

A Basic Course in Humanitarian Health Emergency and Relief: A Pilot Study from Saudi Arabia

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Abbreviations:

MOI: Ministry of Interior
NGO: nongovernmental organization
WHO: World Health Organization

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Abstract

Background: Political unrest in the Middle East heightens the possibility of catastrophe due to violent conflict and/or terrorist attacks. However, the disaster risk reduction strategy in the Saudi health care system appears to be a reactive approach focused more on flood hazards than other threats. Given the current unstable political situation in its neighboring countries and Saudi Arabia's key role in providing humanitarian assistance and disaster relief to those affected by internal conflicts and wars, it is essential to develop a framework for training standards related to complex humanitarian disasters to provide the requisite skills and knowledge in a gradual manner, according to local context and international standards. This framework could also support the World Health Organization's (WHO; Geneva, Switzerland) initiative for establishing a national disaster assistance team in Saudi Arabia.

Problem: The main aim of this study is to provide Saudi health care providers with a competencies-based course in Basic Principles of Complex Humanitarian Emergency.

Methods: The interactive, competencies-based course in Basic Principles of Complex Humanitarian Emergency was designed by five experts in disaster medicine and humanitarian relief in three stages, accordance to international standards and the local context. The course was piloted over five days at the Officers Club of the Ministry of Interior (MOI; Riyadh, Saudi Arabia). The 33 participants were from different health disciplines of the government sectors in-country. The participants completed the pre- and post-tests and attended three pilot workshops for disaster community awareness.

Results: The overall knowledge scores were significantly higher in the post-test (62.9%) than the pre-test (44.2%). There were no significant differences in the pre- and post-knowledge scores for health care providers from the different government health disciplines. A 10-month, post-event survey demonstrated that participants were satisfied with their knowledge retention. Importantly, three of them (16.6%) had the opportunity to put this knowledge into practice in relation to humanitarian aid response.

Conclusion: Delivering a competencies-based course in Basic Principles of Complex Humanitarian Emergency for health care providers can help improve their knowledge and skills for humanitarian assistance and disaster relief, which is crucial for disaster preparedness augmentation in Saudi Arabia.

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Introduction

Armed conflict is increasingly becoming one of the main causes of complex humanitarian emergencies around the world. Long-lasting conflicts can cause long-term population displacement, some extending into their third decade. Most refugees are not located in countries well-prepared to provide adequate medical care and humanitarian relief.¹ International and national response teams face many challenges during complex humanitarian emergencies, including difficult organization, unprepared national disaster plans, and disrupted political systems.

The growing need for humanitarian health relief work and rapid responses has led to national and foreign assistance teams often being staffed by inexperienced volunteers who are usually inadequately trained or with out-of-date information. Many of these health care providers need to conduct tasks outside their specialty, which leads to malpractice in the delivery of humanitarian assistance and disaster relief.^{2,3} The high rotation rate of team staff also adds to the problem. There are also different levels of organization and readiness between teams, with some teams highly trained and well-equipped, and others with no or little training and lacking proper

equipment. A survey of nongovernmental organizations (NGOs) deploying health workers to acute human emergencies found that only 34% provided lectures or orientation prior to departure, and less than one-half provided pre-field training in health care.^{3,4} The 2004 South Asian tsunami and the 2010 Haitian earthquake showed unacceptable practices during the delivery of medical relief that raised concerns about the clinical competence and practice of some foreign medical teams. These concerns declared by the United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA; New York, USA/Geneva, Switzerland), the World Health Organization (WHO; Geneva, Switzerland), regional organizations, and NGOs called for better coordination, quality control, and an international standards framework for health services and professionalization through competency-based curricula.^{3,5}

Saudi Arabia has experienced several large-scale disasters and faced threats from unique pathogens such as Middle East Respiratory Syndrome Coronavirus (MERS-CoV). Floods have been by far the most significant natural disasters in Saudi Arabia. While political unrest in the Middle East heightens the possibility of catastrophe due to violent conflict, the disaster risk reduction strategy in the Saudi health care system is focused more on flood hazards than other threats.^{6–8} Previous studies have shown a reactive approach to earlier disasters in Saudi Arabia and highlighted the need for involvement of competency-based methods in education and training.^{6,9,10} As a result, several medical education and training institutes have started to introduce courses focused on Major Incidents Response, but with less attention on Humanitarian Assistance and Disaster Relief. Few studies have evaluated the effectiveness of these major incident training programs in Saudi Arabia for health care providers, including emergency physicians.^{11–13}

To the best of the authors' knowledge, there are no published reports evaluating and assessing post-graduate training programs in humanitarian health emergency in Saudi Arabia. With the current unstable political situation surrounding the neighboring countries of Saudi Arabia and its effective role in providing humanitarian assistance and disaster relief to those affected by internal conflicts and wars, it was essential to develop a framework for training standards related to complex humanitarian disasters. This framework would provide the required skills and knowledge in a gradual manner, according to local context and international standards, and could support the WHO initiative for establishing a national disaster assistance team in Saudi Arabia. The main objectives of this study were to provide health care providers with a competencies-based course in Basic Principles of Complex Humanitarian Emergency and evaluate the effectiveness of the course.

Methods

A mixed methods approach was used to present and evaluate an interactive, competencies-based course which consists of 30 hours over a five-day period focused on general principles in Complex Humanitarian Emergency and Disaster Relief. The course was prepared by the Disaster Medicine Unit of the Mohammed Bin Naif Medical Center (Riyadh, Saudi Arabia) in collaboration with 10 instructors. The course was piloted on March 13, 2018 at the Officers Club of the Ministry of Interior (MOI; Riyadh, Saudi Arabia), sponsored by the Mohammed Bin Naif Medical Center and Institute of High Education (King Fahd Security College) in Riyadh, Saudi Arabia. During the first three days, morning lectures covered the main concepts of humanitarian emergencies

and disaster relief. In the afternoon sessions, table-top exercises and group discussions were held regarding minimum humanitarian standards and rapid needs assessment. On the fourth day, mock simulation exercises were conducted for preventive diseases measures after disasters. The pilot education session in community awareness of disasters was prepared by the participants on the last day.

The Trigger Point for the Courses Idea

In March 2017, a Pre-Hospital Major Incident Management course was conducted in the Officers Club by the Disaster Medicine Unit of the Mohammed Bin Naif Medical Center, King Fahd Security College. During the debriefing session conducted on the last day, around 85% of the participants (paramedics, nurses, and physicians) requested the introduction of a course on Complex Humanitarian Emergency and Disaster Relief for the next education program. Some of the participants had previously been sent to join humanitarian assistance teams in the Southern Border region of Saudi Arabia, but acknowledged that their familiarity with the basic knowledge and skills needed for humanitarian response were limited. The course was prepared by five experts in disaster medicine and humanitarian emergency, public health, and global health, in multiple stages.

The Need for Competency-Based Education in Humanitarian Health

A comprehensive literature review was done to highlight the need for competency-based education in disaster health.^{11,12} There were no published reports evaluating a specific course for Complex Humanitarian Emergencies and Disaster Relief in Saudi Arabia. However, there were existing international education frameworks, with categorization of competencies set for each education level in humanitarian emergencies.^{14–18}

Development of the Basic General Level Course

Four levels of education were designed with categorization of competencies set in each level according to the local context and existing international education frameworks for disaster and public health emergencies^{17–19} (Supplementary Table 1; available online only).

The basic level in this study is considered a foundation stage for the other three proposed education levels in Humanitarian Assistance and Disaster Relief. A comprehensive literature review was conducted to identify the core competencies for disaster and public health emergencies.^{17,18,20,21} Three domains were determined^{4,5,21,22} and six levels of proficiency (Bloom's education taxonomy)²³ were used to establish the core competencies and sub-competencies for the basic level in Complex Humanitarian Emergencies. The basic level course was composed of three main domains with seven core competencies and 71 sub-competencies (Supplementary Table 2; available online only).

Different learning techniques and approaches were used (lectures, case study group discussion, mock simulations, experiential exercise, and table-top exercise) to deliver the material and knowledge and promote higher cognitive engagement.

DOMAIN 1

The General Concept in Humanitarian Health Relief was composed of four core competencies and 60 sub-competencies (Supplementary Table 2; available online only). This domain is dedicated to the basic principles in Humanitarian Emergencies and Disaster Relief. The domain introduced four topic areas: General Concept in Humanitarian Assistance and Relief During

Complex Humanitarian Emergency; Medical and Health Aspect in Complex Emergencies; Public Health Intervention; and Minimum Humanitarian Standards. Lectures, case studies, group discussions, and table-top exercises were used.

The overview of Humanitarian Assistance and Relief During Complex Humanitarian Emergency was presented as a lecture and illustrated the different terms and definitions for humanitarian assistance. To improve the quality and accountability of the humanitarian response during disasters and complex emergencies, background about the Sphere Project (Sphere; Geneva, Switzerland) was introduced, along with the major components of the Sphere Project (humanitarian charter, protection principles, and the core humanitarian standards and minimum standards). The importance of protection by international humanitarian law for affected persons during complex emergencies was also discussed. The roles of major participants, including organizations, and the coordination of humanitarian emergencies using the cluster approach were also presented.

The second topic area was the medical and public health aspects of complex humanitarian emergencies. This part was considered as an overview of public health intervention because it presented the public health consequences in three different phases of emergency (acute, late, and post-emergency) and summarized the important parameters, such as time frame, health profile, priority needs, and public health interventions.

During each phase, critical indicators, such as water, food, shelter, sanitation, fuel, health, and malnutrition, were introduced and briefly summarized. The critical challenges for triage processes in health care facilities, conflict scenes, and camps for refugees and internal displacement were also discussed in this part. Psychological issues during conflict and psychological first aid were presented, in addition to the actions needed to respond to reproductive health needs in the early phase of emergencies to reduce the mortality and morbidity among women.

The third topic area in this domain was public health interventions to protect the health of all age groups, populations, and communities affected by complex emergencies. Three dictation lectures were introduced under the series title "Top Ten Priorities in Public Health Interventions." Group discussions were held after the lecture of needs assessment with a real-world scenario of one of the camps in Northern Syria. The participants were divided into three groups, provided with all required information for the camp, and tasked as an NGO team made up of different professionals to assess the needs of the camp. Each group developed approaches to collect data based on context and were asked to select the appropriate methods for data collection as part of a needs assessment survey. At the end of the session, the participants were asked to list all possible major public health problems, present their assessments/findings, and discuss with the instructors their needs assessment strategy.

The last topic area was about minimum humanitarian standards. The participants were asked after the lecture to divide into groups then apply the Sphere Project hand book technical chapters—Water Supply and Sanitation Promotion, Hygiene Promotion, Disposal Vector Control, and Solid Waste Management Drainage—with minimum standards in a new established camp with 10,000 persons displaced from their own region. The participants were given one day to recognize, present, and discuss the minimum standards for the new camp according to the Sphere Project hand book.

DOMAIN 2

Domain 2 concentrated on the Principles for Community Participation and Community Disaster Awareness. This domain has two core competencies and eight sub-competencies (Supplementary Table 2; available online only).

The first core competency focused on two categories, spontaneous volunteers and the community in affected disaster areas. For spontaneous volunteers, the challenges in volunteer management were addressed by explaining the major components of a volunteer management plan. As volunteers are exposed to unsafe environments, the measures required for ensuring their safety during the response phase were presented. For the community, the role of active involvement of the community during the response and recovery phases and the considerations and stages for communication within communities were discussed in this part.

The second core competency focused on the integration of health promotion and education in disaster risk reduction plans to raise public awareness about health risks after disasters and complex emergencies. Important health-related knowledge, such as sanitation, handling corpses, hand washing, personal protection, managing wound care, and education about vaccine, were discussed in this part.

The students performed three mock simulation sessions to demonstrate public health education and promotion for an affected community in three different scenarios: (1) hand washing demonstration in primary schools for children in displacement camps; (2) oral rehydration solution preparation demonstration in primary care clinics for mothers with children under the age of five in refugee camps; and (3) dead body preparation of cholera patients demonstration for designated health workers in temporary shelters for displaced peoples exposed to recent flash floods in areas with civilian conflict. All three scenarios concentrated on prevention measures and increased public awareness from health risks (eg, cholera outbreak) for communities post-disaster and complex emergencies.

DOMAIN 3

In the last domain, training sessions for Community Education, the instructors used Red Cross and Red Crescent (IFRC; Geneva, Switzerland) modules on Increased Community Awareness.²⁴ The participants were divided into groups of eight to ten and asked to prepare community training activities.

There were five sessions; in the first two sessions, the instructors and participants brainstormed to choose the topics and define their aims, objectives, target audiences, and educational strategy to be developed in the remaining three sessions. One topic they agreed on was a workshop for the first responders about psychological first aid post-disaster and complex emergencies. Role play and lectures were used to gain knowledge and skills for the target audience. The second topic was on protection from missile injuries for high school students in the southern area of Saudi Arabia. Types of injuries, safety measures, and first aid before first responders arrived were introduced. Lectures, educational videos, and first aid practices with mannequins were used in this workshop. The last pilot workshop was about sieve triage for paramedic students. Lectures and triage exercises for 20 cases were used in this project. On the last day of the program, each group of participants presented their community education session and received feedback from the instructors.

Domains	Mean	SD	Z	P
Pre-Test Domain 1 Score	9.90	2.51	-3.775	<.001
Post-Test Domain 1 Score	14.10	1.81		
Pre-Test Domain 2 Score	1.14	0.48	-2.106	.035
Post-Test Domain 2 Score	1.62	0.59		
Overall Pre-Test Score	11.05	2.60	3.729	<.001
Overall Post-Test Score	15.71	1.90		

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Table 1. Comparison between Pre- and Post-Test Scores for Different Domains (1 and 2) and Overall Score
Note: Wilcoxon Signed Ranks Test used to compare the ranks of scores.

The post-test was administered after this session. Passing the course required a grade of $\geq 60\%$ in the post-test and participation in the presentation of the community awareness education session.

Instructors

There were 10 instructors in total. Six were from the Ministry of Health, while the others were from the MOI (one), King Salman Aid and Relief Center (one), and Red Crescent (two). Eight were medical instructors specialized in disaster medicine and complex emergency, public health, and infectious diseases, while two were international instructors for the Sphere Project. A non-medical instructor was Assistant General Director for the King Salman Aid and Relief Center and specialized in humanitarian assistance and disaster relief.

Participants

Thirty-three health care workers (three female; thirty male) were recruited from the main government health sectors across Saudi Arabia (ie, hospitals, polyclinics, and Emergency Medical Services). The participants had previously attended Major Incident Course during the last three years. The trainees had also participated in the Pre-Hospital Major Incidents Education Course two weeks prior, which is one of four courses in the Security and Health Measures in Disaster Management Program. All participants consented to participation before the course, and the study was approved by the Institutional Review Board of Princess Nourah Bint Abdulrahman University (Riyadh, Saudi Arabia; No. H-01-R-059).

Evaluation of the Effectiveness of the Course

On the first and last day of the course, pre- and post-tests were conducted, respectively. The items in both tests were obtained mainly from the questionnaire of the previous Global Health and Humanitarian Course.²⁵ The instructors were also asked to prepare questions relevant to their subjects. Each 30-minute test consisted of 25 multiple choice questions with only one correct answer. One point was given for a correct answer, zero for a wrong answer. The questions in the two tests were the same. Three instructors reviewed all items for both tests.

Feedback

To obtain feedback, the participants were asked to fill an evaluation form at the end of the course. The survey took approximately 10 minutes to complete. In addition to the seven questions (mostly Likert scale), they were asked about workshop level knowledge, whether they would recommend the course to others, and suggestions on how the course might be improved.

Measurement of Behavior Level Post-Course

Ten months after the course, a follow-up survey was sent to the participants by email. Those who did not respond to the email were

contacted by phone whenever possible. The questions included the following:

1. Was this the first course you attended in this topic?
2. Was this course beneficial to you?
3. Did you obtain the knowledge and skills needed from this course?
4. Have you applied any principles learned from this course since taking it? and
5. Have you participated in any humanitarian aid tasks after completion of this course?

If the answer was yes, they were asked to rank the effectiveness of this course in preparing the participants for the humanitarian aid tasks (on a Likert Scale from one to five).

Statistical Analysis

The data were analyzed using Statistical Package for Social Science Version 22 (IBM-SPSS; Armonk, New York USA). The data are presented as means and standard deviations (SD) and mean rank. Descriptive analysis was used to present an overview of the findings. The non-parametric Wilcoxon signed rank test was used to compare pre-test and post-test scores. The Kruskal Wallis test was used to compare the scores by profession. The level of statistical significance was set at $P \leq .05$ for all analyses

Results

The study recruited 33 participants (30 males; three females) with all 33 taking the pre-test. Twenty-one participants (63.6%) did both the pre- and post-tests, including four nurses (19.0%), 13 paramedics (61.9%), three physicians (14.3%), and one radiology technician (4.8%). Descriptive statistical analysis (mean, standard deviation, median rank) was done for all available pre-test and post-test data. The overall score on the pre-test was 44.2%, which increased to 62.9% on the post-test. To assess the gain in knowledge from the course, pre-test and post-test scores were compared by a Wilcoxon Signed Ranks test for the 21 participants who took both tests. The overall post-test scores (mean = 15.71 [SD = 1.90]) were significantly higher (Wilcoxon: $Z = 3.729$; $P < .001$) than the pre-test scores (mean = 11.05 [SD = 2.60]). The post-test scores for Domain 1 and Domain 2 individually were also significantly higher than the pre-test scores (Table 1).

Given that the participants were from different health care disciplines (ie, physicians, paramedics, nurses, and technicians), the pre- and post-test scores for each group were compared. In the pre-test, nurses appeared to have higher scores in Domain 1 (mean = 12.50 [SD = 3.11]) and Domain 2 (mean = 1.25 [SD = 0.50]) than the other health professionals, but this difference was not significant ($P > .005$; Table 2). Similarly, in the post-tests, the radiology technician demonstrated a higher score

	Position	N	Mean	SD	Mean Rank	KW-H	df	P
Pre-Test Score (Domain 1)	Nurse	4	12.50	3.11	16.38	5.791	3	.122
	Paramedic	13	9.00	2.08	8.77			
	Physician	3	10.67	1.53	14.00			
	Radiology Technician	1	9.00	00	9.50			
	Total	21	9.90	2.51				
Pre-Test Score (Domain 2)	Nurse	4	1.25	0.50	12.00	3.344	3	.342
	Paramedic	13	1.23	0.44	11.81			
	Physician	3	0.67	0.58	6.67			
	Radiology Technician	1	1.00	00	9.50			
	Total	21	1.14	0.48				
Overall Pre-Test Score	Nurse	4	13.75	3.50	16.13	4.089	3	.252
	Paramedic	13	10.23	2.05	9.38			
	Physician	3	11.33	2.08	12.00			
	Radiology Technician	1	10.00	00	8.50			
	Total	21	11.05	2.60				
Post-Test Score (Domain 1)	Nurse	4	14.00	0.82	12.13	2.716	3	.437
	Paramedic	13	13.77	1.74	9.85			
	Physician	3	14.67	2.89	11.67			
	Radiology Technician	1	17.00	00	19.50			
	Total	21	14.10	1.81				
Post-Test Score (Domain 2)	Nurse	4	1.25	0.96	8.63	1.418	3	.701
	Paramedic	13	1.69	0.48	11.42			
	Physician	3	1.67	0.58	11.17			
	Radiology Technician	1	2.00	00	14.50			
	Total	21	1.62	0.59				
Overall Post-Test Score	Nurse	4	15.25	0.96	10.63	2.978	3	.395
	Paramedic	13	15.46	1.94	9.96			
	Physician	3	16.33	2.31	13.00			
	Radiology Technician	1	19.00	00	20.00			
	Total	21	15.71	1.90				

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Table 2. Comparison of Pre- and Post-Test Scores in the Different Participant Groups (n = 21)

in Domain 1 (mean = 17.00 [SD = 0.00]) and Domain 2 (mean = 2.00 [SD = 0.00]) than the other health professionals, but this was not significant ($P > .005$; Table 2).

Only 24 participants (72.7%) answered the overall post-course survey (Table 3). Most (87.5%) stated that their personal goals were met by the program. On a Likert scale measuring satisfaction with various aspects of the course (Table 3), the statements "Overall, the workshop was valuable" and "Overall, the workshop facilities and location were appropriate and satisfactory" received the most positive answers (80.0% agree or strongly agree). The statement receiving the least positive answers (66.0%) was "Overall, the handouts for discussion groups and case studies were clear and useful." For the question "Was the workshop above or below your current knowledge level?" 45.0% answered just at the right level and 41.6% ranked it above their level. When asked if they would recommend the course to others, 96.0% answered yes.

Some students complained about some technical difficulties during videoconferencing (first lecture of medical aspect of complex humanitarian) or suggested that more time should be given for the community education session and Sphere Project tabletop exercise. Two interesting positive comments from participants included: "triggered my mind to be part of a disaster management team" and "the course made me think about disaster in different way."

Ten months after the course, a follow-up survey was sent to the participants to assess their satisfaction with the course and their retention of the knowledge and skills they gained. Eighteen of the 33 course participants (54.5%) responded, of whom 16 (88.8%) indicated that it was the first time they attended such a course; all of them agreed that it was beneficial and that they still retained the knowledge and skills 10 months after the course. Thirteen (72.0%) respondents indicated that they had applied

STATEMENT	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE	POSITIVE ANSWERS
Overall, the pre-workshop course was appropriate and informative.	50.0%	21.0%	25.0%	4.0%	0.0%	71.0%
The workshop was scheduled at a suitable time of year.	42.0%	33.0%	25.0%	0.0%	0.0%	75.0%
Overall, the workshop facilities and location were appropriate and satisfactory.	42.0%	38.0%	17.0%	4.0%	0.0%	80.0%
Overall, the workshop material was presented in a clear and organized manner.	54.0%	21.0%	25.0%	0.0%	0.0%	75.0%
Overall, the instructors were effective and responded to questions in an informative, appropriate, and satisfactory manner.	33.3%	37.5%	25.0%	0.0%	4.2%	70.8%
Overall, the handouts for discussion groups and case studies were clear and useful.	58.3%	8.3%	29.2%	4.2%	0.0%	66.7%
Overall, the workshop was informative and valuable.	42.0%	38.0%	21.0%	0.0%	0.0%	80.0%

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Table 3. Participants Evaluation of the Basic Concept in Complex Humanitarian Emergency and Disaster Relief Course

the principles learned from the course since taking it, especially in communicable diseases control and preventive measures for reducing the diseases in their area. Three (16.7%) had participated in humanitarian aid tasks after completing the course and deemed the course very effective in preparing them for these tasks.

Discussion

All health workers, regardless of their professional background, have a responsibility to ensure that they are prepared to help their communities in the event of a disaster and public health emergencies. The most important element of emergency preparedness is training and education.^{2,21} Effective response can be achieved by training and education based on the gaining of task-related, profession-specific, and cross-disciplinary competencies.³ Previous studies in Saudi Arabia showed the need for a competencies-based education program, increased education campaigns at every community level, and the involvement of all hazards threatening the area/country in disaster mitigation measures.⁶ This course involved core humanitarian and cross-disciplinary competencies provided to health care providers based in multiple settings (eg, hospitals,

Emergency Medical Services, Red Crescent, and primary care center).

Competency-based education is the cornerstone for the professionalization in disaster medicine and humanitarian aid. The main goals for competency-based common education programs are to ensure uniformity across disaster and humanitarian emergency programs and to facilitate coordination between international administrative bodies in the event of an actual disaster.^{26–28} Therefore, during training, the participants were focused on what they were supposed to do and not just what they should learn.²⁰

Disaster and Complex Emergency Management differs from daily emergency care of individual patients both qualitatively and quantitatively. It is not just based on patient numbers, but also on different types of patient trauma and a system under extreme stress. Standard medical and nursing training is unlikely to prepare health care providers to be adequate for work in complex emergencies.⁴ To achieve appropriate education and training, the levels and scope of practice for humanitarian health education and training programs are designed according to international standards and local context.¹⁶

The basic level was introduced in this course to all health care providers based on the following elements:

1. Humanitarian professional components composed of individual skill-specific competencies related to their scientific degree and completion of humanitarian competencies that are specific to humanitarian health providers;²¹
2. Target audience, topic area, and roles of the providers related to their tasks during humanitarian assistance;^{4,5,15,17,18,21} and
3. Accredited education and training programs implemented by academically affiliated centers.³

The basic level introduced the general principles of Complex Humanitarian Emergency Response. This level served as the foundation for the more specific competencies developed by other entities.¹⁷ It is recommended that the core competencies for the basic level be achieved by all health care providers before attempting core, intermediate, and advanced levels.¹⁵

Subject Area

Given the scope and range of public health issues during disasters and humanitarian crises, the public health field is increasingly important in the management of humanitarian crises and epidemics.¹³ Most disaster and humanitarian crisis education programs are now focused on public-health-related subjects with skill-based competencies defined by the International Schools, Centers, and Associations for public health.²² In this course, approximately 53% of sub-competencies are related to public health, the remaining 47% are related to different subject areas of humanitarian actions, community awareness, volunteer management, coordination, and organization with other participants.

Educational Strategies

Different teaching techniques with mixed experiences classroom (from different disciplines) were used in this course. In the mixed experiences classrooms, two approaches were used, one for new subjects and the other for common subjects. For new subjects, the material was presented in an introductory way, such as in the sessions on public health emergency, humanitarian assistance, and international humanitarian law. In common subjects, like communicable disease, health promotions, and malnutrition, the material was presented in a new context with integration of new information. In both approaches, the participants were instructed to look for humanitarian health emergency from a multiple disciplinary perspective. The participants, after the medical and health aspects session, had an integrated perspective of the topic that allowed them to fit their learning competencies into a larger knowledge context as observed in technical chapter of humanitarian standards and public health intervention.²⁸

The blended learning approach was recommended and has been used in other training courses.^{5,20,25} Lectures, case study group discussions, mock simulation sessions, and table-top exercises were used to maximize the knowledge transfer and satisfaction of the trainees.^{12,26}

The participants performed three mock simulation sessions to demonstrate public health education and promotion of the affected community through integration of three different and realistic scenarios. Realistic scenarios can be an effective method for performance-level learning that requires learners to experience how specific disasters might progress over time.

In the internal displacement camps table-top exercise, the teams were from four disciplines: physicians, nurses, paramedics, and technicians. They were asked to apply technical chapters with

minimum standards. The instructors divided the participants into groups which consisted of a minimum of one physician and one nurse to help other participants with special medical information related to application of standards in the camps. As the other participants have different knowledge, backgrounds, and experiences, it is necessary to teach them together. By taking into account their differences, each will be playing unique but interlocking roles. However, in a real emergency situation, collaboration and communication among these groups should be fundamental. A variety of techniques should be incorporated to minimize differences and emphasize teamwork.²⁰ One of the main goals in the pilot session for community awareness was to build up teamwork skills between the participants by creating their community awareness workshop, which started from brainstorming and defining the objectives with the target audience and ended with a presentation of the workshop.⁴

Community resilience at every level of society is the second goal. The community participation domain focused on the roles of volunteers and affected populations in reducing the health risks post-events by involving both groups in health education and promotion programs. Because people's knowledge and awareness of health risks determines the occurrence of infectious diseases post-event, all three mock simulation sessions targeted the preventive measures required for post-emergency events, which can help prevent mortality and morbidity in the affected population. Simple preventive measures were chosen like hand hygiene techniques. Starting with these simple but essential actions in public health emergency situations is extremely important to prevent infectious diseases.²⁹

Currently, Saudi Arabia does not appear to have a culture of prevention and risk reduction. Such a culture can be achieved by promotion of multidisciplinary public awareness, training, and education. Government and the health care sector need to inform and educate households and communities regarding disasters so that they can prepare for and reduce the risks related to disasters and public health emergencies.⁶

Assessment of the Participants

In medical education, the efficacy of education courses in augmenting knowledge and skills can be assessed by comparing the clinical work before and after the training, while in the case of disaster health education and training, the situation is different due to the wide variation in the patterns of disasters and the factors that affect the response outcome. Therefore, there is more than one method that can be used for assessment of disaster health training programs.¹² Short-term validation of the course was based on performance of the participants in post-tests and creating assignments that can directly measure the outcomes, as in a community awareness pilot session, which is considered a fundamental element for the basic level in the humanitarian emergency course. The participants design projects related to their own interests or behavior and presented it to the instructor committee. The feedback was received according to performance objectives in this domain.²⁸

Assessment of the gain in knowledge from the course by comparing pre- and post-test results showed a statistically significant enhancement in knowledge. The overall score improvement, however, was only 18%. This could be explained by the presence of paramedics, who recorded approximately 62% (n = 13) in both tests and the presence of public health subjects which accounted for more than 50% of the curriculum. Of the 42% of participants stating that the course was above their knowledge level, most were paramedic participants. This may be due to public health subjects

not being introduced in all paramedic college/universities programs in Saudi Arabia—only three out of ten colleges/universities include public health in their paramedic curriculum. In addition, the qualification degree for paramedics in Saudi Arabia has two tracks, Diploma and Bachelor, each with different curricula and competencies.³⁰

It has been demonstrated that participants in courses using different teaching techniques are more confident in their knowledge for at least six months following the training.^{31,32} In agreement, the survey of the participants in this study 10 months after the workshops demonstrated that the majority were satisfied with their knowledge retention. Importantly, three of them had had the opportunity to participate in humanitarian aid and used the knowledge and skills acquired from the basic course. Prior to the course, none of the participants had dealt with real major incidents and disaster.

Limitations

This pilot study in basic humanitarian health emergency highlighted the need to strengthen the instrument for data collection, which can support consideration of the course as a foundation level for other more advanced levels. In addition, the study has two limitations. The first one related to the Sphere Project for

humanitarian standards, where some participants felt that the workshop time was insufficient for all the participants to apply all standards, which resulted in instructors having to step in and help these participants. Second, in relation to psychological issues, role play for psychological first aid needs to be introduced through role play exercise and be presented as an isolated subject to obtain maximum effectiveness in this area.

Conclusion

Political unrest in the Middle East heightens the possibility of catastrophes due to violent conflict; therefore, preparedness of the health care system in Saudi Arabia for types of emergency other than natural disasters is essential. Delivering a competencies-based course in Basic Principles of Complex Humanitarian Emergency for health care providers from multiple disciplines can help improve the knowledge and skills for humanitarian assistance and disaster relief. It can also facilitate the involvement of the participants in more advanced training levels for humanitarian health emergencies, therefore augmenting disaster preparedness in Saudi Arabia.

Supplementary Material

To view supplementary material for this article, please visit <https://doi.org/10.1017/S1049023X19004977>

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