

stakeholders, we have been able to build local faculty to ensure sustainability and local ownership.

Results: Thirty-six personnel have been trained across four countries. Thirty-six candidates are now instructors, with a further 36 identified for future development as instructors. The evaluation illustrates the long-term partnerships that have been developed and the ongoing capacity development of key regional partners.

Discussion: The Regional Engagement program demonstrates that prolonged engagement with key regional stakeholders and adequate and sustained mentoring will successfully build local capacity to the level needed to mount a successful response to a disaster. Personnel trained through this program helped guide the response to the Lombok earthquake and in Fiji, a MIMMS Team Member training program was conducted with minimal external support.

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A Registry Software for Road Traffic Injury Patients at Apex Trauma Centre in India: An Innovation

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Introduction: A trauma registry is a disease-specific data collection composed of a file of uniform data elements that describe the injury event, demographics, prehospital information, diagnosis, care, outcomes, and costs of treatment for injured patients.

Aim: To establish a trauma registry system on an electronic platform enabling data capturing through Android phones.

Methods: A software has been developed for the registry data collection for road traffic injury patients arriving at JPNATC, AIIMS, New Delhi. The software has been designed to use in the Emergency Department on Android phones/laptops with internet access.

Result: A detailed registry data set has been prepared to enter prehospital, in-hospital, and post-discharge details of all the admitted patients. This includes demographic data, prehospital data, injury event data, vital signs within 24-hrs of arrival, ED disposition (date and time), operative procedures within 48 hours of arrival, chest x-ray (date and time), CT (date and time), ventilation days, ICU-stay days, hospital disposition (date and time), injury coding data (region, severity level, ISS, AIS, ICD-10) and Others, e.g., first neurosurgical consultation (date and time) and first blood transfusion (date and time). There are two panels for this software; one for user panel and another for the administrative panel. User panel is being used for data collection by the trained data collectors 24/7 at the emergency department on a rotation basis. The administrative panel is accessible to only the investigator or other authorized persons. The administrative panel and user panels are password protected. The entered data is being saved in a spreadsheet in the backend and can be used for periodic data quality check and data analysis.

Discussion: There is no trauma registry in India so far for the road traffic injury patients. Present innovation would lay the foundation of national Trauma Registry in India.

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Required Competencies for Clinical Nurses during the Initial Phase of Disaster Emergence

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Introduction: A learning project was launched to prepare for natural disasters such as earthquakes and floods. Competencies were developed for clinical nurses in the Initial phase of disasters as an indicator to build a bridge between daily training and actions during crises. There are two predominant features of the competencies that differ from other works. First was to concentrate only on “the initial phase” of a crisis outbreak. The second was to associate each competence with services and roles of clinical nurses.

Methods: The development has been conducted in accordance with the ibstpi[®] competency development model. First, 50 outlining competencies from earlier studies were selected, like ICN Framework and Disaster Nursing Core Competency for undergraduates in Japan. Then a web-based questionnaire was carried out with a four-point scale of “able,” “probable,” “impossible,” and “cannot understand meaning” for incumbent nurses in order to gauge their adequacy.

Results: There were 86 responses with an average of 14 years (1–40) of nursing experience. We compared them in three groups; those with a job post (G1), those with experience of longer than five years (G2), and those with experience of fewer than five years (G3). The average competency score (total 150 points) was 96.7 (67–129) in G1, 88.2 (53–145) in G2 and 80.2 (59–114) in G3.

Discussion: The results imply, even in G1, the average score is low at 65/100 points. This may indicate most clinical nurses should make efforts to develop their skills and knowledge of disaster nursing through daily work. Only 32 competencies (G1), 14 (G2), and 5 (G3) were marked as “able” or “probable” by over 80% of responders. Thus with consideration, depending on the result and expert reviews, the competencies determined to be “required” for clinical nurses were finally refined down to 35 items including the premise of ten.

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Rescue Operations in Underground Mines: Caring for Patients in a Challenging Environment

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Introduction: Major injury incidents in underground metalliferous and mineral mines are rare, but if, e.g., a major fire would occur, it is the emergency medical service (EMS) together with the mining company and rescue service who perform the rescue operation. Therefore it is important to develop safe and efficient rescue operation procedures for all the organizations involved, especially the EMS personnel.

Aim: To examine EMS personnel's perceptions and experiences regarding underground mining incidents.

Method: Individual interviews were performed with 13 Swedish EMS personnel. The interviews were transcribed verbatim and analyzed with qualitative content analysis.

Results: The theme "providing the same care in a difficult environment" emerged. Depending on the type of incident, the EMS personnel considered if the injured mining workers could be cared for either outside or in the mine in order to access and care for the injured mining workers as quickly as possible. The EMS personnel mentioned that it was difficult to make the decision if they should enter the mine or not due to the uncertainty of their safety. They also considered that it could be harder to accomplish the same level of care as in other incidents due to the difficult environment. In some instances, they cannot drive their ambulance vehicles into the mine, so they have to prioritize which equipment to bring as well as consider how to transport the patients.

Discussion: The results identify some of the difficulties the EMS find challenging. Therefore the results could be used in finding solutions and making the EMS prepared for an effective and timely response for injured in underground mines.

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Research on Design of a Disaster Medicine Course for Clinical Medical Student

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Introduction: Currently, there is no uniform and standard disaster medicine course for students in medical school.

Aim: To design a disaster medicine course model based on knowledge structure, teaching and evaluation methods according to experts' advice and interest of undergraduates majoring in clinical medicine.

Methods: The first and second level catalog defined as chapters and sections for the disaster medicine curriculum were drafted based on literature and summary of fragmentary experience. The teaching syllabus with methods of teaching and evaluation was initially outlined. The expert consultation form and student questionnaire were designed and validated. Experts in disaster medicine in China were consulted and students in our medical school were investigated. Delphi Methods was used and the chapters and sections were adjusted and weighed according to experts' advice through the Analytic Hierarchy Process. The teaching and evaluation methods for each knowledge module were obtained based on suggestions from experts and students.

Results: A total of 31 experts were consulted. 320 students were inquired. By two rounds of consultation with Kendall

coordination coefficient W value 0.207, chi-square value 128.781 ($p=0.01$), consensus about the knowledge structure for the curriculum were achieved, which consisted of 6 chapters (as Introduction to disaster medicine, incident command, medical knowledge and skills in disaster, public health, ethics in disaster, information management, with the weights of 0.1486, 0.1999, 0.4209, 0.0785, 0.0748, 0.0774 respectively) and 25 sections. Teaching methods for different knowledge module were determined, which included lecture, demonstration, case discussion, drill and sand table simulation. And the evaluation methods were affirmed as a quiz, written examination, skill test and teamwork test assessed by intra-group and inter-group evaluation.

Discussion: Through scientific investigation of experts in disaster rescue and undergraduates majoring in clinical medicine, a disaster medicine course model for clinical medical students was established.

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Resilience Training of Regional Medical Command and Control

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Introduction: Resilience is often described as a desirable holistic approach to disaster preparedness. However, the term has a wide variety of meanings and is hard to operationalize and implement in disaster management. A goal for the EU H2020 project DARWIN was to operationalize resilience for incident management teams.

Aim: To test the resilience operationalization by analyzing command team behaviors in a major incident exercise and trace observations to resilience theory.

Methods: A regional medical command and control team ($n=11$) was observed when performing in a functional simulation exercise of a mass casualty incident (300 injured, 1800 uninjured) following the collision of a cruise ship and an oil tanker close to the Swedish coast. Audio and video recordings of behaviors and communications were reviewed for resilient behaviors based on the DARWIN guidelines using the "resilience markers for small teams" framework (Furniss et al., 2011).

Results: A total of 121 observed instances of resilient behaviors were found in the material. In 95 cases (79%) the observed behaviors followed a priori hypothesized connections between resilient strategies and general markers. Certain marker-strategy combinations occurred frequently, such as 18 observations where the strategy "understand crucial assumptions" occurred together with the marker "adapting to expected and unexpected events."

Discussion: Resilience has the potential to contribute to a more holistic disaster management approach. The findings that the observations, in general, correspond to the expected relationship between theoretical concretization and contextualization supports the DARWIN effort to operationalize resilience theory. This is a prerequisite for developing observational