

Izmir Earthquake Experience of Healthcare Professionals During Pandemics: A Qualitative Study / Pandemi Döneminde Sağlık Çalışanlarının İzmir Depremi Deneyimleri: Nitel Araştırma

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Abstract

Introduction: During the period where the effects of Covid-19 pandemics have been intensively experienced, a 6.9 magnitude earthquake struck off İzmir province, resulting in devastating consequences. The earthquake during pandemics cause to increase work overload to healthcare professionals, leading to additional challenges in the management of the process. **Aim:** This is phenomenological research conducted to depict experiences and practices of healthcare professionals who experienced an earthquake together with pandemics. **Materials and Methods:** The study was conducted with 11 healthcare professionals working in the emergency department of a private healthcare facility in İZMİR. The data were collected using a semi-structured, online interview. **Results:** Overall, 3 primary and 18 sub-themes were revealed regarding the experiences and practices of the nurses. Most participants experienced emotions such as fear, shock, panic, and sadness at the time of the earthquake and when faced with earthquake victims. They experienced shortness in resources, safety concerns for themselves and their families as well as health issues and their management. **Conclusion and suggestions:** Participants reported that knowledge regarding competence in the profession, communication skills, ingenuity, and innovation in providing care due to shortness of resources, professional, triage, to provide psychological care, and follow-up skills are required in this challenging. **Highlights:** During disasters, healthcare professionals work in difficult conditions with limited resources and face problems and difficulties more than those experienced during their daily practice. This study presents very important information about health professionals' need to support not only the organization but also psychological support when is been living more than one disaster.

Keywords: Covid-19, Earthquakes, Medical staffs, Emergency care

ÖZ

Giriş: Covid-19 pandemisinin etkilerinin yoğun olarak yaşandığı dönemde, İzmir ili açıklarında 6.9 büyüklüğünde bir deprem meydana geldi ve yıkıcı sonuçlar doğurdu. Pandemiler sırasında yaşanan deprem, sağlık profesyonellerinin iş yükünün artmasına neden olarak sürecin yönetiminde ek zorluklara yol açmaktadır. **Amaç:** Pandemi ile deprem yaşayan sağlık çalışanlarının deneyimlerini ve uygulamalarını betimlemek amacıyla yapılmış fenomenolojik bir araştırmadır. :**Gereç ve yöntemler:** Araştırma İZMİR'de özel bir sağlık kuruluşunun acil servisinde çalışan 11 sağlık çalışanı ile yürütülmüştür. Veriler yarı yapılandırılmış çevrimiçi görüşme kullanılarak toplanmıştır. **Bulgular:** Genel olarak hemşirelerin deneyim ve uygulamalarına ilişkin 3 ana tema ve 18 alt tema ortaya



çıkarılmıştır. Katılımcıların çoğu deprem anında ve depremzedelerle karşılaşıklarında korku, şok, panik ve üzüntü gibi duygular yaşamıştır. Kaynak sıkıntısı, kendileri ve aileleri için güvenlik endişeleri, sağlık sorunları ve yönetimleri gibi sorunlar yaşadılar. Sonuç ve öneriler: Katılımcılar, bu zorlu süreçte meslekte yeterlilik, iletişim becerileri, yaratıcılık ve kaynak yetersizliği nedeniyle bakım sağlamada yenilikçilik, mesleki sorumluluk, triyaj, psikolojik bakım sağlama ve takip becerileri ile ilgili bilgi birikiminin gerekli olduğunu bildirmiştirlerdir. Öne Çıkanlar: Afetlerde sağlık çalışanları kısıtlı kaynaklarla zor koşullarda çalışmakta ve günlük uygulamalarında yaşadıklarından daha fazla sorun ve zorluklarla karşılaşmaktadır. Bu çalışma, birden fazla afet yaşandığında sağlık profesyonellerinin sadece organizasyona değil, psikolojik desteği ihtiyacı olduğu konusunda çok önemli bilgiler sunmaktadır.

Anahtar Kelimeler; Covid-19, Depremler, Sağlık çalışanları, Acil bakım

1. Introduction

Natural disasters may have negative influences on the physical, mental, and social health of individuals. The crisis involving unexpected deaths and injuries is extremely devastating for individuals and society; the healthcare systems, which are aimed to be managed at strictly, are got exhausted while healthcare professionals become tired as they provide continuous care. The routine healthcare services can be overshadowed by disaster, which may be interrupted due to the priority of crisis management (İyemür and Yeşil, 2020; İzci, 2020).

An earthquake is defined as seismic oscillations resulting from unexpected energy release in the Earth's crust. Although the earthquake is a natural phenomenon, it evolves into a disaster due to the resultant loss and interruptions in resources as well as psychological, social, and economical damage in a society and a country (Öztürk, 2013). Death, injury, and disability are the major issues among significant problems caused by a disaster. The healthcare professionals have been affected more adversely than other industries since they experience and attempt to heal the consequences of the disaster (İyemür and Yeşil, 2020).

The Covid-19 is a virus leading a respiratory disease diagnosed as "novel coronavirus", which was first identified at Wuhan City, China in December 2019 and recognized as pandemics due to spread worldwide (Yang et al., 2020). Currently, it remains to be an important health issue with novel variations (<https://covid19.saglik.gov.tr/>).

During pandemics, an earthquake at a depth of 16.5 km with a moment magnitude of 6.9 occurred about 14 km (8.7 mi) northeast of the Greek island of Samos which is located at 23 km away from Seferihisar district of İzmir province at 14:51 in 30 October, 2020 (http://www.koeri.boun.edu.tr/sismo/2/wp-content/uploads/2020/10/20201030_izmir_V1.pdf access date 11.05.2022) The earthquake was a medium-sized earthquake. The occurrence of earthquakes as an additional disaster cause to increase work overload of healthcare professionals, leading to additional challenges in the management of the process. There were 2322 new cases and 78 deaths because of the Covid-19 infection when the earthquake occurred in İzmir in this date. There were two hospitals near the earthquake area. This hospital was one of both. First and emergency cases were taken to this hospital because of this. When major events occurred the same time health system and professional health team may have to manage different problems together. Healthcare professionals have to try to manage the process with insufficient personal because of emergency situation. Therefore, they can live burnout in the with time. The causes of infection in healthcare professionals, measures for protection against infection, and psychological distress experienced by healthcare professionals have been addressed in some studies on the association of earthquakes with pandemics (Yüncü and Yılan, 2020). A qualitative study entitled "Nurses working in healthcare facilities during natural disasters" was identified (Scrymgeour et al., 2020). Again, Adhikari et al. (2020) conducted a study entitled "Earthquake rebuilding and response to COVID-19 in

Nepal, a country nestled in multiple crises" which investigated the association of earthquakes with pandemics (Adhikari et al, 2020). Such studies keep light on health professionals' problems about manage disasters and complex processes. Health professionals not only manage disasters but also live effects of the disaster. Their professional job experiments and their social life needs can come to face to face. They can't choice one of them so, they try to manage all their needs together. As a result, this process can be tiring and difficult for nurses, doctors, and others. We purpose to explain health professional needs, difficulties, and how to administration two disasters with teamwork. To describe İzmir earthquake experiences and practices of healthcare professionals during pandemics.

2.Material and Methods

This is a qualitative study using a phenomenological approach. The phenomenological research focuses on what are the experiences of participants, how they described these experiences, and how these experiences affected participants. This type of research evaluates the perspective of participants to events and the meaning of events for participants (Patton, 1990). In this challenging process, the increased number of cases with earthquakes made it difficult to cope with the process, resulting in further negative influences on the process.

2.1.Universe, sampling, and sampling method

The study was conducted only in the emergency department and sampling was not used. The entire universe was taken as a sample (Baltacı, 2018). The study was conducted with 11 healthcare professionals (nurse, paramedic, emergency medical technician) employed in the emergency department of a private healthcare facility. There were 21 healthcare professionals in emergency department. However, 7 of them didn't work in the emergency department because of shifts and holidays when the earthquake occurred and 3 of them didn't want to join the research. So, the study was conducted with 11 professionals. It was aimed to identify a sample meeting pre-defined criteria using purposive sampling methodology.

2.2.Data collection

The study was carried out in the emergency department of a private health institution in İZMİR between January 2021 and May 2021. The sample criterion was the presence of emergency department experience on the day of the earthquake. The data were collected using Individual Data Form and Semi-structured Interview Form.

Individual Data Form: This form includes items questioning age, gender, marital status, family data, child status, education level, previous experience of a severe earthquake, injury of first-degree relatives in the earthquake, and financial loss due to the earthquake (Öztürk, 2013; İyemür ve Tekeli, 2020)

Semi-structured Interview Form: To collect data, the Semi-structured Interview Form which was prepared based on a literature search by authors and assessed by experts who have been working as a nurse and a paramedic in the emergency department for 9 years scope and content was used. The Semi-structured Interview Form includes 8 questions to determine the experiences of participants. The interview was performed using a guideline.

2.3.Data collection method

Data were collected via profound interviews. Before the interview, we identified healthcare professionals working at the emergency department at the time of the earthquake. We didn't go to the earthquake area for collecting data. Because personals were very busy and tired. So, we took an appointment for online platform when they want to meet. Therefore, we waited to their suitability for

meeting. As a result, collect data took very long period because of this. The healthcare professionals identified were informed about the aim of the study and their willingness to participate was asked. Online interviews were conducted with subjects who accepted to participate. The interviews were conducted by a single researcher to improve reliability and consistency. The interviews were conducted over 20-30 minutes in a silent environment allowing voice recording. Data collection was maintained until sufficient data were obtained.

2.4.Ethics

The study was approved by Ethics Committee. Approval was obtained from Tinaztepe University Health Sciences Scientific Research and Publication Ethics Committee on 10.03.2021 with the decision number 002. In addition, consent was obtained from the hospital in which the study was conducted. All subjects gave verbal informed consent before participation. The voice recordings of interviews were solely listened to by researchers and transcripts were anonymous to ensure data privacy. All subjects were informed that they can withdraw from the study at any time.

2.5.Data Analysis

After transcription of voice recordings, thematic content analysis was performed by MAXQDA version 20.0, a software used for the analysis of qualitative data (MAXQDA, 2023). Voice recordings were independently listened to by researchers. Data obtained were compared and phrases and their structure were coded independently. The researchers identified themes and subthemes representative for these codes via iterative discussion until achieving consensus.

3.Results

The mean age was 24.18 among healthcare provides. Eight of them were women and single. Of the subjects included, 10 had a nuclear family and 8 had no child. Of the subjects, 6 were nurses while 3 were paramedics and 2 were emergency medical technicians. Education level was noted as high school in 7 and an associate degree in 4. When previous earthquake experience was questioned, it was found that 7 had a lack of experience of severe earthquakes. Again, none of the subjects had a first-degree relative injured in the earthquake or experienced financial loss.

After data analysis, phrases of subjects were classified into 3 primary themes and 18 subthemes were identified.

First primary theme: Emotions experienced at the time of the earthquake and when faced with an earthquake victim

The healthcare professionals reported that they experienced various emotions including fear, shock/panic, hope, and sadness at the time of the earthquake; in addition, they experienced sorrow, mercy/human sentiment, and willingness to help when faced with earthquake victims. In the healthcare professional, the emotions experienced at the time of the earthquake and when faced with earthquake victims were comparable; in addition, they experienced sorrow, mercy/human sentiment, and willingness to help (Table 1).

Table 1: Definition of Themes and Subthemes

Theme	Subtheme	Code
Emotions at time of earthquake	Fear	<i>I envisioned my life at time of earthquake; it was very fearful and long duration of earthquake severely affected (Person 7-27-Male)</i> <i>Both earthquake and pandemics of course, All of us should have to be protected. We delivered face mask to our patients. We should have to be protected. We experienced two disasters at the same time. It was really challenging. Pandemics was already challenging, and we were scared. By earthquake, our fear was doubled [Person 2-50-Female]</i>
	Shock/panic	<i>I was on my way to hospital for my shift, but I should have to arrive faster since it was unknown what was happening in the hospital, in case of mass casualties, impact on emergency department is extreme, did not even remember how I went to hospital in that panic [Person 11-28-Male].</i>
	Hope	<i>I felt very emotional. Although I tried not to express, I responded all patients with tears. I cherished hope; however, I hope there was less deaths, and those children only lost their homes but not their parents [Person 8-20-Female]</i> <i>Late on that day, the workload was decreased. I watched live news with hope and began to wait earthquake victims who were rescued from wreckage with anxiety and curiosity [Person 8-20-Female].</i>
	Sadness	<i>Pandemics itself already leads depression. Since our lifestyle has changed. We had a different life in the past. And this earthquake added [Person 1-23-Male].</i> <i>When stepped outside the hospital, you feel extreme sadness and want to cry, you remember the patients and their words. I felt this and began to cry while going home [Person 5-23-Female].</i> <i>We came together and made effort to cope but we saw that we fell short [Person 7-27- Male].</i>
Emotions when faced earthquake victim	Fear	<i>You feel restless and you feel trilling when asking "Are you an earthquake victim and you think that he/she will misunderstand, or you remember to them their livings at time of earthquake [Person 5-23-Female].</i>
	Panic	<i>The panic and fear in the face of patients arriving emergency department a big earthquake. mobile lines were off, we really did not understand how big earthquake was. I realized when I saw patients arriving; then, I felt panic [Person 10-22-Female].</i>
	Hope	<i>How their families are? What will these people do now? We became more hopeful as patients arrived. we forgot tiredness and just wanted to heal them [Person 8-20-Female].</i>
	Sadness	<i>Of course, I felt sad. you feel the fear in the eyes of person saved from wreckage [Person 1-23-Male].</i> <i>I think it makes you feel bad and the person you were dealing. thus, it was tragic for us. in addition, people arriving emergency department also seemed very sad since they were asking their child and family, a question which you cannot answer. The ambulances arrived continuously. Thus, we felt sad and uneasy; it was a very challenging situation [Person 5-23-Female].</i>
	Compassion	<i>One child who I know previously arrived and said that I don't have a prescription and we don't have a house. I can't forget him [Person 2-50- Female].</i> <i>I felt that I lived same grief when I see the fear and grief in their eyes [Person 4-23- Female].</i> <i>In that period, the only thing I was think was to touch another life and help someone [Person 5-23- Female].</i> <i>The COVID was also present, but you did not even remember. at this point, you think about compassion? measures? profession? or helping? I still think that the correct choice was mercy, but it is controversial to ignore measures [Person 11-28-Male].</i>

Second primary theme: Task organization and resource management during earthquake

The healthcare professionals reported that the number of patients arriving emergency department was increased; that there was extreme chaos with instant changes; and that teams provided emergency interventions rapidly. Hospital emergency service was first-level service. Therefore, the hospital disaster plan wasn't enough to manage such a second-level disaster. But the administration of the hospital succeeded to manage the disaster with awesome hardworking and health professional support. They reported that they cooperated for rapid intervention to earthquake victims; that various departments helped and that they used different areas for interventions.

Task organization

"I went back to emergency department when earthquake was finished, and I moved the patients on stretchers out" [Person 4-23-Female].

"Even the colleagues who finished their shift arrived back to hospital. We acted unselfishly as we promised" [Person 2-50- Female].

"We established a task organization in the presence of such chaos. We identified patients with and without emergency and treated accordingly" [Person 7-27-Male].

"At the beginning, triage was lasting 5 minutes. This time is important for analysis of the patient; however, at time of earthquake, we saw that you can see a patient for 30 seconds and completed triage within 30 seconds to refer the patient to appropriate unit. Since patients were arriving continuously" [Person 11-28-Male].

"We had to modify available areas of the hospital to different work areas. For instance, we turned observation room to cast for patients with fracture" [Person 5-23- Female].

The severity of earthquake has led people to forget pandemics. As the priority of healthcare professionals was to save people from wreckage, the protective measures during pandemics were ignored. An increase was observed in COVID cases after earthquake.

"The people forget pandemic while crying at shock and acted as there was no pandemics. However, we warned people and tried to be careful by tidying ourselves up" [Person 9-27- Female].

"We observed a severe increase in the number of cases 1 week or 10 days after earthquake. I could not think that this increase could be attributed to another reason. Some friends had positive PCR results for COVID due to failure to maintain distancing. On first day, we provided care to too many patients. All nurses were at hospital" [Person 11-28-Male].

The earthquake and pandemics affected resource management of the hospital, there were problems in the consumable materials, and they were supplied from other departments. The new areas were opened by increasing COVID cases after earthquake, emphasizing importance of coordination of resource management in hospitals.

"We started to experience shortage of consumable materials. We requested some materials from other departments while some other materials were supplied by hospital stocks [Person 4-23- Female].

"Many earthquake victims were arriving to emergency department; sometimes, 10 ambulances arrived at the same time. There was need for coordination to provide care to the patients [Person 11-28-Male].

The further escalation in pandemics has led involvement of healthcare professionals in the management of earthquake site.

"I was going to help rescue after end of my shift and came back to shift after sleeping one hour. This lasted 4-5 days after earthquake. I both worked in rescue and hospital [Person 1-23-Male].

"We continued to provide care in shelter tents. We checked vital signs and glucose levels of earthquake victims and provided their drugs when needed" [Person 5-23- Female].

"At that time, nobody could follow measures of pandemics including distancing. In particular, the wreckage site became so crowded. The relatives of earthquake victims, healthcare professionals and rescue and healthcare teams from other cities led more liberal measures of protection or ignorance of these measures; thus, workload was increased accordingly" [Person 6-35-Male].

Third theme: The roles and liabilities during and after earthquake



During and after earthquake, **professionalism, effective communication, effective and rapid care, and empathy** were emphasized among roles and liabilities of healthcare professionals (Table 2).

Table 2: Definition of Themes and Subthemes

Themes	Subthemes	Code
Roles and liabilities during and after earthquake	Professionalism	<i>I already keep level head in many issues and fail to establish an emotional relation with people... yes, I feel sadness for my patients, but I am not beyond a healthcare professional for them [Person 1-23-Male].</i> <i>I could not experience emotionality of earthquake at time of event. we felt neither fear nor emotionality... the only thing we care was human life [Person 5-23- Female].</i> <i>Initially, experience for many years and being calm came forefront [Person 6-35-Male].</i> <i>I think to put professionalism for 30-45 minutes and keep going. When I saw earthquake victims arriving, I made all efforts to perform anything I can as a nurse" [Person 7-27-Male].</i>
	Effective communication	<i>I recognized that even a smiling face can be sufficient to the patients. the assuring them as "be calm, it is okay" was sufficient for them [Person 10-22- Female].</i> <i>I apparently observed during triage and care after earthquake that I fortunately had attended to triage and communication trainings since, other than medical knowledge, communication was the major factor that facilitate me in that situation" [Person 11-28-Male].</i> <i>We started to think how we can communicate with earthquake victims by achieving coordination... in that chaotic environment, we took care of patients, treated them, and tried to calm down their relatives [Person 11-28-Male].</i>
	Effective and rapid care	<i>Analytic intelligence definitely...since they take survivors from wreckage... there are patients with extremity fracture, those with pain and suffer... you should relieve these patients rapidly and assess survivors [Person 1-23-Male]</i> <i>We took advantage of participation to exercises on disasters [Person 6-35-Male].</i> <i>I can say role of providing care [Person 8-20- Female].</i> <i>I can say that priority is being quick and practical[Person 4-23- Female].</i>
	Empathy	<i>Empathy is important [Person 6-35-Male].</i> <i>In the earthquake, I better recognized that there are people requiring us [Person 8-20- Female].</i> <i>The liability of a nurse is well-known... and same... however, I can more readily empathize since it deeply affected us [Person 2-50- Female].</i>

4.Discussion

Several psychological symptoms can be seen in individuals directly involved in the disaster or other members of society due to devastating effects during or after a disaster (Özkan and Çetinkaya, 2021). Auxiliary providers, who participate in interventions during a disaster, are the individuals directly get involved in the disaster (Işıkhan, 2021).

In our study, healthcare professionals working in the emergency department during earthquakes reported that they experienced fear, shock, panic, and sadness during the earthquake. During disasters, healthcare professionals work in difficult conditions with limited resources and face problems and difficulties more than those experienced during their daily practice. The healthcare professionals treating earthquake victims reported that they dealt with limited resources, safety concerns about themselves and their families, health issues, and administrative problems. In addition, in the Pouraghaei study, it was found that one of the major challenges was the failure to achieve coordination across organizations (Abdi et al., 2021). In our study, healthcare professionals also reported similar problems. In addition, the risk for contagious diseases is increased during and after disasters. It has been reported that hygiene and environmental problems lead to contagious diseases after disasters. Similarly, the healthcare professionals also reported an increase in COVID cases during and after earthquakes in our study. In the literature, a systematic review has reported that individuals with chronic diseases such as cancer, hypertension, diabetes mellitus, or cardiovascular diseases should have constant access to healthcare services (Sohrabizadeh et al., 2021). In our study, healthcare professionals also provided care including monitoring vital signs, blood glucose measurement, and drug administration to earthquake victims with chronic diseases in the shelter tents.

The healthcare professionals are the largest group of healthcare providers who play a key role in the intervention of natural disasters. In natural disasters, the goal is to achieve the highest level of health for individuals and the society affected by the crisis. To achieve this goal, the nurses require the highest level of personal and professional skills. Timely and appropriate nursing care is the primary factor for improved survival, reduced mortality rate, and well-being of individuals following a disaster. This factor is correlated with occupational readiness and competence level. The professional competence defined by International Nursing Association includes critical thinking, technical skills, and effective communication abilities. In general, competence includes composition and performance of knowledge, specialty, and individual skills to perform occupational roles in a safe and ethical manner. The nurses should gain occupational and technical skills such as using emergency equipment, triage, and psychological care for earthquake victims before encountering a crisis while they are acting their roles (Rezaei et al., 2020). In our study, healthcare professionals also emphasized these roles and liabilities. As like our findings, in the qualitative study on occupational competence in providing care to earthquake victims, Rezaei et al. emphasized that the nurses should have professional knowledge, communication abilities, innovation and creativity in case of limited resources, professional liability, triage skills, ability to provide psychological care as well as monitoring and follow-up skills (Rezaei et al., 2020).

In our study, it is apparent that organizational coordination is highly important in the management of processes. In the literature, in a systematic review on the response of healthcare services to pandemics and earthquakes, it was reported that effective debriefing about COVID-19 enhances the disaster field and that planning in the preparation for disaster should be effective to improve the economic consequences of COVID-19 pandemics (Sohrabizadeh et al., 2021).

This study presents very important information about health professionals' need to support not only the organization but also psychological support when is been living more than one disaster. Working as a health professional is very different from the other jobs. You always must be careful, quick, and ready to work very long hours, with lack of conditions and lack of thinking your family. So, you can be burnout and tired in a short time. Therefore, administrations must see health professionals' needs in this important and emergency process to help.

5. Conclusion and Suggestions

Based on results, it was seen that healthcare professionals providing care to individuals and earthquake victims experienced several complex emotions concurrently. The importance of coordination and team awareness were re-appreciated from the experiences of healthcare professionals. It was observed that healthcare professionals were got exhausted emotionally while dealing with multiple disasters; in addition, they continued to serve in the context of team collaboration and professional ethics. It is recommended to increase the number of qualitative studies to better analyze the conditions of healthcare professionals and to provide training about potential situations and disasters by reviewing organizational problems and stages of management systems and sharing experiences via patient simulations using scenarios. Health professionals have some needs about organizations and psychological support during more than one disaster. Therefore, we suggest to the hospital administration to prepare to role-play scenarios and disaster scenarios, drill practice the health professional approach and discuss their feelings, and workload and update hospital disaster plan through these findings.



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Declarations

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