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Evaluating preparedness of emergency trainees to triage victims of mass casualty incidents

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ABSTRACT

Background: Triage of victims in mass casualty incidents (MCI) is crucial in prioritizing care and allocating resources[1]. Triage skills are important to be evaluated for training and better preparedness. Using clinical vignettes is a well-known approach to evaluate clinicians' knowledge and decision-making[2]. This study aims to evaluate preparedness of emergency residents and fellows to triage victims of MCI.

Methods: Emergency Medicine (EM) residents and fellows at Hamad General Hospital, Emergency Department (HGH-ED) were invited to the study. Each participant filled a questionnaire followed by triaging of 15 vignette-based victims of MCI. Descriptive statistics elaborated on participants' training and relevant exposures (Table 1). It also showed the degree of agreement in their triage results and rates of under-triage and over-triage. Cohen's kappa coefficient showed inter-rater agreement and internal consistency in triage results.

Results: Participants included 63 emergency trainees, 27 residents, and 36 fellows. Only 28.3% (n = 17) of them participated in an MCI drill over the past two years. 51.7% (n = 31) attended training on triage in MCI. 73.3% (n = 44) indicated that they have rarely or never triaged victims in a real MCI or a drill. Only 3.3% (n = 2) perceived themselves as highly confident in triaging victims of MCI. A total of 904 triage outcomes resulted from this exercise (Table 2). The overall rate of agreement among the triage outcomes is 73% (660 times in 904 triage outcomes). The rate of over-triage was 36.8% and 23% under-triage.

Conclusion: Better triage results was associated with previous triage training. The rate of over-triage was as the literature recommends. However, the rate of under triage was alarmingly higher than the literature recommendation as $<5\%$[3]. The higher rate of under-triage imposes a risk of missing seriously injured victims, which may lead to higher mortality or poor patients' outcomes. Further training and exercises may be the key to saving more lives and resources.

Keywords: triage, mass casualty, emergency medicine trainees, assessment

Table 1. Participants' prior training in MCI triage in relation to their trainee title

	Residents	Fellows	Total % (n)
Attended MCI triage training	57.7% (15)	47.1% (16)	51.7% (31)
Did not attend MCI triage training	42.3% (11)	52.9% (18)	48.3% (29)

Table 2. Triaging results of the 15 MCI victims' vignettes by the participants, including the rate of agreement, over-triage

Victim no.	Triaged by	Skipped by	Actual triage status	Precision rate (Triaged correctly by EM trainees)	Over-triage rate	Under-triage rate
1	62	1	Yellow	85.5%	9.7%	4.8%
2	62	1	Red	64.5%		35.5%
3	58	5	Red	75.8%		24%
4	61	2	Red	63.9%		36%
5	63	0	Red	100%		
6	59	4	Red	69.5%		30.5%
7	60	3	Red	83.3%		16.6%
8	61	2	Red	75.4%		24.6%
9	56	7	Red	87.5%		14.3%
10	61	2	Red	85.2%		14.7%
11	61	2	Green	55.7%	44.2%	
12	60	3	Green	58.3%	41.6%	
13	60	3	Yellow	43.3%	51.6%	
14	59	4	Red	83%		16.9%
15	60	3	Red	65%		35%
Total victims 15	Total triage results 903	Total skipped 42	11 red 2 yellow 2 green	73% Overall agreement (Mean precision)	36.8% average over-triage rate in total of 4 victims	23% average under-triage rate in a total of 11 victims

Note: This study meets the exemption criteria stated under (2.2.2 a, b & c) and (2.4) of the Qatar University IRB "Handbook for Ethical Rules and Regulations for Research Involving Human Subjects". The educational study is based on a retrospective data of quality assurance surveys that took place during an MCI training on triaging, which lacks any imposed risk or breach of privacy to the participants.

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