

Aim: To develop a new triage method to prioritize patients arriving at the ER.

Methods: Patients aged ≥ 13 years who arrived at the ER of Yodogawa Christian Hospital without being transported by ambulance between January 2016 and October 2018 were assessed. We analyzed correlations between the items included in the triage sheet and admission. We calculated risk ratios (RRs) of the items that were significantly related to admission. The RR of an item was considered its score, and the triage score was calculated by summing the individual RR scores for each patient. We performed receiver operating characteristic (ROC) analysis of admission and triage scores.

Results: Among 20992 patients, 2030 patients (9.7%) were admitted to the hospital. The triage scores of all the patients ranged from 26.5 to 62.3. According to the ROC analysis, the area under the curve was 0.791 and the optimal cutoff value for the triage score was 32.7 (sensitivity: 0.74, specificity: 0.70).

Discussion: Since this research was based on data from a Japanese secondary level emergency hospital in an urban area, our triage method can be adapted to the many ERs in Japan that share a similar background. The method used to develop this triage method can also be used to develop triage methods for ERs with different backgrounds.

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Development of a Tool Measuring Nurses' Competence for Disaster Response

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Introduction: Disasters are situations of complexity and unpredictability that require the performance of teams from various instances with preparation and qualification to assist the victims, recover the environment, and restore living conditions. Health services are essential in the response to a disaster, and nurses all over the world play a significant role in these disasters.

Aim: To develop a valid and reliable scale to identify nursing competencies in disasters.

Methods: Competencies were selected from those related to the framework developed by the International Council of Nurses. A methodological study was developed in two stages: I) validity of content and appearance verification and II) verification of applicability and reliability with test-retest. The participants of stage I were eight specialists in emergencies and disasters in Brazil. In stage II, 326 nurses from the Emergency Mobile Assistance Service in Southern Brazil participated. Data analysis utilized the Content Validity Index and Interest Reliability Index. Psychometric properties of the instrument were measured with Cronbach's alpha coefficient; applicability and test-retest reliability with the use of the t-test and intraclass correlation coefficient and factorial validity.

Results: Forty-one competencies of 51 were organized in three domains according to Factor Analysis. Cronbach's alpha values showed good internal consistency. There was no significant difference between the test and retest scores. The intraclass

correlation coefficient values were adequate. The instrument showed reproducibility and adequate applicability.

Discussion: This tool will assess nurses' competencies for disaster response and provide evidence for the development of educational policies in disasters, creating a reliable and prepared workforce to respond more effectively during a disaster.

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Development of an Active Learning Program for a Community Utilizing a Scenario Participating as Simulated Rescuers and Sufferers in an Earthquake Prone Area of Japan

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Introduction: Major earthquakes with a magnitude of 8-9 are anticipated to occur in the next 30 years at a 60 percent chance on the southern coast of Japan. Since the most part of our Prefecture is likely to be damaged by tsunami and landslides, residents are expected to take a self-reliant approach on the initial several days after the earthquakes and tsunami.

Aim: To improve the resilience of the local communities we have developed and applied an educational program of disaster response.

Methods: An active learning program was designed on roles of rescuers and sufferers, and conducted two-hour sessions for high school students using a scenario in which they encountered an earthquake during a field trip. Half of the participants were assigned to play students on a field trip and asked to discuss options as a small group to survive and secure their safety in an isolated situation after an earthquake. They exchanged ideas to stay alive, cooperate with local residents and request disaster assistance using very short radio messages to the appropriate counterpart. The other half of the participants were assigned to be school administrations and asked to estimate the situation of sufferers. Their task as a small group was to organize assistance based on the best assumption from the limited information of the isolated students and local villagers.

Results: After the sessions, the participants expressed their discovery in the discrepancy of situational recognition between the two groups and they learned about assumption-based planning as well as good information sharing.

Discussion: Through this program, the participants experienced simulated situations and learned perspectives from both sides; providing relief as rescuers and receiving aid as sufferers. The participants were motivated to share and utilize their knowledge and skills to make their community resilient to disasters.

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Development of an E-Learning Platform For EMTs In Ghana

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Introduction: The continuous development of the knowledge and skill of the emergency medical technicians (EMTs) in Ghana is important for the success of the pre-hospital system. Due to distance and time constraints, an online e-learning platform is a good way to educate the Emergency Medicine Technicians in Ghana.

Aim: The study looked at the feasibility of developing a distant learning module for the training and continuous medical education of EMTs.

Methods: EMTs in the Ashanti Region were randomly selected to be part of the study. They received online lectures and notes that were accessible by their mobile phones. They all received a test at the end of each model. The study measured their willingness to participate, average attendance for each model, and the scores for each model test. The study also measured the overall feasibility of the distant learning program.

Results: The study developed a training course comprised of 7 modules: trauma and surgical emergencies, obstetric emergencies, pediatric emergencies, disaster management, medical emergencies, basic ultrasound, and medical research. Tests and quizzes were electronically sent to EMTs over the course of the research period, with an average test score of 70.14% (low: 35%, high: 95%) for the cohort. Feedback from participants showed gains in knowledge and skill delivery. The average attendance for all model was 56.6% ranging from 47.37%–63.16% for the models. Challenges for attendance included internet access, heavy duties, and other personal reasons. The post-training interview showed 100% willingness to participate in future online programs with the most common reasons stated as low cost, ease of attendance for models, and reduced expense.

Discussion: The study concluded that online, distant learning models can be used in Ghana for training and continuous medical education for EMTs. It is an easy and cost-effective model compared to a face-to-face model.

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Development of Trauma and Disaster Response in Togo, Africa

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Introduction: The project was provided under the auspice and support of the Israel Agency for International Development Cooperation (MASHAV) at the Ministry of Foreign Affairs (MFA). Togo, one of the smallest and least developed countries in West Africa, has a population of ~7.9 million. About 65% of its population lives in rural areas. Due to the lack of medical

resources, Togo suffers from health problems including those related to trauma and mass events. In May 2017, a trauma and disaster team came to Togo to train the medical team in the new trauma unit, donated and built by the MFA. The unit was built in the Atakpame Regional Hospital (ARH), located 160km north of the capital, Lomé. ARH serves one million inhabitants, mostly from rural areas.

Methods: The training included lectures, simulations, drills, case studies, bedside teaching, and operation of medical technologies.

Results: Following the training, it was recommended to continue the program and to move forward with advanced training. Following the team's recommendations, MASHAV decided to expand the program and to provide a multilateral project to Togo and ten other West African countries within five months after the first training ended. Twenty participants (mostly senior doctors) were chosen from ten Western African countries and brought to Lomé. The participants joined a two-day Trauma and Disaster Preparedness seminar. Following the seminar, they were moved to Atakpame to join the local team and the facilitators, to visit the trauma unit, and to learn about it as a model for trauma care that can be modified to the capabilities of the local facility.

Discussion: Lessons learned and recommendations from those two projects were brought to the MFA that will try to develop more training and cooperation models to help and establish better trauma care and disaster response, supported by the Israeli team.

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The Diagnostic Value of Ultrasonic Measurement of Inferior Vena Cava Diameter Respiratory Variability on Volume Response Evaluation of Geriatric Hip Fracture

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Aim: To evaluate the value of ultrasonic measurement of the respiratory variability of inferior vena cava (IVC) in the preoperative volume-response evaluation of elderly hip fracture patients.

Methods: Volume-loading tests were carried out in elderly patients with hip fractures requiring surgical treatment from August 2017 to February 2018. The maximum diameter (IVCe) and minimum diameter (IVCi) of the IVC were measured by ultrasound, and the variation of IVC (IVC-CI) was calculated before surgery. SV was monitored by a FloTrac/Vigileo system, and positive volume responsiveness was defined as ΔSV increasing by more than 15%. The sensitivity and specificity of IVC-CI to volume responsiveness evaluation was analyzed by ROC, and the correlation between IVC-CI and ΔSV was analyzed by Spearman correlation analysis.

Results: Ultrasound measurements and volume-loading tests were successfully performed in 39 of the 44 patients. Among them 21 cases were volume responsiveness positive (group R) and 18 cases were volume responsiveness negative (group N). Before the volume-loading test, IVCi in group R was significantly smaller than group N and IVC-CI was significantly larger than group N ($P < 0.05$), while the difference between IVCe and group N was not statistically significant ($P > 0.05$). After the volume-loading test, the differences between IVCe,