	Pre training (Mean ± SD)	Post training (Mean ± SD)	P value
Correct	319 (4.37±1.814)	358 (4.90±1.994)	<b>0.046</b>
Over triage	345(4.73±2.219)	307(4.21±2.398)	0.190

Under triage	315(4.32±1.825)	343(4.70±2.314)	0.219
No answer	43(0.59±1.517)	14(0.19±0.776)	<b>0.009</b>

The average correct responses for first, second and third year students were, pre training- 5.16±1.642, post training- 6.16±1.893 (table 3), pre training 5.74±1.973 post training 7.07±2.252 (table 4), pre training 4.37±1.814 post training 7.07±2.252 (table 5) respectively.

There was a significant improvement in the correct response of first (p value=0.046) (Table 4) and second (p value=0.015) (Table 5) year students while there was almost no improvement in the third year students (Table 3). The reason for this could be attributed for the clinical exposure of third year students as they were already having some basic idea for triage.

After training the percentage of incorrect responses decreased in all the three batches (table 2).

**DISCUSSION:**

According to the results obtained, the level of knowledge and practice in triage after intervention was higher than before training.

Since India does not have its own well established triage system, it is high time to think and take all the necessary measures to tackle the impending health situations in a better way.

Knowledge of Triage has been investigated previously among various health care professionals.<sup>5,8</sup> Hedayati et al. (2011) in their study concluded medical students' low level of knowledge about hospital triage can be due to lack of exclusive triage education course and not having emergency departments which follow evidence-based decision making.<sup>9</sup>

Tabatabai et al. (2015) in their study concluded the low awareness scores of the students about triage highlighted the need for more supervision during internship, emphasis on triage in university courses, and specialized triage training courses for the students.<sup>10</sup>

From the results it can be emphasized that active efforts are needed from the very beginning of the medical training. It is also required to reinforce the knowledge from time to time as it has been seen sometimes that the impact of training is reduced over time.<sup>11</sup>

According to the results obtained, the level of knowledge and practice in triage after intervention was higher than before training. The pre-training knowledge of students was moderate but was good after the training and none of them exhibited poor knowledge, a finding consistent with that of Haghdust *et al.* in Rasht.<sup>12</sup>

### CONCLUSION:

It is recommended that medical students' educational courses should include separate chapter on triage which is currently lacking in almost all the Indian medical institutions. EDs are not well developed and overcrowding is a major problem in the country. Continuous practical emergency room training can be provided from at least second year onwards to the students.

In conclusion, according to the positive impact of education on knowledge and performance of students, continued triage education and practical triage are suggested for the medical students.

Randomly imparting triage without proper training of the health staff shall unnecessary waste the resources.

### Recommendation:

This study showed that there are numerous areas for research on triage. The effect of education on triage in emergency department, comparison of the quality of patient triage by students in different semesters, physicians and emergency medical technicians in the emergency department are the subjects for further studies.

**Conflict of Interest:** None declared

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