

Duties of Disaster Medicine Specialist to Save Suffering Humans and Environment, with Smart Thinking Such as Pre-Disaster Preparation, Disaster Planning, Disaster Response and Disaster Recovery

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ABSTRACT

Background and Objective: The main theme of this article is to discuss the duties of Disaster Medicine Specialist to save suffering humans and environment with smart thinking. The steps used would be such as pre disaster preparation, disaster planning, disaster response and disaster recovery throughout the disaster lifecycle.

Methods: The author has chosen the scoping review methodology for this article and discuss the findings of other authors in the provided table. Author has presented five different tables and four of the SPSS diagrams to present the findings from the reviewed articles. The author has mainly discussed the duties of the disaster medicine specialist and the benefits of the disaster medicine. Author has presented the ten different models for the mitigation effects of the disaster and named the major disaster relief organizations. The aim of this article is to discuss in detail the benefits and success of the disaster medicine and their disaster models to overcome the challenges during the natural or manmade disasters.

Results: The author of this article has provided the 5 different tables about duties of the disaster medicine specialist and the benefits of the disaster medicine. Author has presented the ten different models for the mitigation effects of the disaster and named the major disaster relief organizations. The author has presented the four of the SPSS diagrams to present the findings from the reviewed articles as followed by scoping review. The SPSS diagrams have shown the numbers/ roles and the frequencies of the selected subjects in the scoping review.

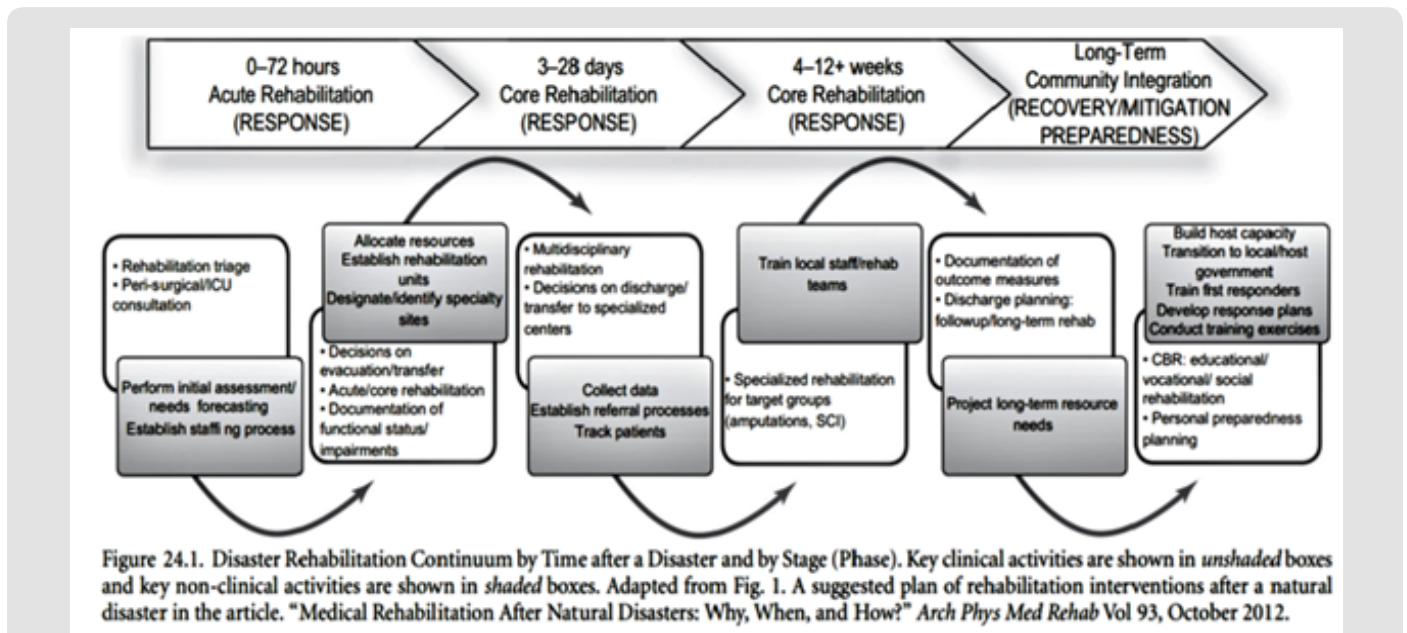
Conclusion: To conclude, the field of disaster medicine is playing vital role to save human lives during the disaster. Governments or organizations following the disaster life cycle consisting of disaster preparedness, planning, management, mitigation, and disaster recovery. Disaster management plan implementation before the disaster struck and during the disaster, following disaster recovery made it possible to achieve the positive results. The role no politics in manmade disaster such as current war in the Ukraine made it difficult for the medical personal to manage the disaster and to provide medical other help to local people.

Introduction

Disaster Medical Specialists are trained doctors Healthcare Administration.com [1] who treat people affected by emergencies, casualties, and natural disasters. They plan pre-disaster preparations oversee treatment at the disaster scenes and then ensure transportation of victims to hospitals or any other medical facilities for further treatment. Be it hurricane, earthquake, any road mishap, train accident or any terror attacks, Disaster Medical Specialist has a greater role to play in minimizing the casualties and Healthcare Administration.com [1] ensure quick and effective treatment to the injured. Disaster medicine is very difficult and stressful. Carrerprofiles.info [2] Disaster medical specialists are required to treat dying people and coordinate treatment efforts during natural disasters. It can also be dangerous since they typically work in unsterile dirty and chaotic environments. During natural disasters disaster medical specialists work long days and experience sleep deprivation. When not volunteering they

treat patients in hospitals and medical clinics. Carrerprofiles.info [2] Many government agencies hire full-time disaster medical specialists (Picture 1). Disaster medicine has grown in importance as terrorism E Magazine [3] humanitarian aid and climate disasters have proliferated around the world. Graduates should be able to work in one or more of five capacities:

- 1) Define the main academic legal, and ethical principles associated with disaster medicine.
- 2) Assess the impact of disasters on the health system including risk assessment and development of primary prevention programs.
- 3) Manage medical response in diverse disaster situations.
- 4) Organize local education and E Magazine [3] training in disaster medicine.
- 5) Develop research projects in disaster medicine.



Picture 1: Disaster rehabilitation Kristi LK [38].

The Disaster management cycle illustrates the ongoing process Grdc.org, 2021 [4] by which governments businesses and civil society plan for and reduce the impact of disasters. React during and immediately following a disaster and take steps to recover after a disaster has occurred. Appropriate actions at all points in the cycle lead to greater preparedness better warnings, reduced vulnerability, or the prevention of disasters during the next iteration of the cycle. The complete disaster management cycle includes the shaping of public policies and Grdc.org, 2021 [4] plans that either modify the causes of disasters or mitigate their effects on people property and infrastructure. In December 2019 a pneumonia of unknown

etiology was Wajdan AlAssaf [5] detected in Wuhan, China. This outbreak was then declared an international public emergency in January 2020 by the World Health Organization and the announcement activated disaster management plans worldwide. This global crisis created several challenges for the health-care sector. While preparing this Wajdan AlAssaf [5] Saudi academic hospital with a capacity of 192 beds for the emerging pandemic obstacles arose despite its extensive prior disaster planning and training. Disaster risk management is an integral and Rajnish J [6] necessary component of disaster care. Meticulous planning and preparation are the backbone of this concept. Disaster plans must

be field tested frequently updated and scrutinized regularly subject to expert review and incorporate lessons from other sources and events.

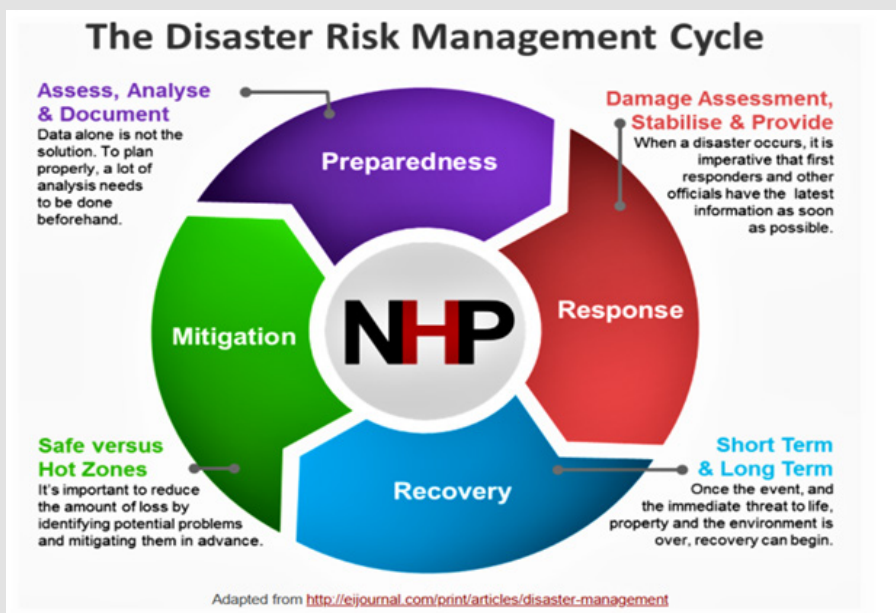
Ideally these tasks should be undertaken by a disaster committee within a health care facility. Engaging the health care volunteer workforce and local community members and educating them about Rajnish J [6] disaster care and legal protections is highly recommended. The large number of casualties during a major disaster Y Haraguchi, et al. [7] is a global problem even in the developed countries. When the role of the intensivist is reviewed many roles were verified to be important that is as a leader of a medical team or triage officer as well as a professional in the field of specific intensive care. However, there are many problems to be solved in the fields of disaster medicine. In order to solve the diversification or the various medical problems it is necessary to compile or systematize a disaster medicine of the world version Y Haraguchi, et al. [7]. This is the first comparison of post-earthquake diagnoses Gerlant B, et al. [8] with baseline data. Within 2 weeks after the acute phase of an earthquake respiratory digestive and ophthalmological problems will emerge to the prejudice of trauma. Of 7000 triaged post-earthquake patients 3500 were admitted of whom 2795 were included and analyzed. A comparison indicates that post-earthquake patients Gerlant B, et al. [8] suffered significantly less from violence but more from wounds respiratory digestive and ophthalmological diseases.

Methods

The author has chosen the scoping review methodology for this article and discuss the findings of other authors in the provided table. Author has presented five different tables and four of the SPSS diagrams to present the findings from the reviewed articles. The author has mainly discussed the duties of the disaster medicine specialist and the benefits of the disaster medicine. Author has presented the ten different models for the mitigation effects of the disaster and named the major disaster relief organizations. The aim of this article is to discuss in detail the benefits and success of the disaster medicine and their disaster models to overcome the challenges during the natural or manmade disasters. Millions of people everyday face disasters for example Michelangelo B [9] typhoons terrorist attacks earthquakes famine civil wars explosions and tornadoes. Disaster is defined as every event that causes serious disruption which exceeds the ability of the affected community or society to cope using its own resources. Disasters are usually categorized as natural or man-made and

are described using a series of steps called the disaster cycle defined in four phases: mitigation and prevention, preparedness and planning, response, and recovery Michelangelo B [9]. Though most faculty representatives indicated Nils K, et al. [10] that they favor expanding and implementing disaster medicine education German medical schools still have a lot of room for enhancement in this field. The incorporation of e-learning tools could facilitate the expansion of disaster medicine teaching while simultaneously addressing the expressed concerns of the survey's participants and guarantee nationwide standardization. To best prepare doctors for providing optimal care in Nils K, et al. [10] disaster situations specific education and training should start at the medical school level. Integrating interdisciplinary teams and course components Edward HJ [11] important to other education stakeholders may help other schools overcome obstacles to implementing disaster medicine training.

Training in disaster medicine and preparedness is minimal or absent in the curricula of many medical schools in the United States. Despite a 2003 joint recommendation by the Association of American Medical Colleges and the Edward HJ [11] Centers for Disease Control and Prevention few medical schools require disaster training for medical students (Picture 2). The military background and training of the medical students Luc JM [12] makes them better prepared for disaster situations than their civilian counterparts. Historically medical students have been deployed to care for disaster victims but may not have been properly educated to do so. Based on the nature of their military training we hypothesized that Luc JM [12] military medical students were better educated and prepared than their civilian counterparts for disasters. Although the operational model needs to be applied Joie Acosta [13] and tested in community planning and disaster response it holds promise as a unifying framework across new national preparedness and recovery policy. And provides structure to community planning resource allocation and metrics on which to evaluate NGO disaster involvement. Such partnerships Joie Acosta [13] can build deep local networks and broad systems that reach from local communities to the federal government. In addition to patient transport systems to provide medical Hideaki A, et al. [14] care inside disaster-affected areas is needed. Transporting critically ill patients outside of disaster-affected areas for treatment is an important activity of Japan Disaster Medical Assistance Teams (DMATs). The number of patients that can be accepted by ICUs in non-affected areas was insufficient.



Picture 2: Natural hazard partnership [39].

This will require DMAT operational reforms Hideaki A, et al. [14] and the creation of logistics systems such as the supply of resources for earthquake-reinforced hospitals. Besides emergency department overcrowdings ambulance Amir M [15] diversions endangering patient s safety and increasing risk for in-hospital mortality hospital-related incidents reduce and limits the regional preparedness by minimizing the surge capacity. There were an increasing number of hospital-related incidents mainly caused by emergency department’s overcrowdings the lack of beds Amir M [15] at ordinary wards and/or intensive care units and technical

problems at the radiology departments. The US Department of Health and Human Services (Washington, DC USA) Daniel W, et al. [16] Office of the Assistant Secretary for Preparedness and Response (ASPR) sponsored development of a set of tools meant to allow any hospital to run a real-time no-notice exercise. Focusing on the first hour and 15 minutes of a hospital’s response to a sudden MCI with the goals of minimizing burden maximizing realism and providing meaningful Daniel W, et al. [16] outcome-oriented metrics to facilitate self-assessment (Tables 1-5).

Table 1: 40 Articles and websites discusses the 10 duties of Disaster medicine specialist – frequencies. Healthcare Administration.com [1].

40 Articles and websites discusses the 10 duties of Disaster medicine specialist – frequencies. Healthcare Administration.com [1]		
	10 duties of Disaster medicine specialist.	Similarity of Frequency in 40 Articles.
1	Treatment of people affected by emergencies, casualties and natural disasters.	36
2	Plan pre-disaster preparations, oversee treatment at the disaster scenes and then ensure transportation of victims to hospitals.	35
3	Helps in the planning process and the types and amounts of resources devoted for response to each category.	38
4	Facilitates the response to a disaster by better knowledge and training on similar disasters.	37
5	Keep yourself updated about the current happenings in your vicinity and try to collect data on disasters.	38
6	Use medical supplies and pain killers to provide immediate comfort to the victims when you reach a disaster scene.	30
7	Make sure to have relevant medical supplies such as oxygen kit, life-saving medicines, intravenous fluids etc.	34
8	Find out the flaws and rectify those in your next assignment.	32
9	Make a routine inspection of medical supplies and equipment’s and suggest improvements if needed.	28
10	Consult with physician’s surgeons and specialists and offer your assistance as you are the first point of contact with the patients.	27

Table 2: 40 Articles and websites discusses the 10 benefits of Disaster medicine – frequencies.

40 Articles and websites discusses the 10 benefits of Disaster medicine – frequencies.		
	10 benefits of Disaster medicine	Similarity of Frequency in 40 Articles.
1	It aims to give students skills in planning and hospital incident command.	36
2	Skills in PPE, decontamination and information management.	30
3	Skills in safety, essential resources, psychological support and ethics.	29
4	Disaster preparedness can reduce fear, anxiety and losses.	30
5	Reduces the impact by flood proofing, elevating a home, securing house items and avoid danger.	37
6	Provide training to oversee treatment at disaster scene, transportation of victims.	36
7	Reduction of physical trauma, emotional trauma and acute disease in population.	30
8	Reduce the personal injuries and death cause by disaster.	33
9	Speedy recovery, protect victim and personal suffering.	32
10	Helps in disaster prevention and mitigation.	34

Table 3: 40 Articles and websites agrees that Disaster medicine relief organization for disaster help: N.A.I.S [40].

40 Articles and websites agrees that Disaster medicine relief organization for disaster help: N.A.I.S [40]		
	10 relief organization for disaster help:	Similarity of Frequency in 40 Articles.
1	United Nations Office for Disaster Risk Reduction (UNDRR).	37
2	United Nations Disaster Assessment and Coordination (UNDAC).	38
3	WHO, UNICEF, UN, UNESCO.	35
4	American Red Cross, Mercy Corps, World Vision.	39
5	Action Against Hunger, ADRA International, Air Serv International, American Jewish Joint Distribution Committee.	28
6	American Refugee Committee, AmeriCares, Giving Children Hope, Hands on Disaster Response.	25
7	International Medical Corps (IMC), international Rescue Committee, Operation USA, Project HOPE.	29
8	Salvation Army World Services Army, Save the Children USA, Unitarian Universalist Service Committee.	28
9	United Methodist Committee on Relief, United States Fund for UNICEF.	29
10	National Disaster Risk Reduction and Management Council (NDRRMC), EU Disaster risk management.	38

Table 4: Disaster management modelling and types of models discussed to mitigate disaster by Articles and websites Kristi L K [38].

10 types of models discussed to mitigate disaster by Articles and websites. Kristi LK [38]	
1	Disaster cycle: disaster recovery and construction model.
2	Traditional model – sequence of action (Blackie et al.)
3	Traditional model – Concept of disaster risk management. (Ahmed et al.)
4	Circular model. (Kelly).
5	Expand – contract Model.
6	Disaster crunch and release Model.
7	The Disaster Manitoba Model.
8	Comprehensive Model of disaster management.
9	Evaluation and research framework. (Birnbaum et al.)
10	The SIMEDIS Model, Victim creation model.

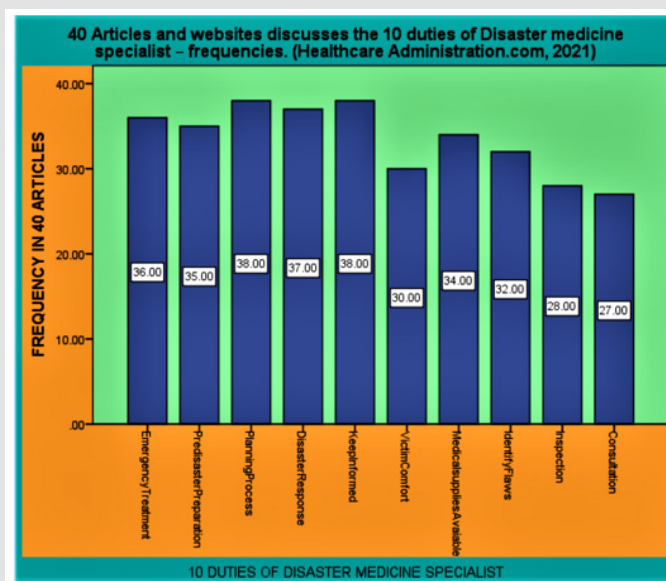
Table 5: 40 Articles and websites discuss the history of Disaster medicine and positively portrays the use of trained disaster medicine specialists Web MD [41].

40 Articles and websites discuss the history of Disaster medicine and positively portrays the use of trained disaster medicine specialists. Web MD [41]		
	10 Roles of disaster medicine specialists.	Similarity of Frequency in 40 Articles.
1	To identify and immediately manage serious and life-threatening situations in disaster.	38
2	To care for and stabilize critically-ill patients of all age groups.	37
3	Can interpret diagnostic imaging and can apply pharmacological knowledge.	36
4	Can use knowledge to select and manage appropriate equipment.	28
5	Know what resources, treatment, diagnostic tests or preventive techniques you could use for treating the patient.	31
6	Expert in Disaster preparedness, disaster planning steps to implement.	34
7	Expert in disaster prevention, response and recovery plan implementation.	34
8	Leadership skills to implement the mitigate disaster impact throughout disaster lifecycle.	30
9	Calm and composed, teamwork skills and good at multitasking.	22
10	Treat patients with illnesses of neurology, cardiology, pulmonology, renal issues, gastrointestinal problems, orthopedic concerns, pregnancy, gynecology, dermatology, and psychiatry.	33

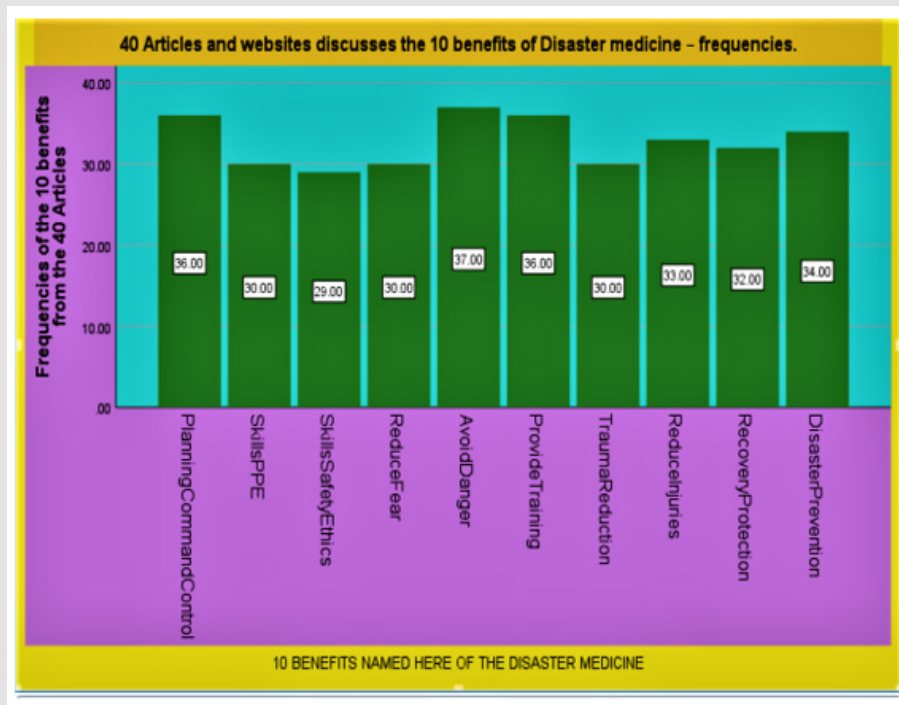
Results

The author of this article has provided the 5 different tables about duties of the disaster medicine specialist and the benefits of the disaster medicine (Supplementary Figures 1-4). Author has presented the ten different models for the mitigation effects of the disaster and named the major disaster relief organizations. The author has presented the four of the SPSS diagrams to present the findings from the reviewed articles as followed by scoping review. The SPSS diagrams have shown the numbers/ roles and the frequencies of the selected subjects in the scoping review. The Research Center in Emergency and Luca R [17] Disaster Medicine (CRIMEDIM; Novara, Italy) has been working since early 2000

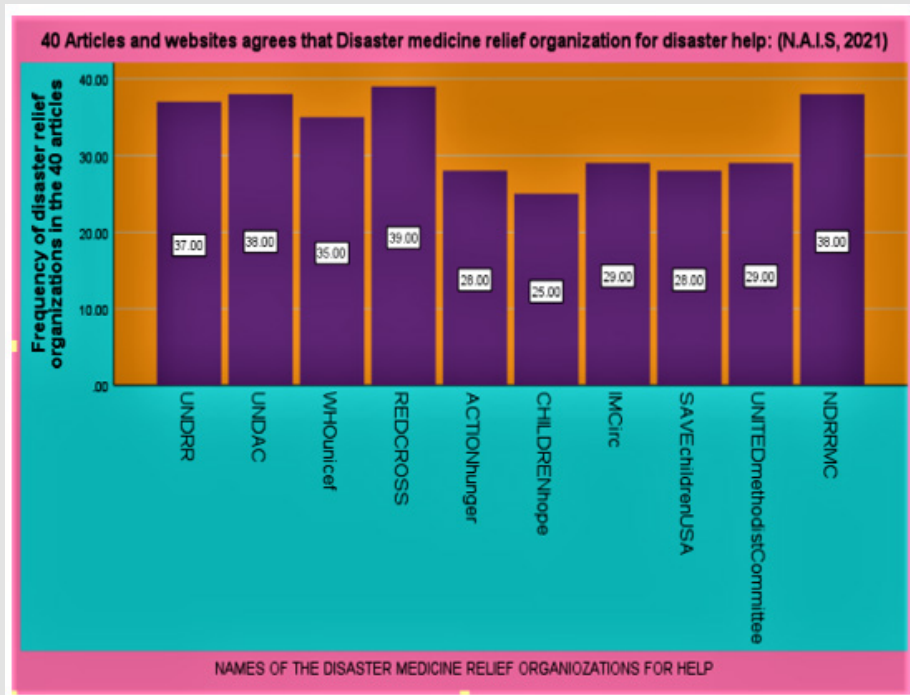
in trying to fill this gap. By fighting to include disaster medicine in the basic curriculum of medical students and implementing specific education programs on disaster medicine. CRIMEDIM experience can be seen as a successful example of how academia can strengthen the presence of disaster medicine education in the undergraduate and postgraduate path Luca R [17]. Hospitals are viewed as a haven of safety within a Amy HK [18] community in the aftermath of a natural or man-made disaster. Thus, the importance of disaster training for hospital personnel is paramount. Regardless of specialty all physicians will be called upon to serve. Yet, disaster training is not routinely incorporated into the curriculum of undergraduate medical education.



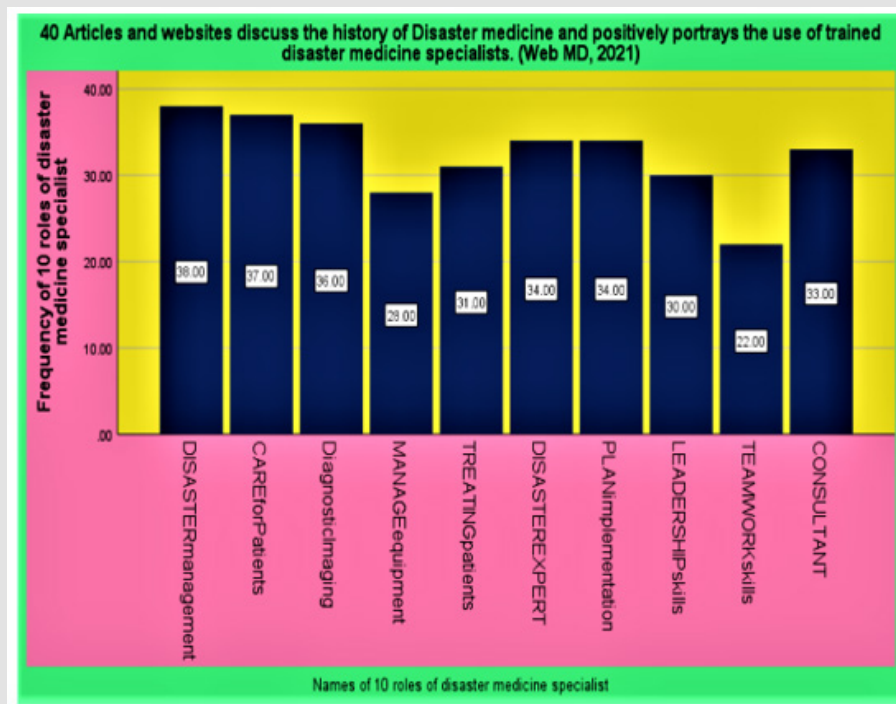
Supplementary Figure 1: 40 Articles and websites discusses the 10 duties of Disaster medicine specialist frequencies. Healthcare Administration.com [1].



Supplementary Figure 2: 40 Articles and websites discusses the 10 benefits of Disaster medicine - frequencies.



Supplementary Figure 3: 40 Articles and websites agrees that Disaster medicine relief organization for disaster help: NAIS [40].



Supplementary Figure 4: 40 Articles and websites discuss the history of Disaster medicine and positively portrays the use of trained disaster medicine specialists Web MD [41].

The development and implementation of a Amy HK [18] disaster management course for medical students should therefore be a priority. Improved education and training of all health Lauren W [19] professionals is a necessary step to ensuring that health system responders are appropriately and adequately primed for their role in disasters. Revising the organizing framework should assist disaster health educators in selecting competencies appropriate to their learning audience and identify gaps in current education and training. Using the hierarchical learning framework of competency sets in Lauren W [19] disaster medicine and public health. As well for optimized emergency management in Norman H [20] individual cases as for optimized mass medicine in disaster management the principle of the medical doctors approaching the patient directly and timely. Even close to the site of the incident is a long-standing marker for quality of care and patient survival in Germany. Regulative laws proper organization of resources equipment training and adequate delivery of medical Norman H [20] measures are key factors in systematic approaches to manage emergencies and disasters alike and thus save lives. Disaster medicine and humanitarian medicine are Cecile Stephanie S [21] inextricably linked and the terms are sometimes used synonymously.

A genealogical history-of-knowledge approach demonstrates that the concept of disaster medicine emerged in the early 20th

century in Switzerland in the context of industrialization. The Cold War constituted the historical constellation in which disaster medicine was developed in Cecile Stephanie S [21] West Germany during the 1960s and 1970s in a way that was paradigmatic for other Western European countries (Figures 1 & 2). Extensive mitigation activities are a prerequisite Robert MG [22] for the response and recovery activities that must follow a large-scale mass casualty event. We have never seen the number of casualties in the United States we are preparing for today. We do have the threat of an enemy who will strike within the United States with the purpose of inflicting mass numbers of casualties on the civilian population. We must maintain the perspective that even the smallest chance of such an incredibly devastating event, whether manmade or natural warrants our full attention Robert MG [22]. Traditional clinical oriented medical education might Tong S, et al. [23] lead to a huge gap between the knowledge level on disaster medicine and the current needs of disaster preparedness. Continuing medical education and public education plans on disaster medicine via media should be practice oriented and selectively applied to different populations and take the knowledge levels and training needs into consideration. Training needs of disaster Tong S, et al. [23] medicine were generally high among the surveyed. 'Lecture' and 'practical training' were preferred teaching methods.



Figure 1: Traditional Model disaster management Ahmed, et al. [26].

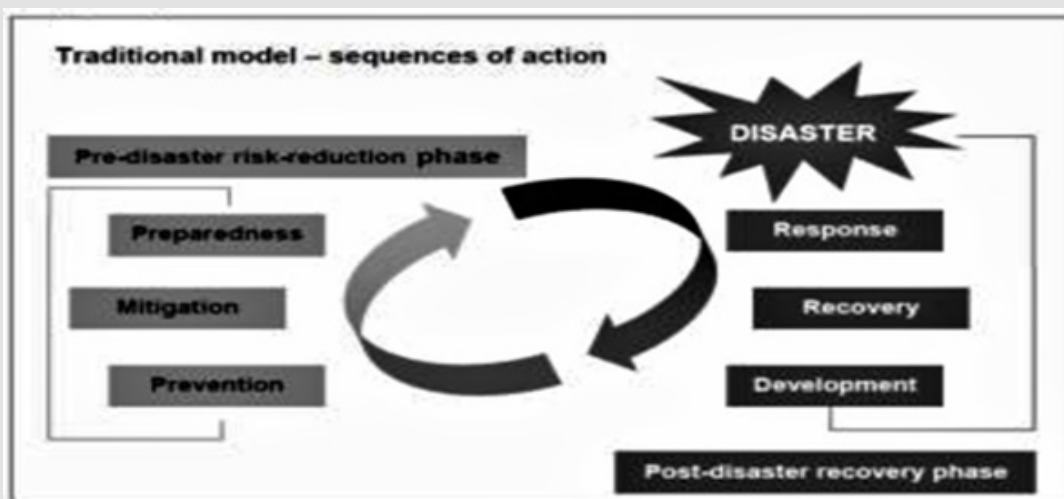


Figure 2: Traditional Model disaster management Blackie, et al. [27].

Discussion

Erik Noji, mentioned tongue in cheek, Noah as the Selim [24] first disaster manager during a lecture in 2005. The canonical description of “The Genesis Flood” does describe Noah as a master planner and executer of an evacuation of biblical proportions. After gaining knowledge of a potential catastrophic disaster, he planned and executed an evacuation to mitigate the effects of the “Genesis Flood” by building the Ark and organizing a mass exodus. Throughout history management of large disasters was conducted by the military. Indeed, the military still plays a large role in disaster Selim [24] response in many countries particularly if the response

is overseas and prolonged. Despite a 2009 recommendation from the AMA Todd P, et al. [25] that disaster medicine and public health response training should be implemented in medical schools, anywhere from 31% to 47% of medical education programs lack a formalized disaster medicine curriculum. A need for disaster medicine response training for University of Alabama medical students in an appropriately socially distanced format was identified during the COVID-19 pandemic. Through collaboration with the FEMA CDP our UAB faculty Todd P, et al. [25] were able to successfully deliver a novel virtual disaster preparedness and response course. Disaster response demands a large workforce covering Alba RG, et al. [26] diverse professional sectors.

A systematic review of English-language articles was performed on PubMed, Google Scholar, Scopus, ERIC, and Cochrane Library. The systematic review revealed that the largest number of papers were mainly focused on the Alba RG, et al. [26] health care sector and presented a lack of agreement on the terminology used for competency-based definition. Being one of Europe's densest populated countries Luc JM, et al. [27] with multiple nuclear installations a large petrochemical industry and at risk for terrorist attacks the Netherlands bear some risks for incidents. This reported knowledge was tested by a mixed set of 10 theoretical and practical questions. Despite a Luc JM, et al. [27] high willingness to respond our students are not educated for disaster situations. Disaster medicine lies at the intersection between medicine Alexander H [28] emergency management and public health. However, there is a dearth of trained disaster medicine practitioners in the United States and filling that gap will require funding for disaster medicine training programs. Disaster medicine training includes leading the hospital response to everything from power outages to the pandemic of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) Alexander H [28] that causes coronavirus disease (COVID-19).

With the strong support and involvement of all WHO regional offices the Shuhei N, et al. [29] HEALTH EDRM RN now works with more than 200 global experts and partners to pursue its mission. The first Core Group Meetings of the HEALTH EDRM RN were held on 17 and 18 October 2019 and concluded with the HEALTH EDRM RN. The activity priorities to

- (1) Promote operational research to better meet the needs of emergency and disaster exposed individuals and communities and efforts to translate science to policies and programs and
- (2) Strengthen the Shuhei N, et al. [29] research capacity of the health EDRM community.

When disasters strike local physicians are at the Mark KH [30] front lines of the response in their community. Curriculum guidelines have been developed to aid in preparation of family medicine residents to fulfill this role. Disaster responsiveness has recently been added to the Residency Review Committee Program Requirements in Community Medicine with little family medicine literature support. Here the evidence in support of disaster training in a variety of settings is reviewed. As disaster preparedness and disaster training Mark KH [30] continue to be implemented the authors call for increased outcome-based research in disaster response training. The need for continual disaster medicine training is high Bo H, et al. [31] health professionals should be equipped with knowledge and skills for disaster management. The most of participants (67.3%) received informal disaster medicine training and only a few (12.7%) participated in disaster drills.

Most of the participants wanted to get continual education about disaster medicine training (89.8%) but prefer on-line training course for the flexibility of time scheduling and travel through China. Disaster Medicine training is not included in Bo H, et al. [31-43] medical education curriculum in China even though the country has suffered various disasters annually.

Conclusion

To conclude, the field of disaster medicine is playing vital role to save human lives during the disaster. Governments or organizations following the disaster life cycle consisting of disaster preparedness, planning, management, mitigation, and disaster recovery. Disaster management plan implementation before the disaster struck and during the disaster, following disaster recovery made it possible to achieve the positive results. The role no politics in manmade disaster such as current war in the Ukraine made it difficult for the medical personal to manage the disaster and to provide medical other help to local people.

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