



# The Evaluation of Children Admitted to Ege University Faculty of Medicine After an Earthquake in Terms of Health Services

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## ABSTRACT

**Aim:** The most vulnerable victims of natural disasters are children. Health professionals have made great efforts to improve the health and psychosocial conditions of children from this region after the major earthquake disaster we experienced. This study aimed to evaluate those earthquake victims referred to our department of pediatrics in terms of health services and to share the results.

**Materials and Methods:** Children who were transferred to Ege University Faculty of Medicine, Department of Pediatrics after the earthquake were included in this study. It was recorded from which province these children came from, their age, gender, whether they were crushed or not, their physical health status, the duration of their stay in the hospital, their vaccination status, and whether there was any loss of parent or sibling.

**Results:** Five earthquake victims were referred, three from Hatay, one from Malatya, and one from Iskenderun. Of these children aged between 16 months and 16 years, 4 were boys, and 1 was a girl. In two of our patients, both lower extremities were amputated due to being trapped under rubble. The tetanus vaccine was administered to all children. It was discovered that 4 of our five patients hospitalized had lost a parent and/or sibling. The mean duration of stay in the hospital was 10.2 days.

**Conclusion:** It is crucial to determine earthquake survivors' needs during treatment, to work as multidisciplinary teams, and to make a follow-up plan for after discharge.

**Keywords:** Earthquake, pediatric, health service

## Introduction

In our country, on February 6<sup>th</sup>, 2023, two major earthquakes of 7.8 and 7.5 occurred, respectively, in the Pazarcık and Elbistan districts of Kahramanmaraş (1). These earthquakes have been described as one of the biggest natural disasters for our country and the world. As a result of these earthquakes, more than 122 thousand people were injured in Turkey. As a result of the earthquakes, many people lost their families, homes, and jobs, but it is impossible to explain these losses with numbers alone.

The most vulnerable victims of natural disasters which affect many people are children. The Ministry of Family, Labour, and Social Services of the Republic of Turkey announced that it registered 1,915 unaccompanied children who were pulled out of the rubble after the earthquake on February 6<sup>th</sup>, 2023 (2). One thousand seven hundred eighty-eight of these children were handed over to their families, and 79 children were stated to be taken into institutional care (2).

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In earthquakes, it is crucial to give different priorities according to the needs of the children after first providing emergency support (removal from under the rubble, transport to the hospital, treatment, etc.) (3). Children may develop malnutrition and dehydration in a shorter time than adults. Infectious disorders which may emerge after an earthquake are more severe because their immune systems are not fully matured. Children's ability to withstand stress psychologically is less than that of adults. A child's development can be permanently affected if appropriate conditions are not provided (3). For the reasons mentioned above, doctors, nurses, psychologists, social workers, and other health workers should work together, and the essential support should be determined quickly for the earthquake survivors in hospital. Health professionals providing Primary Health Care have made great efforts to improve both the health and psychosocial conditions of children and families with children coming from the affected region after the major earthquake disaster we experienced. This study aimed to evaluate the earthquake victims referred to our pediatric department after their first treatment in the earthquake area in terms of health services and to share these results.

## Materials and Methods

Children referred to Ege University Faculty of Medicine, Department of Pediatrics, for their treatment and follow-up after the earthquake on February 6<sup>th</sup>, 2023, were included in this study. It was recorded from which province these children came, their age, gender, whether they were crushed or not, their physical health status, their duration of stay in the hospital, vaccination status, and whether there was a loss of parents or siblings.

We aimed to provide health support for these urgently brought patients. In line with this goal, a social worker evaluated each hospitalized patient. After the children's identity information was verified, whether the accompanying persons were authorized to stay with the child was determined. According to the Ministry of Health's circular, children were reported on in writing to the Izmir Provincial Directorate of Family and Social Services on a daily basis. A psychological support action plan was prepared by making daily visits to the patients by pediatric, adolescent, and mental health physicians. It was aimed to determine the priority needs and to meet them quickly in the daily evaluation meetings attended by the physicians who organized the treatment of children, the social pediatricians, and social workers. For this purpose, the vaccination status of the children was checked, and

after emergency tetanus vaccinations, it was determined whether there were any missing vaccinations in their vaccination schedules. In addition, situations such as clothing and financial support were also evaluated. Medical treatment reports which may be required during their stay in the hospital were prepared quickly (medicine, report on prosthetics due to limb loss. etc.). After the patients were re-evaluated before discharge, an outpatient treatment plan was explained, and priority patient appointments were made to outpatient clinics where they would be followed up. In addition, when the patients were discharged, they were handed over to their legally approved guardian via a signature. Support was provided for all our patients regarding a place to stay after discharge (in line with their requests).

## Results

Five children referred to our department of pediatrics for hospitalization and treatment after the earthquake between the 6<sup>th</sup> and 13<sup>th</sup> of February, 2023 were included in this study. Table I shows the characteristics of these children, such as from which province they came, their age, gender, whether or not they were crushed, their physical health status, their duration of stay in the hospital, vaccination status, and whether there was any loss of parents or siblings.

Of the children who were aged 16 months to 16 years, 4 were boys, and 1 was a girl. Three children were referred from Hatay, one from Malatya, and one from Iskenderun. All of the children had been dug out of the rubble. The children's stay under the rubble ranged from 8 to 78 hours (mean 48 hours). Both lower extremities of two of our five patients were amputated due to compression by the rubble. When their vaccination statuses were examined, it was determined that 2 cases were fully vaccinated, and one case was missing those vaccinations which should have been given by the age of 4 years. However, the vaccination records of the other two cases could not be accessed from the national vaccination tracking system. All of the children were vaccinated for tetanus. In addition to our patients whose vaccines were missing, Diphtheria, Pertussis, Inactivated Polio, Measles, Rubella, and Mumps vaccines were also administered, and a vaccine schedule was prepared for our patients whose information could not be reached. The mean hospital duration of the patients was determined as being 10.2 days. It was discovered that 4 of our five patients had lost parents and/or siblings.

Patient number	I	II	III	IV	V
<b>Age</b>	Six years	Sixteen months	Six years	Sixteen years	Sixteen years
<b>Gender</b>	Boy	Boy	Boy	Boy	Girl
<b>City</b>	Hatay	Hatay	Malatya	Hatay	İskenderun
<b>Trapped under the rubble</b>	Yes	Yes	Yes	Yes	Yes
<b>Time under the rubble</b>	24 hours	53 hours	78 hours	8 hours	72 hours
<b>Physical health condition</b>	Two lower extremities amputated	Left arm trauma (fasciotomy)	Soft tissue trauma	Soft tissue trauma	Two lower extremities amputated
<b>Immunization status</b>	Incomplete immunization	Complete immunization	Complete immunization	Information not available	Information not available
<b>Administered vaccines</b>	MMR DTaP-IPV	Tetanus	Tetanus	Tetanus	Tetanus
<b>Duration of stay in hospital</b>	10 days	20 days	5 days	5 days	11 days
<b>Loss of parent-sibling</b>	No	Yes (mother and father)	Yes (mother and 2 siblings)	Yes (mother and father)	Yes (father and 1 sibling)

## Discussion

The earthquake in Kahramanmaraş on February 6<sup>th</sup>, 2023, was reported as the biggest earthquake in our country. As with all natural disasters, there was much confusion regarding health services, particularly in the initial days following these earthquakes. While the rescue efforts for the people under the rubble continued, many reasons, such as the collapse of buildings which provided health care services, the fact that some of the health personnel working in that area were trapped under the rubble of the earthquake, the roads which the aid vehicles would use were blocked, and the lack of electricity and water made it challenging to provide health services. The earthquake victims removed from the rubble had to be transferred to different cities in order to continue their treatment after the emergency response. During this period, children, who are the biggest victims of natural disasters, needed additional support in comparison to adults. First, since their families were also under the rubble, it was necessary to identify the children, ensure they had companions, and determine their needs after discharge. For this reason, the children hospitalized in our hospital were evaluated with an approach via a collaboration of health professionals while their treatment was ongoing.

Problems such as identification and being unaccompanied during natural disasters are common (3). It was determined that four earthquake survivors in our hospital lost their parents and siblings. However, their identities and security were achieved since all of them and their legal companions were identified (with the permission of the İzmir Provincial

Directorate of Family and Social Services). The Ministry of Family, Labour, and Social Services of the Republic of Türkiye announced that after the earthquakes, 79 children (who were not identified or had no adult to care for them) were taken into institutional care (2). However, this information stated in April, 2023 should be re-examined with updated numbers.

Head, neck, spine, thorax, abdominal injuries, extremity fractures, compartment syndrome, and crushes are the most common injuries in an earthquake (4). Extremity losses can also be experienced depending on the duration of being under the rubble and the severity of the damage. All of the children transferred to our hospital were removed from the rubble in an average of 48 hours. Compartment syndrome developed after left arm trauma and a fasciotomy was performed on one of our patients. In two of our patients, both lower extremities were amputated. Orthopedic-physical therapy physicians evaluated these patients, and the necessary procedures were initiated for prosthesis insertion. No signs of trauma were detected in the other three patients except for soft tissue trauma at different sites (Table I). Disaster situations such as earthquakes are critical because they can lead to missed vaccinations for children (5). In addition to the necessary emergency vaccinations after trauma, care should be taken not to interrupt the national vaccination program. Children and infants whose vaccination status is unknown should never be considered vaccinated, and a vaccination schedule should be made. After examining the vaccination status of the children in our study, the tetanus vaccine was administered to all of them.

Our patient with missing vaccines was given the missing vaccines, and those patients whose information could not be obtained were considered as if they had never been vaccinated, and an appropriate vaccination schedule was arranged. Post-discharge vaccination programs for these children were continued in the social pediatric outpatient clinic.

Psychological evaluation of children after disasters is critical. Children with parent/sibling loss should also be evaluated separately. The most common mental disorder which develops after trauma is post-traumatic stress disorder, followed by acute stress disorder, anxiety, phobic disorder, and sleep disorder (6). The cases in our study were examined daily by pediatrician, adolescent, and mental health physicians. This service continued after discharge after an appropriate psychological support action plan was prepared. It is known that there may be confusion regarding the health system during and immediately after natural disasters. As mentioned above, health professionals made great efforts to improve the health and psychosocial conditions of the children and families with children coming from the affected region after the major earthquake disaster we experienced. However, in cases of natural disasters, it is necessary to train health workers to be able to provide the support services to be given to children and their families.

## Conclusion

As a result, it is essential to determine the needs of earthquake victims during treatment, to work as multidisciplinary teams, to have pediatricians at the head of the group, and to make follow-up plans for after discharge.

## Ethics

**Peer-review:** Internally and externally peer-reviewed.

## Authorship Contributions

Concept: M.T., F.K., Design: M.T., F.K., Data Collection or Processing: M.T., F.K., Analysis or Interpretation: M.T., F.K., Writing: M.T., F.K.

**Conflict of Interest:** No conflict of interest is declared by the authors.

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