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Preparedness of Public Hospitals for Disasters[1]

Devlet Hastanelerinin Afetlere Hazırlık Durumları

Murat SEMERCİ[2], Saime ŞAHİNÖZ[3]

Öz

Bu çalışmanın amacı, Türkiye'deki hastanelerin afete hazırlık düzeyini belirlemek ve hastanelerin afete hazırlığının hastanenin özelliklerine göre farklılık gösterip göstermediğini tespit etmektir. Araştırmanın evrenini Sağlık Bakanlığına bağlı hastaneler oluşturmaktadır. Örneklem olarak 210 hastane seçilmiştir. Veriler hastanelerin yöneticilerinden veya görevlendirdikleri personelden anket yöntemiyle toplanmıştır. Veri toplama formu olarak Dünya Sağlık Örgütü tarafından geliştirilen kılavuzun Türkçe versiyonu kullanıldı. Araştırma sonucunda hastanelerin ortalama puanının 156,83±21,43 olduğu belirlendi. En yüksek ortalama puan komuta kontrol (12,93±1,37) alt boyutundan, en düşük ortalama puan ise insan kaynakları (22,48±4,80) alt boyutundan alınmıştır. Hemşire başına düşen günlük hasta sayısına göre toplam afete hazırlık puanları arasındaki farkın anlamlı olduğu belirlendi.

Anahtar Kelimeler: Afet, Afet Hazırlığı, Afet Planlaması Afet Yönetimi, Hastaneler

ABSTRACT

The purpose of this study is to determine the level of preparedness for disasters in Turkish hospitals and to determine whether hospital disaster preparedness differs depending on hospital characteristics. The population of this study consists of hospitals affiliated with the Ministry of Health. 210 hospitals were selected as the sample. Data were collected from the hospital directors and staff commissioned by the hospital using a questionnaire method. The Turkish version of the guide developed by the World Health Organization was used as the data collection form. The results of the survey revealed that the average score of hospitals was 156. 83±21. 43. The highest mean score was obtained for the command control subdimension (12. 93 ± 1. 37), and the lowest mean score was obtained for the human resources subdimension (22. 48 ± 4. 80). It was found that there was a large difference in the overall disaster prevention score depending on the number of patients per day per nurse.

Keywords: Disasters, Disaster Preparedness, Disaster Planning, Disaster Management, Hospitals

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[2] **Corresponding Author:** Gümüşhane Üniversitesi Sağlık Bilimleri Fakültesi, muratsemerci90@gmail.com, ORCID: 0000-0002-0840-7134 [3] Ordu Universitesi Tıp Fakültesi, drsaime@hotmail.com, ORCID: 0000-0003-0915-9344

INTRODUCTION

Disasters are events that cause great economic damage, illness, death, and disability and are characterized by long-lasting effects (Skolnik, 2016). Disasters have been one of the crucial issues around the world in recent years. It was severe in terms of loss of life and property, and its frequency is gradually increasing (Liu & Ota, 2017). In 2021, 432 natural disasters were reported that killed 10 492 people, affected 101.8 million people and caused approximately $252 billion in economic losses (CRED, 2022). In addition, more than 6 million deaths due to COVID-19 and approximately 565 million confirmed cases of COVID-19 have been reported globally. In Türkiye, there were more than 15 million cases and approximately 100,000 deaths (WHO, 2022). As a result of the Kahramanmaraş centered earthquakes that occurred on February 6, 2023, more than 15 million people were affected by the earthquake and 50,783 people lost their lives (WHO, 2023). It is estimated that the total burden of the disaster caused by the earthquake on the Turkish economy is approximately 104 billion dollars, and this magnitude may reach approximately 9 percent of the national income in 2023 (T.C. Cumhurbaşkanlığı Strateji ve Bütçe Başkanlığı, 2023).

It is important to keep hospitals safe, especially during emergencies and natural disasters, as these healthcare facilities need to be able to withstand and fully operate at such times (Linh & Hanh, 2020). In case of a disaster, the hospital is expected to provide service with its resources without any outside help for the first 72 hours (Hastane Afet ve Acil Durum Planları (HAP) Uygulama Yönetmeliği, 2020). Hospitals, where even the smallest problems (such as water and power cuts) in daily life cause big problems, have to continue their routine operations and meet the increasing demand due to the disaster. For this purpose, the Ministry of Health of the Republic of Türkiye has made it obligatory to make Disaster and Emergency plans in all hospitals, based on the Hospital Disaster and Emergency Plan Preparation Guide (T.C Sağlık Bakanlığı, 2016).

The main purpose of a hospital emergency/disaster plan is to optimally prepare the hospital's staff and institutional resources for different disaster situations. When hospitals are not prepared to respond effectively to emergencies and disasters, it leads to increased morbidity and mortality of the injured, and damage to the hospital's staff and facilities (Christou, 2021). With well-structured health services, the impact of disasters can be reduced, and a more efficient response can be achieved (Chan, 2017).

In Türkiye before 2015, hospitals made disaster plans without a standard format. In studies, it was found that hospitals did not have disaster preparedness efforts, hospital disaster plans were missing or were inadequate, and hospitals were not prepared for disasters (Balçık Yalçın et al., 2014; Top et al., 2010; Türk Tabipler Birliği, 2009).

In studies conducted in recent years, it has been determined that there are hospital disaster plan teams, but these team members do not know their duties and responsibilities in the hospital disaster plan, that Emergency Health service employees find the disaster drills and disaster training insufficient and they have insufficient knowledge in responding to disasters (Dinçer & Kumru, 2021; Kaynak & Kutlu, 2023; Pamuk Cebeci & Arberk, 2021). Contrary to these studies, in some studies, it was found that the disaster training and disaster preparedness levels of the hospital disaster team were at an acceptable level, and the employees' knowledge about the hospital disaster plan was at a mediumhigh level (Sarık & Cengiz, 2022). In another study conducted on nurses, it was found that they had a moderate level of knowledge and awareness (Avcı et al., 2022; Tercan & Şahinöz,2021).

This study stands out as it is a comprehensive study on the disaster preparedness of hospitals at the national level. It is one of the rare studies in which parameters such as hospital ownership, bed capacity, number of personnel, etc. are evaluated together.

METHODS

Research Questions

The study is a descriptive qualitative study. The study seeks answers to the following questions:

How is the preparedness of hospitals for disasters quantitatively? Does the hospital's ownership, role, region, number of general practitioners, number of emergency specialists, number of specialists, number of nurses/midwives, number of pharmacists, annual number of surgical operations, number of emergency physicians, total number of specialists, number of intensive care beds, number of daily admissions, number of patients per physician per day, number of patients per nurse per day affect the preparedness of hospitals for disasters?

Population and Sample of the Study

The population of the study consists of hospitals affiliated to the Ministry of Health in Türkiye. Sample calculation was made with the G Power 3.1.9.7 package program. Based on the mean score in the study of Ingrassia et al. (2016), the sample to represent the population was calculated with a significance level of 0.95, at a 95% confidence interval, a power of 80% and an effect size of 0.24. As a result of the statistical analysis, it was calculated that the study should be conducted in a minimum of 181 hospitals. Permission was requested from all provincial health directorates in Türkiye to conduct research in all public hospitals. The study was performed in 210 hospitals with emergency and disaster planners and managers who could obtain written consent from Provincial Health Directorates and hospitals.

Data Collection Method and Tools

The data were collected from the managers of the hospitals or the personnel appointed by them by telephone, e-mail and face-to-face. As the data collection form, a questionnaire prepared by the researcher asking about the general characteristics of the hospitals and the Turkish adaptation of the steps in the guide titled 'Hospital emergency response checklist: An all-hazards tool for hospital administrators and emergency managers'(WHO, 2011), developed by the World Health Organization were used. In the adaptation study, the statements in the relevant guide were translated into Turkish by a professional translator, checked again by the researcher, and adapted into Turkish to fit the terms in the Hospital Disaster and Emergency Plan guide. Another professional translator translated the statements in the relevant guide into English. Later researchers translated it into Turkish. Within the scope of the Emergency and Disaster Plan, the questionnaire consisting of a total of 92 statements was scored and analyzed by giving 0 points for the no option, 1 point for the yes planned option and 2 points for the yes completed option.

Statistical Analysis

The analysis of the study was performed using SPSS (Statistical Package for Social Science for Windows) package program version 22.0 and the significance level was accepted as $p<0.05$. In the analysis of the data, descriptive features are given as number and percentage distribution. The conformity of the data to the normal distribution was evaluated with the Shapiro-Wilk test because the data were not normally distributed, and the variances were not homogeneous, and non-parametric tests were used. Kruskal Wallis H test and Man Whitney-U test were used between descriptive characteristics and total and sub-

dimension scores of disaster preparedness. In Kruskal Wallis H analysis, Mann Whitney-U test was used as a further analysis to determine where the difference originated from. Spearman correlation analysis was used to determine the relationship between total and sub-dimension scores of disaster preparedness. Cronbach's alpha analysis was used to evaluate the validity of the data.

RESULTS

The findings of the study are presented below.

It was determined that of the hospitals, 87.1% are state hospitals, 33.8% have a bed capacity of 11-60, 34.3% have 20 or more general practitioners, 56.2% have emergency specialists, 34.3% of them have 220 or more nurses/midwives, 37.1% have 21 or more emergency service physicians, 36.2% had 2001 or more daily admissions, 52.4% had daily admission of 0-20 patients per physician, 53.3% had 1-8 patients per nurse per day.

It was determined that the average score of total disaster preparedness of the hospitals was 156.83±21.43, the highest average score was obtained from the command control (12.93±1.37), and the lowest average score was obtained from the human resources (22.48±4.80) sub-dimensions (Table 1).

In this study, no significant correlation was found between total disaster preparedness and subdimension scores according to hospital ownership ($p>0.05$). It was determined that the scores of training and research hospitals were higher in the sub-dimensions of command and control, continuity of essential care services; the scores of state hospitals were higher in the sub-dimensions of communication, safety and security, triage, surge capacity, human resources, logistics and supply management, post-disaster recovery and total disaster preparedness scores.

No significant relationship was found between total and sub-dimension scores of preparedness for disasters according to the bed capacity of hospitals ($p>0.05$). Hospitals with 11-60 bed capacity had lower scores in total disaster preparedness; hospitals with 211 or more bed capacity had lower scores in surge capacity, post-disaster recovery, logistics and supply management sub-dimensions; and hospitals with 61-210 bed capacity had lower scores in triage sub-dimension.

According to the number of general practitioners of the hospitals, a significant relationship was found in the sub-dimension of surge capacity ($p<0.05$), while no significant relationship was found in other sub-dimensions and total scores of disaster preparedness.

Hospitals with 20 or more general practitioners in the sub-dimensions of command and control, postdisaster recovery; hospitals with 0-10 general practitioners in the sub-dimensions of safety and security, communication, surge capacity, triage and total scores of disaster preparedness; hospitals with 11-19 general practitioners in the sub-dimensions of human resources, logistics and supply management had lower scores. It was determined that the difference in the surge capacity subdimension stemmed from the group with 0-10 general practitioners.

A significant relationship was found in the safety and security sub-dimension ($p<0.05$), while no significant relationship was found in the other sub-dimensions and total scores of disaster preparedness according to the status of hospitals having emergency specialists. Hospitals without emergency specialists had lower scores in the sub-dimensions and total disaster preparedness scores, while hospitals with emergency specialists had lower scores in the post-disaster recovery subdimension.

A significant relationship was found in the safety and security sub-dimension according to the number of nurses/midwives in the hospitals ($p<0.05$). There was no significant correlation between total disaster preparedness and other sub-dimension scores ($p>0.05$). Hospitals with 221 or more nurses/patients had lower scores in command and control and post-disaster recovery sub-dimensions; hospitals with 0-74 nurses/patients had lower scores in surge capacity and human resources subdimensions; hospitals with 75-220 nurses/patients had lower scores in continuity of essential services, communication, triage, logistics and supply management sub-dimensions and total disaster preparedness scores. It was determined that the difference in the safety and security sub-dimension stemmed from the hospitals with 75-220 nurses/midwives.

A significant relationship was found between the sub-dimensions of safety, security and surge capacity according to the number of emergency service physicians of the hospitals ($p<0.05$). There was no significant relationship between total disaster preparedness and command and control, communication, triage, continuity of essential services, human resources, logistics and supply management and post-disaster recovery sub-dimension scores ($p>0.05$). Hospitals with 0-10 emergency physicians had lower scores in the sub-dimensions of command and control, communication, triage, continuity of essential services and total scores of disaster preparedness; hospitals with 11-20 emergency physicians had lower scores in the sub-dimension of human resources; and hospitals with 21 or more emergency physicians had lower scores in the sub-dimensions of logistics and supply management and post-disaster recovery. It was determined that the difference in the safety and security sub-dimension stemmed from the group with 21 or more emergency physicians, and the difference in the surge capacity sub-dimension stemmed from the group with 0-10 emergency physicians.

A significant relationship was found in the safety and security sub-dimension according to the number of daily applications to the hospitals ($p<0.05$), while no significant relationship was found between the total and other sub-dimension scores of disaster preparedness ($p>0.05$). Hospitals with 2001 and above applicants had lower scores in command and control and post-disaster recovery subdimensions; hospitals with 0-600 applicants had lower scores in communication, surge capacity and continuity of essential services; hospitals with 601-2000 applicants had lower scores in safety and security, triage, human resources, logistics and supply management sub-dimensions and total disaster preparedness scores. It was determined that the difference in the safety and security sub-dimension originated from the hospitals with 601-2000 applicants.

A significant relationship was found between the post-disaster recovery sub-dimension according to the number of patients per physician per day ($p<0.05$). No significant relationship was found between disaster preparedness and other sub-dimension scores ($p>0.05$). Hospitals with physicians with 0-20 patients per day in other sub-dimensions and total scores of disaster preparedness and hospitals with physicians with 21 or more patients per day in human resources sub-dimension had lower scores.

A significant relationship was found between, post-disaster recovery, logistics and supply management sub-dimensions and total scores of disaster preparedness according to the number of patients per nurse per day ($p<0.05$). No significant correlation was found between the other sub-dimensions ($p>0.05$). The scores of the hospitals with nurses with 1-8 patients per day in the sub-dimension of command and control, and the scores of the hospitals with nurses with 9 or more patients in the subdimensions of communication, human resources, surge capacity, continuity of essential services provided, safety and security, triage were lower. It was determined that the difference in post-disaster recovery, logistics and supply management sub-dimensions and total disaster preparedness scores originated from the hospitals with nurses with 9 or more patients per day (Table 2).

In addition, no significant relationship was found between the total and sub-dimension scores of disaster preparedness according to the ownership of the hospital (state hospital - training and research hospital), according to the bed capacity, according to the roles (A1, A2, B, C, D), according to the geographical region (Mediterranean region, Marmara region, etc.), according to the number of specialist physicians, according to the number of pharmacists, according to the number of annual surgical operations performed in the hospital, according to the intensive care bed capacity ($p>0.05$). It is not shown in the table.

No significant correlation was found between the number of patients per physician per day and the number of patients per nurse per day and the sub-dimensions of safety and security, triage, command and control, communication, and surge capacity ($p>.05$), which are not shown in the table.

No significant correlation was found between the number of general practitioners, emergency physicians, emergency service physicians, daily admissions, nurses/midwives and the availability of emergency specialists and the continuity of essential services, human resources, logistics and supply management, post-disaster recovery sub-dimensions and total scores ($p>.05$), which are not shown in the table.

As a result of the Spearman correlation analysis between the total and sub-dimension scores of the hospitals' preparedness for disasters, positive very weak relationships, weak relationships, moderate relationships and high-level relationships were determined.

The Cronbach alpha value of the total disaster preparedness score was 0.949 and the Cronbach alpha values of the sub-dimension scores were 0.466 for the command and control sub-dimension, 0.539 for the communication sub-dimension, 0.635 for the safety and security sub-dimension, 0.850 for the triage sub-dimension, and 0.858 for surge capacity sub-dimension, 0.782 for continuity of essential services provided sub-dimension, 0.816 for human resources sub-dimension, 0.831 for logistics and supply management sub-dimension, 0.867 for post-disaster recovery sub-dimension.

LIMITATIONS

Although comprehensive information can be obtained about the status of emergency and disaster plans, the limitations of the study are that private and university hospitals are not included in the study, and data can only be obtained from disaster planners.

DISCUSSION

Due to the recent increase in disasters determining the level of disaster preparedness of hospitals is a necessary issue (Ortiz-Barrios et al., 2020). Ownership of hospitals affects the disaster preparedness of hospitals. Hospitals with lack of financial capital and infrastructure problems are more vulnerable to disasters (Janati et al., 2018). According to the opinions of the disaster and emergency plans officers the ownership of the hospital they work in affects; the lack of resources, supply of materials, availability of uninterrupted power supply, availability of storage to provide water supply, a structure to remove waste in case of disaster, and feeling ready for disaster (Başeğmez, 2017). The reason why there was no significant difference between the disaster preparedness score according to the ownership of the hospital in this study is thought to be because in Türkiye, hospitals are managed under a single roof by the Ministry of Health and financed by a single center Social Security Institution (Hurst et al., 2008).

Providing mass critical care requires the ability to rapidly increase a hospital's patient volume above its normal capacity (Seda & Parrish, 2019). In this study, it was determined that the bed capacity of hospitals did not affect preparedness for disasters. In a study conducted in Türkiye, when the

characteristics of the hospital disaster plan were taken into consideration according to the bed capacity, in the comparisons made between hospitals with 100-200 beds and more than 200 beds; it was reported that there was a significant difference between the bed capacity and the names of the people and institutions to cooperate with, having a predetermined crisis room, having a telephone in use and backup in the crisis room, having a public relations officer to communicate with the press members in case of a disaster ($p<0.05$). It has been reported that there is no significant difference ($p>0.05$) between having an adequate number of backup electricity sources, having alternative food supply agreements, having a communication plan, having an emergency service triage plan, conducting annual drills and having a written disaster plan ($p>0.05$) (Top et al., 2010). It is thought that the number and quality of personnel and service offerings vary according to the bed capacity of the hospitals, and therefore the scores are also thought to vary.

The number of general practitioners and the number of emergency physicians in hospitals affect the surge capacity. Even if hospitals have sufficient equipment and material capacity, opportunities for capacity increase will be limited unless they are fully integrated into inter-institutional training and planning (Kaji & Lewis, 2006). It is important to overcome the deficiencies in the surge capacity of the hospitals within the scope of the study to cope with disasters (Al-Hajj et al., 2020). Although a study reported that almost all hospitals had been exposed to disasters in the last 5 years, none were staffed to provide adequate health care in times of increased demand and had no ability to surge capacity (Koka et al., 2018). Since there are fewer emergency physicians and the hospital is smaller, it is thought that the capacity increase is planned less because there is a referral option. It is thought that the other sub-dimensions are insignificant because hospital staff have low disaster awareness, and they focus more on medical treatment.

Hospital staff can be lost due to illness, as during the COVID-19 pandemic, or due to injury during a disaster (Melnychuk et al., 2022). A safe hospital should not collapse in disasters, causing the loss of staff and patients, but should continue to function and provide services when they are needed most (Mulyasari et al., 2013). Emergency departments are one of the departments with the highest security needs in Türkiye. In this study, a significant relationship was determined in the safety and security subdimension according to the status of hospitals having an emergency specialist, the number of nurses/midwives, emergency service physicians, and daily applications to the hospital ($p<0.05$). The scores may have been lower in small hospitals without an emergency specialist due to less need for security services. The number of staff of hospitals affects not only emergency and disaster structuring but also safety and security measures. It is thought that hospitals with more emergency physicians are busier and therefore need security services more.

Performing basic treatments with rapid assessment and triage is a part of the daily work life of emergency medicine specialists. They are more experienced in this regard compared to other specialties, so hospital emergency medicine specialists need to take part in disaster preparedness and disaster planning (Ersel et al., 2009). A study reported that 53.6% of the hospital disaster team did not know their duties in the hospital disaster plan, 35% did not know how to access the hospital disaster plan, 76.4% did not know the location of the Hospital disaster management center, 77.9% did not know the location of the secondary disaster management center, 67.9% did not have information about the existence of action plans prepared for disasters and emergencies (Şen & Ersoy, 2017). These results show that the hospital disaster team does not take an active role in the disaster planning process according to their areas of expertise.

The functionality of the hospital depends not only on the damage to the hospital building, but also on the availability of personnel, the functioning of the supporting infrastructure and backup systems, and

the availability of different supplies (Hassan & Mahmoud, 2019). In a study conducted with hospital disaster teams and managers, only 38.5% of the participating personnel responded positively to the question of whether the hospital has sufficient staff to cope with the sudden and large influx of patients during disasters or emergencies, and 37.4% of them have sufficient information to meet and manage the increased demand in this situation, and 61.5% of the hospital staff participating in the study were aware of the role of hospitals in emergencies and disasters, but 63.7% reported that they did not have information about whether the hospital had an emergency and disaster plan (Ncube & Chimenya, 2016). Since hospital density varies according to physician and nurse workload, it is thought that there is a significant difference between the scores. It is thought that the other sub-dimensions are insignificant due to the high density of patients per nurse.

In addition, regarding the geographical region where the hospitals are located, the number of pharmacists in the hospital, the annual number of surgical operations performed in the hospital, and intensive care bed capacity:

Although a limited difference in the level of preparedness according to the region where the hospital is located was reported, there was no statistically significant difference in the composite scores of the participating hospitals (Al-Hajj et al., 2020). This supports the fact that in this study there was no significant difference according to the region where the hospital was located. Hospital pharmacists play an important role in medication management in emergency and disaster preparedness. Hospital pharmacists in Europe do not fully comply with the principles developed for pharmacists to respond effectively to disasters (Responding to disasters guidelines for pharmacy guidelines) is in parallel with this study (Schumacher et al., 2021). In another study, which is in parallel with the results of this study, it was reported that the number and types of intensive care units, surgical capacity, pharmacy inventory, cooperation with external stakeholders, triage, infection control, security and communication were not significant ($p>0.05$) in the preparedness of hospitals for disasters and emergencies (Al-Hajj et al., 2020). It is thought that the results in other sub-dimensions are meaningless due to the low number of pharmacists in the hospitals studied and the fact that intensive care and operating room services are not provided in all of them.

It can be said that the plans of the hospitals are made within the scope of disaster preparedness (Woyessa et al., 2020). In studies conducted using the same guide, it was reported that the hospitals participating in the study showed an insufficient level of preparedness for potential disasters and crisis events (Khan et al., 2021; Naser et al., 2018). Command control and triage scored the lowest, while surge capacity and human resources scored the highest (Naser et al., 2018). Another important point is that countries have different vulnerabilities for each of the nine core components. For example, low- and middle-income countries may be more vulnerable to disasters that threaten their infrastructure, and continuity of essential services appears to be more important (Rezaei et al., 2018).

Similar to this study Mahdaviazad and Abdolahifar (2013) reported that the overall level of preparedness among hospitals was moderate, but their overall preparedness was very limited in some key components such as operating room management, surge capacity and human resources (Mahdaviazad & Abdolahifar, 2013).

In a study in which a hospital's disaster management team was evaluated in terms of training and experience, it was not found to be adequate in terms of preparedness for emergency and disaster situations (Çelikli, 2010). The drills conducted in relation to hospital disaster plans were positively improving, disaster plans should be prepared with personnel, and voluntary personnel participation is important for creating disaster awareness (Canatan et al., 2015). According to Vick's study, 88.8% of hospitals have signed reciprocal agreements with other organizations to provide healthcare services

and 70% have registered volunteer healthcare professionals to assist in the event of a disaster (Vick, 2017).

In Türkiye, private hospitals, which are stuck in side streets due to poor construction and lack of planning, are not able to serve as emergency or referral hospitals due to both their problems and medical logistics problems that may arise (Yalbaz, 2008). On the contrary in a study examining the disaster preparedness of hospitals in Japan, it was reported that all of the hospitals had generators to provide sufficient electricity, food stocks, sufficient number of triage tags, some hospitals may have insufficient drinking water stocks, more than half of the hospitals had helipads and all hospitals could be reached by wide road networks (Mulyasari et al., 2013). Since the total and sub-dimension scores of hospital emergency and disaster plans are a whole, it is thought that they affect each other.

Türkiye has well-prepared guidelines in the context of disaster plans (Tekeli Yeşil, 2021). However, even if the best disaster plan has been made, the best technological equipment is available, and the most well-trained and conscious personnel are trained against disasters, it is not possible to say that it is prepared for disasters if the hospital building cannot maintain its integrity in any extraordinary situation.

CONCLUSION

The health sector has special importance in disaster management. One of the most important tools of health management in disasters is health disaster and emergency plans.

Considering the disaster preparedness scores of the hospitals participating in the study, it was concluded that the hospitals were prepared for disasters at the planning stage; the best level of preparedness among the sub-dimensions was in the planning of the command-and-control structure and the lowest level of preparedness was in the planning of human resources.

Hospital characteristics such as ownership, role, region, bed capacity, number of general practitioners, number of emergency specialists, number of specialist physicians, number of nurses/midwives, number of pharmacists, annual number of surgical operations, number of emergency physicians, total number of specialist physicians, intensive care capacity, number of daily applications to the hospital, number of patients per physician did not affect the disaster preparedness of the hospitals, and only the high number of patients per nurse per day negatively affected the level of disaster preparedness.

The presence of emergency medicine specialists in hospitals and a higher number of nurses/midwives increase safety and security preparedness. The low number of general practitioners and the total number of physicians (general practitioners and specialists) in the emergency department decreases surge capacity preparedness.

A high number of patients per physician per day decreases post-disaster recovery scores. A high number of patients per nurse per day has a negative impact on logistics management, post-disaster recovery and overall preparedness for disasters.

Ethical Principles of the Study

Before starting the study, the Ethics Committee decision dated 03/12/2018 and numbered 95674917-051.99-E.37162 from Gümüşhane University Scientific Research and Publication Ethics Committee approval and written consent from the Provincial Directorates of Health were obtained. Verbal consent

was obtained from the emergency and disaster managers and hospital managers of the relevant hospitals by explaining the purpose and method of the study. In addition, permission was obtained from the World Health Organization Permissions Team by e-mail in order to use the guideline developed by the World Health Organization in the study.

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Conflict of Interest

The author(s) declare that they do not have a conflict of interest with themselves and/or other third parties and institutions, or if so, how this conflict of interest arose and will be resolved, and author contribution declaration forms are added to the article process files with wet signatures.

NOTE:

Tables related to our article are among the Issue Supplementary Files.

Open Access Link of Tables: https://dergipark.org.tr/tr/download/issue-file/76417

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