

Disaster-Town: Assessing the efficacy of a virtual platform in disaster medicine training for medical students.



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Introduction

- Disaster Medicine training can be resource intensive and difficult to reproduce on a large scale if many simulated casualties are required.
- In this study, we therefore explored the use of an online open-source platform, GatherTown, in Disaster Medicine training for medical students.
- We hypothesised that this platform provides a reproducible, low-cost and efficacious alternative to conventional disaster medicine training methods.

Methods:

- for medical students.
- A pre-test questionnaire was conducted in order to gauge the
- then grouped into small teams and underwent a computer-based
- were graded by facilitators who were Emergency Medicine Specialists and Residents.
- A post-test questionnaire was then conducted and pre- and post-test results were analysed using the student's t-test, with p-value 0.05 used

Results

- 43 medical students from 3 medical schools participated across 2 sessions in 2024.
- 17 (39.5%) were Year 1 students, 5 (11.6%) Year 2, 8 (18.6%) Year 3, 12 (27.9%) Year 4, and 1 (2.3%) was a Year 5 student.
- Average pre- and post-test scores were 52.3% and 66.5% respectively, with an average increase of 14.2% (0.89-1.94 95% Confidence Interval), p < 0.001.
- 29 (67%) students improved, while 3 had lower scores and 11 had the same score.
- Students felt that the scenario based virtual game helped facilitate learning of Mass Casualty Incident principles (4.88/5), was interactive and informative (4.91/5) and improved their understanding of disaster triage (4.91/5).

	All (N = 43)	Preclinical (N =	Clinical (N =	p-					
		20)	23)	value					
Mean age (Years, SD)	22.2 (22, 3)	21.9 (22, 4)	22.4 (22, 2)	0.51					
Mean pre-test score (SD)*	52.3 (19.7)	49.5 (18.5)	54.8 (20.9)	0.38					
Mean post-test score (SD)*	66.5 (16.6)	62.0 (17.0)	70.4 (15.5)	0.10					
Pre- vs. post-test difference (SD)	14.2 (17.1)	12.5 (16.5)	15.7 (17.8)	0.55					
T-test when comparing pre-/post-test difference									
p-value	< 0.0001	0.003	0.003	-					

Table 1: Pre-test and post test scores by preclinical and clinical years.

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Figure 1: Map of a disaster zone. Participants are represented as avatars (central), with interactable elements including patient vignettes (silver tables outlined with red box) as well as environmental hazards (outlined with red box on the bottom right).

	A	В	с	D	E
1		Patient Identifier	Working diagnosis	Intervention	Triage
2	#001				
3	#002				
4	#003				

Figure 2: Dashboard for keeping track of casualties, triage categories and immediate interventions



Figure 3: Students triaging and treating casualties in groups with Emergency Medicine Residents facilitatina

Discussion

Educational theories

This disaster simulation training was collaborative as students were required to work in groups to treat and triage casualties; as students were grouped such that there was a variety of students from clinical and pre-clinical years, this allowed students who were in the clinical years to guide their juniors and explain concepts that they might not be familiar with. This ties in with the concept of the zone of proximal development, where learners can develop new skills and knowledge that they would not previously be able to do individually with the help of their fellow learners as well as with the guidance of the facilitators.

Limitations include a small sample size as well as a self reported improved understanding of disaster triage. However, the post test questionnaire allows the instructors to assess up to level 2 of the Kirkpatrick Model. Conclusion

Students participating in the virtual disaster simulation had an average increase of 14.2% in their post test scores, and reported improved understanding of disaster triage and mass casualty incident principles. The virtual platform Disaster-Town shows promise and may have future applications in training medical students in Disaster Medicine. Further research could be done in this area.

Singapore National

Polyclinics

Bright Vision

National Neuroscience Institute

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