RÉSUMÉ
Soins de santé hospitaliers problèmes de gestion anti-crises en Géorgie

Introduction. Le Caucase du Sud et la Géorgie en particulier sont considérés comme des zones à haut risque de conflits de guerre en raison de leur situation géographique. Par conséquent, des plans de préparation aux catastrophes d’urgence doivent être en place afin que les hôpitaux puissent faire face au nombre accru de victimes et fournir des traitements médicaux efficaces.

L’objectif de l’étude était d’évaluer la préparation aux catastrophes des hôpitaux et d’identifier les facteurs qui l’influencent.

Materials and methods. As part of the quantitative research method, a survey of 50 top managers of six medical institutions in the regions bordering the separatist regions of Georgia was conducted.

Results. Emergency management is planned in hospitals. However, most of the respondents (71.4%) have not done emergency training and disaster management practices are not conducted (80%). Only half of the respondents (52%) indicated that there is a hospital emergency/disaster preparedness committee, which does not frequently hold regular meetings (79.6%). According to 64% of the respondents, the emergency/disaster committee of the hospital is not multidisciplinary and does not include qualified individuals from various directions. Many respondents agree that the hospital uses a triage system (98%) and has a documented method of patient tracking (82%). However, according to 64% of the respondents, the emergency/disaster committee of the hospital is not multidisciplinary and does not include qualified individuals from various directions. Many respondents agree that the hospital uses a triage system (98%) and has a documented method of patient tracking (82%). However,

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most of respondents said they do not have the ability to track patients transferred from their institution to another (70%) and the institution cannot control scheduled patients who are discharged during catastrophic situations (72%). The management of critical incidents was not adequately integrated into the emergency plan.

Conclusions. The results revealed a moderate level of crisis and disaster preparedness in hospitals. To improve the level of preparedness for crisis and disaster events, certain changes are advised to be made in hospitals. These results demonstrate a lack of interest in emergency management planning training. Special training is required to raise the awareness of hospital staff on the management of emergency situations.

Keywords: anti-crisis management, emergency disaster preparedness, crisis situations, healthcare system, Georgia.

INTRODUCTION

A disaster causes many people to become ill or injured, which is a heavy burden on the health system, causing significant social and financial harm to the state. Disasters are both natural (earthquakes, tsunamis, floods) and man-made (wars, terrorism). Disaster management requires risk assessment, structural and non-structural prevention and emergency planning, warning, and evacuation preparedness. Hospitals play a major role in disaster management. Their prompt and efficient service can be crucial in reducing the death rate caused by disasters.

To overcome the obstacles presented by wars and natural disasters, hospitals must improve their disaster preparedness. Hospital disaster preparedness is a continuous process that aims to ensure the resilience and functioning of the hospital during disasters and to respond effectively to quickly overcome negative consequences. Hospitals should have a proper disaster preparedness plan in place. Because of the increase in terrorism-related incidents, the concept of disaster preparedness was developed in the early 1990s.

The ability of a hospital to respond to disasters is determined by its size, functional capacity, availability of appropriate equipment, and availability of appropriately qualified health care personnel.

According to studies conducted in various countries, hospital staff has a relatively low level of knowledge about disaster preparedness planning, which was primarily due to a lack of disaster medicine training programs. Experts believe that developing a single concrete plan for disaster preparedness in hospitals is necessary in order to standardize protocols. The World Health Organization (WHO) has developed a special tool for assessing health system preparedness to deal with disasters, in order to ensure preparedness and response to emergency situations.

Due to its geographical location, the South Caucasus, particularly Georgia, has always been an object of special interest of dominant international actors. In the last 30 years of independence, Georgia has endured civil war and military conflicts with Russia (the Abkhazian-Samachablo conflict in the 1990s and the August 2008 war), resulting in many casualties and health damage, as well as limited opportunities for both military forces and civilians. The Caucasus region, especially Georgia, is still considered an explosive zone of war conflicts. Several studies have been carried out to evaluate various aspects of disaster preparedness.

Selon 64% des répondants, le comité d’urgence/catastrophe de l’hôpital n’est pas multidisciplinaire et ne comprend pas de personnes qualifiées provenant de diverses directions. Un grand nombre de répondants conviennent que l’hôpital utilise un système de triage (98 %) et dispose d’une méthode documentée de suivi des patients (82%). Cependant, la plupart des répondants ont déclaré ne pas avoir la capacité de suivre les patients transférés d’un établissement à un autre (70%) et l’établissement ne peut pas contrôler les patients programmés qui sortent lors de situations catastrophiques (72%). La gestion des incidents critiques n’était pas adéquatement intégrée au plan d’urgence.

Conclusions. Les résultats ont révélé un niveau modéré de préparation aux crises et catastrophes dans les hôpitaux. Afin d’améliorer le niveau de préparation aux crises et catastrophes, il est conseillé d’apporter certains changements dans les hôpitaux. Ces résultats démontrent un manque d’intérêt pour la formation en planification de la gestion des urgences. Une formation spécifique est nécessaire pour sensibiliser le personnel hospitalier à la gestion des situations d’urgence.

Mots-clés: gestion anti-crise, préparation aux catastrophes d’urgence, situations de crise, système de santé, Géorgie.
**The Objective of the Study**

was to assess hospitals’ disaster preparedness in Georgia and identify the factors that influence it.

**Materials and Methods**

A quantitative research study was conducted in six hospitals in the regions bordering the separatist regions of Georgia. A total of 60 respondents were enrolled in this study, through randomized (targeted) simple selection. The respondents were administrative managers, heads of hospital departments, two of which were state and four private medical organizations. From the entire 60 distributed questionnaires, 50 were filled out (83.3% response rate). The main criterion to get involved in the study was one-year administrative experience, while the refusal to participate in the study was the exclusion criterion. A self-administered questionnaire was selected as a data collection tool. The study was conducted during the period of September-November 2022. SPSS version 20 was used for the statistical analysis of the results.

To assess the preparedness of hospitals to deal with disasters, a self-administered questionnaire was used, which was developed based on special questionnaires developed by the WHO9 and the American College of Emergency Physicians10. The questionnaire includes 79 priority action items sorted into 13 major components: security and defense (4 items), logistics (15 items), emergency management planning (13 items), hospital preparedness and training (6 items), case management system (6 items) disaster preparedness committee (3 items), triage (4 items), patient care (3 items), disaster stress management (5 items), pharmacy services (4 items), laboratory services (6 items), management of fatal incidents (4 items), communication, warning, message (6 items).

The study protocol was approved by the Bioethics Committee of the Caucasus University (No 2022-32) in January 2022. Before participating in the study, all the participants signed an informed consent.

**Results**

Hospital disaster preparedness requires complex operations and a responsible attitude. Hospitals are the foundation of the healthcare system, the importance of which increases especially during emergencies and disasters.

**Defense and security**

According to our research, hospitals play an important role in ensuring the safety of patients during disasters. All hospitals have the necessary equipment for proper hospital operation. Every medical facility has a security guard on duty around-the-clock. If necessary, hospitals have the option to add a security guard. During an emergency, all facilities can provide full perimeter monitoring. There is a plan according to which information will be provided to the family members of the injured and also the influx of a large number of people will be controlled. Moreover, hospitals are monitored by video cameras placed at various locations within the hospital, to ensure optimal monitoring and control of hospital properties, entrances and exits. The overwhelming majority of respondents stated that hospitals have defense and security measures in place. This is a very high rating, which is crucial for the proper and safe treatment of patients.

**Logistics**

Electricity is essential for functioning of hospital equipment. Therefore, the hospital’s power supply should be well-organized and secure. In the case of an emergency, a backup power supply must be available and operational. According to the survey results, all hospitals have a power generator that can provide electricity for three days if needed. The generator undergoes a complete load test once a year. According to 66.7% of respondents, the hospital has a backup source of fuel to ensure a three-day supply. Most hospitals, according to 66.7% of respondents, have fuel in secure areas.

Continuous water supply is essential for the hospital. To ensure continuity of water supply, each hospital should have a secondary source of water to be used in case the primary source fails to provide adequate water supply. According to 83.3% of respondents, hospitals can provide continuous water supply. Moreover, some hospitals have a secondary water source, meaning that while some receive their water from a municipal source, others have their own water supply. According to 66.7% of respondents, hospitals have 3 days of food supplies for staff and patients.

Most hospitals have enough oxygen supplies for 3-4 days. Medical oxygen is used in operating rooms, emergency rooms, and intensive care units. A well-ventilated, secure location to store medical oxygen is necessary to assure an adequate supply.

Hospital operations must be safe and efficient, which is why technical and engineering departments are so important. Hence, technical and engineering staff must be accessible around-the-clock. Most respondents indicated that technical and engineering staff are available 24 hours a day. Accordingly, hospitals function adequately in case of problems with generators, power supply, some vital equipment (monitors, ventilators).

Heating, ventilation, and air conditioning systems are critical to the operation of hospitals, but
they fail during disasters. According to most respondents, all facilities have the ability to target heating, ventilation, and air conditioning systems.

Hospital wastes, including solid and liquid wastes, are hazardous to human health and may cause problems. As a result, having an efficient waste management system in hospitals is crucial, especially in times of emergency. The management of contaminated waste in the hospital is organized, according to 100% of the respondents. Details about defense, security and logistics are presented in Table 1.

### Emergency Management Plan

Most respondents (92%) confirmed that their institution has an emergency management plan. The emergency management plan, according to 74% of respondents, outlines both internal and external emergencies. However, nearly one-third of respondents (32%) noted that the plan is inaccessible to administration and staff. The plan, according to 62% of respondents, does not cover all types of disaster situations.

In addition, more than half of respondents (54%) agree that the plan includes written agreements regarding the recruitment of additional staff if necessary. 88.0% of respondents agree that the plan includes measures to cancel scheduled services (e.g., scheduled surgeries) during emergency situations. It is noteworthy that according to 70% of the respondents, according to the plan, psychologists and psychiatrists are not involved in the processes. 96.0% of respondents answered that the plan includes provisions for continuing with scheduled operations throughout the recovery phase.

Special training is required for hospital employees in emergency service. According to the survey's
results, 71.4% of the participants did not participate in emergency event training at least twice a year. Only 28.6% gave a positive answer. Hospital staff must be on maximum alertness for emergency situations since the purpose of hospitals during emergencies and catastrophic events is to mobilize maximum resources to ensure a successful management of the recovery of victims. The results show that special training is required to increase hospital staff awareness of emergency situation management. Medical personnel are untrained in emergency management processes, according to studies conducted in some countries5,6, according to some studies. However, many trainings are held in hospitals to improve staff skills17. Details about emergency management plan are presented in Table 2.

### Hospital preparedness and training

According to 79.2% of the respondents, the institution does not conduct training of emergency situations twice a year. According to 71.8% of respondents, the institution does not participate in at least one disaster response training per year. These results demonstrate a lack of interest in emergency management planning training. Having a written emergency management plan is important for every hospital, but a written plan does not guarantee preparedness, and it is also important to train hospital staff on how to properly implement the plan and increase their level of preparedness for emergency situations. Hospital staff will be more informed about their responsibilities through proper training. There was no evacuation of staff or patients in the institution in the previous 12 months, according to 88.0% of respondents. According to 68.0% of respondents, the institution uses the following accounts of the actions to determine the strengths and weaknesses of the emergency action plan.

### Case management system

A case management system exists in the hospital, according to 82% of respondents, but disaster management drills are not held at least twice a year, according to 80%. There is no procedure for appointing a disaster management manager, according to 60% of respondents. 56% of respondents said their staff is ready for action if the disaster management system is activated. During an emergency, the incident management system manager’s role is critical because he is the person in charge of all aspects of the emergency response; it is up to him to manage incidents, the use of resources, and he is in charge of the administrative team to which he reports because he has sufficient experience and authority to give instructions or orders. Details about hospital preparedness, training and case management system are presented in Table 3.

### Table 2. Planning of the management of emergency situations.

<table>
<thead>
<tr>
<th></th>
<th>No</th>
<th>Yes</th>
<th>Chi-square</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does the facility have an emergency management plan that addresses the four phases of emergency management: preparedness, response, mitigation, and recovery?</td>
<td>8.0%</td>
<td>92.0%</td>
<td>2.35</td>
<td>5</td>
<td>0.799</td>
</tr>
<tr>
<td>Is the emergency management plan intended for dealing with both internal and external emergencies?</td>
<td>26.0%</td>
<td>74.0%</td>
<td>8.79</td>
<td>5</td>
<td>0.118</td>
</tr>
<tr>
<td>Is the plan easily accessible to administration and staff?</td>
<td>32.0%</td>
<td>68.0%</td>
<td>5.69</td>
<td>5</td>
<td>0.338</td>
</tr>
<tr>
<td>Does the plan cover all types of disaster situations?</td>
<td>62.0%</td>
<td>38.0%</td>
<td>11.13</td>
<td>5</td>
<td>0.049</td>
</tr>
<tr>
<td>Does the plan include arrangements for rapid transfer of patients from the emergency department to the hospital?</td>
<td>16.3%</td>
<td>83.7%</td>
<td>6.20</td>
<td>5</td>
<td>0.287</td>
</tr>
<tr>
<td>Does the plan include early discharge of scheduled patients during emergency situations and daily ambulatory care for them?</td>
<td>40.8%</td>
<td>59.2%</td>
<td>9.89</td>
<td>5</td>
<td>0.078</td>
</tr>
<tr>
<td>Does the plan include hiring more employees if necessary?</td>
<td>46.0%</td>
<td>54.0%</td>
<td>11.68</td>
<td>5</td>
<td>0.039</td>
</tr>
<tr>
<td>Does the plan include cancellation of scheduled services (e.g., surgeries) during emergencies?</td>
<td>12.0%</td>
<td>88.0%</td>
<td>5.63</td>
<td>5</td>
<td>0.344</td>
</tr>
<tr>
<td>Are psychologists and psychiatrists included in the processes, as per the plan?</td>
<td>70.0%</td>
<td>30.0%</td>
<td>18.98</td>
<td>5</td>
<td>0.002</td>
</tr>
<tr>
<td>Does the plan include provisions for returning to scheduled operations during the recovery phase?</td>
<td>4.0%</td>
<td>96.0%</td>
<td>10.94</td>
<td>5</td>
<td>0.053</td>
</tr>
<tr>
<td>Has the plan been shared with the appropriate local and state emergency agencies (organizations)?</td>
<td>20.0%</td>
<td>80.0%</td>
<td>5.13</td>
<td>5</td>
<td>0.400</td>
</tr>
<tr>
<td>Do all employees have access to an emergency plan?</td>
<td>68.0%</td>
<td>32.0%</td>
<td>4.57</td>
<td>5</td>
<td>0.471</td>
</tr>
<tr>
<td>Do emergency department staff undergo emergency training at least twice a year?</td>
<td>71.4%</td>
<td>28.6%</td>
<td>14.19</td>
<td>5</td>
<td>0.014</td>
</tr>
</tbody>
</table>
Disaster Preparedness Committee

Only half (52%) of respondents reported having a hospital emergency/disaster preparedness committee to provide staff guidance. Most respondents (79.6%) stated that the emergency/disaster committee does not frequently hold regular public meetings. According to 64% of the respondents, the emergency/disaster committee of the hospital is not multidisciplinary. Appropriate preparedness, experience, education, and resources are required to handle crisis events effectively. To do this, the disaster preparedness committee should be multidisciplinary and include qualified, experienced personnel from various fields. The disaster preparedness committee should be multidisciplinary and comprise competent, experienced individuals from diverse professions to achieve this. Members of the disaster preparedness committee should be on hand during crisis situations to guide hospital employees, make decisions, and manage the situation sensibly using the available facilities.

Triage

In the study, the triage component had the highest rate. The hospital, according to 98% of respondents, uses a triage system in which patients are classified with color labels (red, black, green, and yellow) based on the severity of their illness and the urgency of medical interventions. In addition, for the large number of victims, each clinic has an alternate processing area. Patients must be triaged depending on their medical needs since mass casualty situations might overload medical institutions. Getting the patient to the appropriate location at the appropriate time so they can receive the best possible care is the aim of triage. When the hospital’s workload exceeds the available skilled treatment, triage is used. A qualified nurse conducts triage in hospitals, quickly evaluating patients’ conditions and classifying them according to the severity of their illnesses. Each patient is prioritized for hospitalization and transferred to the appropriate treatment facility. In the triage system, patients are classified mainly in three colors: red for serious cases that require immediate intervention, yellow for patients who need intervention but can wait for one to two hours, and green for mild conditions that may require treatment but do not require hospitalization.

Monitoring the patient

The presence of color markings for patient tracking is a problem especially during emergencies. A large percentage of respondents (82%) agree that the institution has a written method for tracking patients (marked tracks). However, 70% of respondents said they do not have the ability to track patients transferred from their institution to another.
Furthermore, according to 72% of respondents, the institution cannot control scheduled patients who will be discharged during disasters.

All hospitals have written signs and labels indicating hospital departments, but there are no colored lines specifying pathways to help patients in moving to specific departments. In such cases, patients ask hospital staff for the location of their preferred unit. Patients and their visitors will find it simpler to navigate the hospital due to colored lines on the floor or walls.

### Managing stress during disasters

The process of responding to crisis situations necessitates effective stress management. The institution does not have a critical incident stress management team, according to 74% of respondents. Mental health services are not available during and after a disaster, according to 44% of respondents. Mental health team members are not trained in crisis and emergency care, according to 72% of respondents. As 80% of respondents say, there is no plan to assess disaster response workers’ physical and psychological well-being (Table 4).

### Availability of pharmaceutical and laboratory services

Responding to any emergency requires the use of pharmaceutical and laboratory services. According to 73.5% of the respondents, the pharmacy does not keep stock of antidotes. The pharmacy, according to most respondents, has control over the daily usage of medications. The pharmacy has a one-month supply of medicines, according to 98% of respondents. There is a plan, as 82% of the respondents claim, to make sure the pharmacy gets medications from the supplier promptly in emergency situations. 80% of respondents indicated that laboratory personnel are trained to provide increased responsiveness during emergency situations. 96% of those surveyed answered that the plan outlines how to supply reagents in urgent situations. There is a plan in place for emergency scenarios, according to 82% of respondents, so that the pharmacy can make sure that medications get from the supplier immediately. According to 60% of responders, there has not been any improvement in the blood supply system during the past 12 months (Table 5).

<table>
<thead>
<tr>
<th>Table 4. Disaster preparedness committee, triage, patient care, managing stress during disasters.</th>
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<tbody>
<tr>
<td>Does the hospital have an emergency/disaster preparedness committee and does it provide staff leadership?</td>
</tr>
<tr>
<td>Is the hospital emergency/disaster committee multidisciplinary?</td>
</tr>
<tr>
<td>Are there regular public meetings of the emergency/disaster committee?</td>
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<tr>
<td>Triage</td>
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<tr>
<td>Does the hospital use a triage system?</td>
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<tr>
<td>Does the protocol include international triage symbols? (red, black, green, yellow)</td>
</tr>
<tr>
<td>Is the staff aware of the significance of each sign?</td>
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<tr>
<td>Does the facility include an alternative processing space in case there is a high volume of victims?</td>
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<table>
<thead>
<tr>
<th>Monitoring the patient</th>
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<tbody>
<tr>
<td>Does the facility have a written method of patient care?</td>
</tr>
<tr>
<td>Is it possible for the facility to track patients who are transferred to another local facility?</td>
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<tr>
<td>Can the facility keep an eye on scheduled patients who discharged during a disaster?</td>
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<table>
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<tr>
<th>Managing stress during catastrophes</th>
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<tr>
<td>Is there a critical incident stress management team or equivalent mental health services at the facility?</td>
</tr>
<tr>
<td>Are mental health services available during and after a disaster?</td>
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<tr>
<td>Are members of the mental health team trained in crisis care and emergency care?</td>
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<tr>
<td>Are mental health services represented on the emergency management planning committee?</td>
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<tr>
<td>Is there a plan to assess disaster response workers’ physical and psychological well-being?</td>
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</table>
Management of fatal cases

76% of those surveyed reported there is a victim management plan. The institution does not have any refrigerators to accommodate the victims, as 66% of the responders answered. 60% of respondents answered that morgue staff members lacked training. In case of mass casualties, the institution cannot assign extra storage, according to 76.4% of the respondents.

Communication, warning, notification system

Communication is an important component during emergency situations. The results of the survey showed that most hospitals (96%) have a communication system capable of receiving and sending emergency, emergency alert and notification information. 77.4% of the respondents indicated that the institution could receive warnings from external agencies about an imminent emergency. Most of the respondents (63.3%) indicated that the hospital has a proper system (up-to-date contact information) to inform both on-duty and off-duty staff about emergency situations and call them to work in case of emergencies. Our research results are consistent with other studies, which sustain that effective internal and external communication systems are essential during emergency situations, to ensure personnel coordination with various healthcare facilities, governmental agencies, and community organizations.

Communication disruptions in healthcare institutions can be brought on by damaged or overloaded internal or external communication systems. Miscommunication isolates the hospital from the outside world, including various disaster response services, and complicates the hospital’s ability to receive appropriate assistance. Loss of communication at the internal level has a negative impact on the coordination of disaster response, as individual services and members of the operational headquarters are unable to exchange information. According to our research, healthcare facilities must have an effective interdisciplinary plan to prevent communication damage during disasters.

Integrating information management during an emergency is crucial for patient and hospital coordination, data storage, management, and reporting. The Information Technology (IT) department plays an important role in keeping the information system functioning well and maintaining accurate patient records. The study’s findings are consistent with those of other studies, which emphasize the value of keeping accurate records on patients before, during, and after an emergency because some patients may have been taking their medications continuously for a long time and may still need to do so in the event of a catastrophe. Record keeping also allows reimbursement for disaster relief (Table 5).

We calculated the average preparedness value by components across hospitals to assess the state of the healthcare system. The triage system had the highest average percentage of positive responses (80.50%), followed by the communication, alerting, and arrival component (77.26%), pharmacy service (76.77%), and laboratory service (72.58%). The following components had the lowest results: management of fatalities (43.50%), stress management during critical situations (36.24%), and facility preparedness and training (28.18%).

With an average score of 56.57%, the results revealed a moderate level of preparedness for crisis
Effective preparedness for crises and disasters is a continuous process that must be continuously supervised and monitored by the health care system. The results of this analysis indicated a moderate level of preparedness for emergencies. Hospital strengths were identified in the triage system, as well as the communication, warning, and notification component, while hospital weaknesses were identified in the medical organization’s preparedness and training component, as well as the stress management component during critical situations.

Disasters can cause short-term disruptions in the family, or they can be long-term and dramatically change the lives of family members, especially when there is loss. The psychological and social effects of catastrophic occurrences harm the affected population’s mental health and psychosocial well-being. To lessen the negative effects of trauma in victims, it is crucial to include psychologists and psychiatrists in hospitals.

The study found that medical organizations were extremely underprepared for disasters, with a very low rate of personnel training. In this regard, the medical organization’s staff training and preparedness always ensure a better outcome for the victims.

The study’s findings revealed that hospitals have a moderate level of disaster preparedness. The received conclusions and recommendations will help to raise the level of education of medical organization staff, to ensure effective management of crisis situations and catastrophic events.
CONCLUSIONS

- Mental health and psychosocial well-being issues must be addressed in the hospital’s emergency plan. Psychologists and psychiatrists must be always a part of the provision of hospital services, not just during disasters.
- It is mandatory to conduct emergency drills and trainings in various areas of health care, with the goal of increasing personnel knowledge and improving their ability to manage emergencies more effectively.
- It is necessary to increase the hospitals’ capacity to effectively manage the affected population, and to better manage the large number of disaster cases.
- Primary care personnel must be trained and integrated into emergency planning, so that they can manage relatively mild cases and reduce hospital overload.
- All personnel better be aware of the emergency management strategy, so their level of awareness can be raised.
- It is necessary to have disaster preparedness committee in hospitals.
- Hospitals can set up an emergency management system that will be led by trained employees.

Author Contributions:
TV., and K.O. conceived the original draft preparation. TV., and K.O. were responsible for conception and design of the review. TV., and K.O. were responsible for the data acquisition. TV., and K.O. were responsible for the collection and assembly of the articles/published data, and their inclusion and interpretation in this review. TV., and K.O. contributed equally to the present work. All authors contributed to the critical revision of the manuscript for valuable intellectual content. All authors have read and agreed with the final version of the manuscript.

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REFERENCES