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Introduction: Chemical exposures can cause direct and indirect injuries to responding medical personnel. Therefore, hospital healthcare providers should be provided with disaster response training that includes identification of chemical hazards, establishment of the hazard zone, personal protective equipment use, decontamination, and chemical injury antidote use. This study evaluates the educational effectiveness of the chemical-mass casualty incident response education module (C-MCIREM) for hospital healthcare providers.

Method: This was a retrospective quasi-experimental study. Subjects were hospital providers who enrolled in the C-MCIREM program between May 1, 2021, and July 26, 2022. Subjects were hospital providers from Bucheon, Mokpo, Iksan, Jeonju, and Dae-gu cities in South Korea. Subjects completed pre, post, and three-month knowledge retention and self-assessments of readiness tests, as well as evaluations on tabletop exercises (TTX), and a satisfaction survey (11-point Likert) after the course. The instructors scored teamwork measures via standardized evaluations on TTX throughout the course. The K-paired Sample Friedman test was used to compare samples.

Results: 127 respondents were enrolled. The median knowledge score rose from 51/100 (39, 66) to 85.5/100 (73.75, 90) with a median retention score of 74/100 (64, 88) (p<0.001). Participants felt their readiness to respond increased in all facets (all p<0.001) on the post and retention test for the MCI situation. All three hospital teams showed significant increases in teamwork between the median of the 1st and 4th TTX as 27/100 (23.5, 29) and 69/100 (66.75, 69.5) (p<0.05). Participants were overall satisfied (9.1/10 SD 1.13) and would recommend the training to others (9.15/10 SD 1.2).

Conclusion: C-MCIREM participants had high satisfaction with a significant increase and persistence in knowledge, improved teamwork, and self-assessed readiness to respond to a chemical mass casualty incident.

Development and Evaluation of Scenario-based E-Simulation for Humanitarian Health Training

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Introduction: In response to the global upward trend of humanitarian emergencies, the humanitarian health workforce has grown substantially in the last decades. Still, humanitarian education and training programs are limited in availability, geographical locations, and teaching methods, and are too expensive for local respondents. To address these gaps, an e-learning tool for humanitarian public health has been developed and evaluated.

Method: Action research was used to develop the e-Learning tool. Rapid prototyping–a modified analysis, design, development, implementation, and evaluation (ADDIE) model, was used to identify the content and instructional design. This iterative process involved consultations and feedback from public health and disaster medicine instructors and students at different levels and training programs from within and outside CRIMEDIM. Qualitative data were analyzed using thematic analysis. Quantitative data were appropriately summarized. Pre/post-test change in knowledge score was tested with paired t-test.

Results: Although different levels of training are needed, targeting health professionals at the entry-level in the humanitarian field is identified as a priority. Scenario-based e-Simulation covers health needs assessment, essential health services, communicable diseases standards, and the health system was developed and evaluated. Trainees were highly satisfied by the clear objectives, the realism of the simulated scenarios, quizzes, and interactivity. In the 1-7 numerical scale, the median for overall experience satisfaction was 6.3 (IQR=5.3-7, N=35). The mean of the post-test score was 7.71, which was significantly higher than the mean of the pre-test score of 5.88. The large effect size of 1.179 indicates the training effectiveness. Poor internet was identified as a potential barrier to delivering the training.

Conclusion: This participatory study resulted in the development of effective Scenario-based e-Simulation. Offline mode of training will be adapted for trainees with poor internet connection settings. Successful factors in instructional design will be used to inform the development of advanced training in the field.

The Challenge of Mass Casualty Incident Response Simulation Exercise Design and Creation: A Modified Delphi Study

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