scientific reports

Check for updates

OPEN

Difficulties faced by children with autism spectrum disorders after an earthquake: a study from parents' perspectives

Mehmet Akif Kay[1], Muhammed Abdulbaki Karaca[2]✉, Osman Tayyar Çelik[3] & Cihangir Kaçmaz[4]

The February 6, 2023 Kahramanmaraş earthquake severely affected 11 provinces in Türkiye, disrupting services for vulnerable groups. This research aims to examine the difficulties that children diagnosed with Autism Spectrum Disorder (ASD) face in education, health, and social support services from the parental perspective following the earthquakes centered in Kahramanmaraş on February 6, 2023. The research used a basic qualitative research method and semi-structured interviews were conducted with 22 parents residing in Malatya, which was affected by the earthquake. The data obtained were examined with content analysis method. Students diagnosed with autism spectrum disorder have been found to experience significant declines in their educational performance, health routines (in adapting to them) and basic skills such as going to the toilet, eating and self-care. At the same time, parents faced difficulties in accessing health and social services. As a result of the research, it was determined that the interruption of the daily routines of children diagnosed with ASD and their alienation from their social environments after the disaster increased behavioral and emotional problems. It was emphasized that alternative education models should be developed for children diagnosed with ASD during disaster periods and families should be encouraged to take an active role in this process. Following disasters, ABA practices, mobile tools and teletherapy should be integrated into technology-based disaster response policies to continue ASD training and therapy.

Keywords Autism spectrum disorder, Children, Disaster, Kahramanmaraş earthquake, Parents

Abbreviations

ASD	Autism spectrum disorder
ABA	Applied behaviour analysis

Special education is provided to individuals with special needs by specially trained personnel through special education programs. The ability of children with special needs to acquire independent living skills depends on determining their needs and providing educational opportunities appropriate to these needs[1,2]. For this reason, individual programs are carried out in line with the needs and deficiencies of individuals with special needs through special education practices[3–5]. Through these programs, individuals with inadequate development in psychomotor, mental, communication, social, and emotional areas are supported by an expert team with personalized individual planning.

Although individualized programs and expert support systems ensure progress under normal circumstances, these educational opportunities may not always be sustainable. In particular, during times of crisis or disruption, circumstances may arise that prevent children with special needs from benefiting from consistent and structured educational services. Therefore, it is important to examine how external factors, especially disasters, can hinder the implementation of special education practices and increase the vulnerabilities of these children[6]. Disasters are destructive events that significantly impact daily life, leading to loss of life and property and the collapse of social systems. In such situations, educational services are often disrupted, and this can seriously affect children with

[1]Department of Child Care and Youth Services Vocational School of Social Sciences, Batman University, Batman, Türkiye. [2]Department of Special Education, Faculty of Education, Inonu University, Malatya, Türkiye. [3]Department of Child Development, Faculty of Health Sciences, Inonu University, Malatya, Türkiye. [4]Department of Child Development, Faculty of Health Sciences, Kayseri University, Kayseri, Türkiye. ✉email: akaracaegitim@gmail.com

special needs due to the loss of routine and specialised support. The collapse of school infrastructure and lack of access to education delays children's academic and social development[6,7]. Children are particularly vulnerable in disasters because they depend on their caregivers for food, shelter, healthcare and emotional support. Separation from their caregivers and exposure to unsafe conditions can lead to long-term psychological problems such as anxiety and depression[8,9].

During this period, individuals with special needs who have difficulty meeting their own needs experience significant difficulties[8]. Because individuals with special needs who try to adapt to the society they live in before the disaster may be disadvantaged by encountering problems such as movement and access restrictions as a result of the disruption of the existing environmental and social order. Disasters can worsen the psychological problems of children with special needs, who already rely heavily on their parents for support. The trauma experienced by parents can affect children more, leading to increased rates of depression and post-traumatic stress disorder (PTSD)[6]. If individuals with special needs are not taken into account in the planning and risk reduction processes before the disaster and do not participate in the process as stakeholders, greater problems may be experienced during the disaster and in the following processes[10].

Children with special needs may have difficulty in evacuating and taking protective action during sudden-onset disasters due to their mobility or cognitive impairments. They may also face difficulties in receiving timely warnings and have difficulty accessing shelters and necessary medical support[6]. Interruption of access to treatment can have long-term negative effects on children with developmental problems. Although all children with special needs face difficulties after disasters, children with ASD exhibit specific sensitivities that amplify the impact of such crises. Their strong dependence on daily routines, heightened sensory sensitivities, and difficulties in communication and social interaction make them disproportionately affected when stability is disrupted[11–13].

Children with ASD often show limitations in leisure skills[11]. Children diagnosed with ASD may face great difficulties in accessing and benefiting from health services, and this access may become even more difficult, especially in emergencies such as earthquakes[14]. Families of children with ASD also face psychological, social, and financial difficulties during and after earthquakes. These difficulties include issues such as meeting the needs of their children, providing emotional support, and rearranging routines[15]. Loud noises, vibrations, and crowded environments experienced during and after earthquakes can cause sensory problems and increased anxiety in children with ASD. This situation, along with the disruption of their daily routines, can trigger sleep problems and behavioral disorders[16]. It was stated that behaviors such as communication, daily living, socialization, and motor skills of individuals with ASD decreased significantly in the months immediately after the earthquake[17].

The vulnerabilities of children with special needs are further exacerbated by the interaction between their psychological or physical characteristics and the persistent negative effects of environmental conditions. Failure to improve these conditions after a disaster, and failure to provide the necessary support for children with special needs, leads to limitations in individual functioning becoming more visible and pronounced[6]. The various difficulties faced by individuals with ASD necessitate a more comprehensive approach to the challenges that may arise in emergency and disaster situations. The establishment of a special intervention team and online support network for individuals with autism following Hurricane Sandy can be cited as an example of such initiatives[18].

These general challenges became particularly evident during the devastating earthquakes that struck Türkiye in February 2023. More than 50 thousand people died and more than 107 thousand people were injured in this earthquake. The earthquake significantly affected and destroyed 11 cities with a population of approximately 14 million. It is known that more than half a million buildings were damaged due to the earthquakes, leaving millions of people homeless[19]. Individuals with special needs were deeply affected by this earthquake in Türkiye[20].

As mentioned above, the disadvantages faced by children with ASD are exacerbated by disasters, with both families and children experiencing difficulties that further increase their vulnerability. However, research focusing on the experiences of children with ASD and their families in the aftermath of earthquakes remains limited. Existing research has its limitations. For example, in a study conducted by Aslan[21] 2 weeks after the earthquake, the focus was on the impact of the earthquake on the lives of parents with children with ASD, while the longer-term effects of the earthquake on children with ASD were overlooked. Similarly, research conducted by Kahveci and Bulut addressed the psychological effects of post-earthquake adversities on parents of children with ASD[22]. While Eroğlu et al.[23] focused on the psychological effects of the earthquake on children with ASD and their parents, Yarımkaya et al.[24] addressed the physical activity barriers experienced by children and adults with ASD after the earthquake. Some studies[18,25] focus on intervention programmes and education for children with ASD in emergency situations such as disasters. When these studies are evaluated, it can be said that the difficulties experienced by parents after a disaster and the effects of disasters on children with ASD have not been assessed together. Furthermore, it has been observed that there has been a lack of focus on longer-term experiences following disasters and that the multifaceted effects of disasters on children have not been contextualised in terms of pre- and post-disaster competencies. Consequently, given the limited number of studies and the limitations of existing research, it can be said that this study represents a timely initiative to fill this gap in the field.

In this context, this study aims to evaluate the difficulties faced by children in industrial zones in the areas of education, health and social support following the earthquake centred in Kahramanmaraş on 6 February 2023 from the perspective of their parents and to comprehensively reveal the experiences encountered during this process. Thus, this study contributes to a better understanding of the needs of children with ASD and their families by making visible the difficulties they experience in post-disaster processes.

Methods

This study investigates the difficulties experienced by parents of children with ASD after a disaster and the effects of this process on children from the parent's perspective. The study uses a basic qualitative research approach to

reveal parental experiences in detail. Basic qualitative research aims to understand how people experience events and phenomena and how they comprehend this experience[26].

Participants and procedure

The participants of the study consisted of 22 parents of children diagnosed with ASD residing in Malatya province of Türkiye, which was significantly affected by the earthquake. The participants were selected for the study using criterion sampling, a purposive sampling method. Criterion sampling involves selecting individuals who have certain characteristics and who have experienced the phenomenon that is important for the research topic[27]. Our criteria for sample selection in this study were as follows: (1) having a child diagnosed with ASD, (2) being affected by the earthquake centered in Kahramanmaraş on February 6, 2023, and (3) volunteering to participate in the study.

Although there is no consensus on the required number of participants in qualitative research[28,29] this study was based on data saturation. New interviews were conducted until they failed to reveal any new insights or themes[30]. This has helped to create a rich and comprehensive dataset. The participants' joint meetings assessed whether the data was similar to previous interview data, and accordingly, the interviews were limited to 22 participants. The characteristics of the participants are presented in Table 1. The detailed information for each participant is provided in Appendix 1. The study included 14 mothers and 8 fathers. The ages of the children ranged from 4 to 18. Most participants are on low incomes. After the earthquake, 9 families did not relocate, 9 families moved to a different residence within the province, and 4 families migrated out of the province for a short time or permanently.

Before collecting the data, ethics committee permission was obtained. In this context, the study was approved by Batman University's Ethics Committee (Decision no: 2024/01-44). ABK, one of the researchers, participated in a series of seminars at the provincial level for families with children with special needs after the earthquake as a special education specialist. During this process, he had the opportunity to meet families diagnosed with ASD. In addition, efforts were made to reach parents of children with ASD through teachers working in special education. In this context, information about the purpose of the study was provided to parents who met the inclusion criteria by face-to-face and telephone interviews.

Data collection

The interview technique was used with a semi-structured interview form to collect data. An interview is a form of data collection method that allows in-depth information to be collected about a specific topic, conducted face-to-face or via technological/digital tools such as telephone, etc[31]. The researchers prepared a draft form containing questions appropriate to the research purpose based on the disaster literature. The questions were structured to cover parents' experiences with their children with ASD before and after the disaster. Accordingly, participants were asked to compare and share their assessments of their children's daily routines, social and emotional experiences, educational and life skills before and after the earthquake. This approach enabled us to contextualise the effects of the earthquake on children with ASD. Draft form was shared with four academics who are experts in qualitative research, in the field of special education, guidance and psychological counseling, and child development. The interview form was finalized in line with the opinions received. The semi-structured interview form includes eight questions. The interviews took place between 10 January 2024 and 15 February 2025. Before the interviews, the participants were called and the date, place, and time of the interview were determined by asking the participants. The interviews were conducted at school and in private settings. Two

Characteristic	Category	*n*	%
Parent gender	Mother	14	63.6
	Father	8	36.4
Parent age (years)	Range	24–54	–
Income level	Low	14	63.6
	Moderate	6	27.3
	High	2	9.1
Child gender	Boy	17	77.3
	Girl	5	22.7
Child age (years)	Range	4–18	–
Type of school attended	Separate special education school	18	81.8
	Special education and rehabilitation center	3	13.6
	Special education class	1	4.5
Post-earthquake living status	Same house	9	40.9
	Relocated within the province	9	40.9
	Migrated outside the province	4	18.2
Separation status	Separated from father only	4	18.2
	Remained with family	18	81.8

Table 1. Demographic characteristics of participants ($N = 22$). Income status was determined according to the minimum wage paid in Türkiye.

researchers participated in the interviews. Three participants allowed audio recording, and notes were taken in the interviews with the other participants. The interviews lasted an average of 45–55 min.

Trauma informed approach and ethical considerations in interviews

A trauma-informed approach allows researchers to capture participants' rich experiences while also protecting participants from re-traumatisation[32]. We utilised a series of frameworks for sensitivity and ethical principles in the interviews[33–35]. Firstly, ethical considerations were taken into account when preparing the interview questions, and care was taken to ensure that the questions were phrased in an impartial manner that reflected the participants' overall experience. Written informed consent was obtained prior to the interviews, and during this process, participants were provided with detailed information about the purpose of the research, the process, and possible precautions. During the interview process, care was taken to communicate with participants in a consistent, predictable, and accepting manner. In addition, researchers used empathetic and non-judgmental language to prevent re-traumatisation, exercised caution with questions that could challenge participants, and approached emotional responses with sensitivity. If participants became upset or disclosed traumatic experiences during the interviews, a break was taken and the interview was redirected towards a supportive approach. It was clearly stated that the interviews could be terminated if necessary. Finally, before concluding the interviews, participants were asked if they had any additional thoughts to share, and they were thanked, emphasising the value of their participation in the research.

Data analysis

The content analysis method was used in the analysis of the data. Content analysis is the process of systematically examining qualitative data and revealing certain themes, patterns, and meanings based on the data by the researchers. The following steps were followed in the content analysis as suggested by Hsieh and Shannon: (1) transcription of the data, (2) coding, (3) identification of themes, and (4) interpretation. Transcripts were created by transcribing the notes and audio recordings taken during the interviews and recorded electronically[36]. The transcripts were prepared in detail, including participants' emotional responses and intonations. These transcripts were shared with the participants and feedback was obtained. Data analysis commenced immediately after each interview, without waiting for subsequent interviews. This guided the researchers on what to focus on in the following interviews[37]. Before proceeding to the coding stage, the transcripts were read repeatedly by the two researchers conducting the interviews to ensure familiarity with the data. Subsequently, an Excel table was created for coding, and the interview questions were placed in this table to begin the coding process. Both researchers carried out the coding independently. When creating codes, the two methods proposed by researchers[38] were followed. Within this scope, in some coding sessions, participants' statements were labelled without any alteration (in-vivo coding), while in other coding sessions, coding was performed using appropriate concepts from the literature that best expressed participants' views. For example, in the theme "Emotional and behavioural problems", "crying spells" were directly labelled as participant statements, while in the same theme, the codes "social isolation, withdrawal" were coded as phenomena describing the participants' views. All participants held occasional joint meetings to exchange views on the codes. During these meetings, some codes were deleted or renamed. The next step was to identify themes. Themes are structures, patterns, or abstractions that emerge as answers to research questions[39]. The theme creation process was carried out with the participation of all researchers. An inductive approach was followed in this process. First, the codes were read individually and top-level categories appropriate to the focus of the research were created. For example, codes expressing problems related to access to health services were grouped together to form the theme "Difficulties experienced in accessing health services". Once the themes were determined, all themes and codes were reviewed again, and the researchers reached a consensus on their appropriateness. In the final stage, the themes were reported in the findings section and interpreted with direct quotations to support them.

Trustworthiness

As in all research, validity and reliability are important for the quality of the information produced in qualitative research. In qualitative research, validity and reliability are framed as rigor or trustworthiness[40]. Various methods can be used for trustworthiness. In this study, the methods of member check, triangulation/diversification, and peer review recommended in the literature[41] were used. As part of member checking, the research report containing themes, codes, and their interpretations was shared with participants, who were asked to evaluate whether the findings and conclusions reflected their views and thoughts. In data triangulation, methodological triangulation and researcher triangulation are two fundamental methods[39]. In this study, researcher triangulation was used. Researcher triangulation involves the involvement of more than one researcher in the planning, data collection, and analysis process of the research. However, the entire research process, transcripts, and research report were supported by a researcher specialising in qualitative research. Additionally, within the scope of transferability, the data collection and analysis process were reported in detail.

Results

In line with the views expressed by the parents, the difficulties that emerged after the earthquake and the negative effects of the earthquake on the development of children were divided into themes and presented in detail. Five themes have been identified that frame the problems faced by parents of children with ASD after the earthquake and the negative effects on children with ASD. These are; socio-economic difficulties, difficulties in accessing health services, educational difficulties, emotional and behavioral problems ve regression in basic skills.

The socio-economic difficulties experienced by the parents are presented in Table 2. Within this theme, the problems highlighted by families with children with ASD were access to social services, housing, relocation, financial difficulties and social isolation. The vast majority of families with children with ASD were of low

Main theme	Codes
Socio-economic difficulties	Service access
	Financial problems
	Housing issues
	Social isolation
	Relocation

Table 2. Socio-economic challenges faced by families.

Theme	Grouped codes
Difficulties in accessing health services	Access to healthcare providers (appointments, specialist access)
	Medication-related difficulties (medication access, medication use)
	Continuity of care (check-ups, diagnosis and treatment)

Table 3. Health services difficulties.

socio-economic status. These families were receiving psycho-social support, financial and social support before the earthquake. The interruption of these services following the earthquake presented a challenge for families. Participant 19, who stated that money had no meaning in the first days after the earthquake, later expressed the need for financial support and applying for social assistance with the following words:

"*We lived in a period when money had no power. Afterward, we made a living with the means of the state. However, we had financial problems because we could not do our jobs. We were in frequent contact with social services*" (Participant 19).

It is understood from the participant's words that families are experiencing financial difficulties due to being unable to work after the earthquake and are seeking social assistance to cope with this situation. However, low-income families in particular frequently shared the financial difficulties they were experiencing.

The vast majority of parents highlighted the problems they experienced with housing. During this process, many families were forced to move repeatedly, leading to problems of social isolation as well as difficulties adapting to their social environment. Participant 2, who was moved to a container after the earthquake and has two children with ASD, emphasised the need for social activities, expressing that their child was isolated from their social environment with the following words. 'Since there were no children in our environment, the child was extremely uneasy.' Housing was one of the major problems faced by families after the earthquake. Participant 12 stated that they stayed in their car for a while, while participant 5, who lives in a village, expressed their gratitude for the support they received from a special education teacher in the following words:

"*We had transportation problems, we had difficulties in getting support. We lived in a village, our special education class teacher Ali helped us despite all the difficulties, he brought tablets, materials and provided diapers and food aid, God bless him*" (Participant 5).

It is understood from the participant's words that the support he received from his special education teacher increased his resilience and made it easier for him to cope with difficulties.

The difficulties experienced by parents of children diagnosed with ASD in accessing health services are presented in Table 3. Within this theme, parents particularly mentioned the problems they experienced in accessing healthcare professionals, necessary medications, and services such as diagnosis and treatment. In this context, participant 4, whose child also has epilepsy, stated that they had to move to another city because they could not get an appointment at any of the four hospitals, while participant 7 said that their child fell ill due to living in difficult conditions and that they had difficulty getting treatment. Families who settled in the village or town where their relatives lived after the earthquake mentioned the problems they experienced in accessing health services more frequently.

Participant 14 stated that their child was on regular medication and described the problems they faced due to being unable to obtain the medication as follows:

"*After the earthquake, my child's self-harming behaviour, aggression and repetitive behaviours increased. I think this was because he couldn't take his medication for a while. Now we have obtained his medication and he is better than before….*" (Participant 14).

The participant's words highlight the importance of access to medication for children with ASD after a disaster. Indeed, it is understood that interruptions in the routine administration of medication exacerbate behavioural problems in children.

The participant, who stated that their child had become withdrawn after the earthquake, described their inability to secure two appointments, the problems they experienced in obtaining medication, and how they coped with these problems in the following words.

"*The appointments we made at the hospital were canceled due to the busyness after the earthquake. The appointment system was closed for a while. Since the child has epilepsy, we could not use the medicines in the first weeks because we could not obtain them. After a while, we obtained the medicines through the aid of the Ministry of Health. The child's behavior and emotions deteriorated in the post-earthquake process, after a while we started taking medicines and he recovered as he got used to the social environment in time*" (Participant 2).

Theme	Codes
Educational difficulties	School closure
	Access to education
	Learning environment
	Support interruption
	Materials access
	Forgetting
	Concentration
	Falling behind

Table 4. Difficulties experienced in education.

Theme	Grouped codes
Emotional and behavioral problems	Emotional reactions (fear and anxiety, earthquake fear, crying, withdrawal) Sleep and sensory issues (sleep problems, noise sensitivity, delirium)
	Communication difficulties (silence, echolalia, communication frustration)
	Behavioral changes (irritability, obsessions, inappropriate interest)

Table 5. Emotional and behavioral problems in children diagnosed with ASD.

The parent's words highlight the importance of access to healthcare services for children with ASD following the earthquake. Indeed, appointment cancellations and system shutdowns have disrupted access to regular health checks; the inability to obtain medication has negatively affected both the child's physical health and their behavioural-emotional state. This situation shows that the intensity of healthcare services after a disaster and the lack of infrastructure have made the continuity of treatment for children with special needs even more fragile. At the same time, regaining access to medication with the support of state institutions has contributed to the recovery of the family and the child.

The difficulties experienced by parents of children diagnosed with ASD regarding education are presented in Table 4. School lockdown and access to education were the main educational challenges reported by parents. Parents were aware that their children were experiencing learning losses alongside difficulties accessing education. Following the earthquake, schools remained closed for a long period, and participant 3, who was searching for a safe place to live, expressed their views on this matter as follows:.

"*There was no education for 4 months due to the earthquake, there was a change of location for 3 months, the child had difficulty a lot after starting school, and we had to take all the education from the beginning again. I need privacy education for my child after the earthquake. The disruptions in education and difficulty in attendance make it difficult for us to get help in this regard*" (Participant 3).

Participant 3 shared some concerns about their child while expressing the above views. Since they began living in a crowded container city, the participant emphasised their child's need for education on privacy but did not receive sufficient support.

The participant, aware of the critical importance of school for the socialisation and acquisition of certain basic skills for children with ASD, emphasised that the closure of seven schools had led to significant regression in their child, who was experiencing social and emotional problems due to being unable to spend time with their peers. This situation demonstrates the critical importance of educational environments as a restorative and motivating factor after a disaster. Despite this, some children received no educational support for nearly seven months. In this context, participant 21 stated that they tried to support their child with their own resources.

Access to education seemed to be a bit more worrying for families living in villages. Participant 18, who had been unable to access education for a long time and could only access various materials, described the problems their child was experiencing due to insufficient support as follows.

"*We were deprived of everything for 4.5 months, there was nothing in the village, and the child only concentrated on toys and phones. Later, AFAD and Tohum Autism Foundation brought educational cards, materials, and tablets, but after 5 months he became quite withdrawn*" (Participant 18).

Parents who moved to different provinces to provide their children with educational opportunities in a more suitable environment stated that although they experienced adjustment problems for a while, they compensated for learning losses more quickly. However, these families also mentioned that their children experienced concentration problems for a while.

Codes related to the theme of emotional and behavioural problems observed in children with ASD following the earthquake are presented in Table 5. Problems observed in children with ASD have been grouped under emotional reactions, sleep and sensory issues, communication difficulties, and behavioural changes. Within the scope of emotional reactions, earthquake fear, crying spells, withdrawal, and anxiety were frequently reported problems by parents. Participant 9, who observed these types of problems intensely in their child, expressed their views as follows:

Theme	Skill area	Before the earthquake	After the earthquake
Regression in basic skills	Self-care skills	Independent in toileting, feeding regularly, dressing and brushing teeth	Toileting accidents, appetite loss, food refusal/selectivity, difficulty with dressing (zippers, buttons), refusal to brush teeth
	Communication skills	More appropriate language use, less difficulty expressing needs	Inappropriate/ repetitive speech, difficulty expressing, avoidance of communication
	Social interaction	Participated in play, had limited peer interaction	Withdrawal, no participation in games, social isolation
	Attention and perception	Maintained eye contact for longer periods	Marked decrease in eye contact
	Psychomotor skills	Better fine motor abilities (writing, hand use)	Weakness in balance, difficulty writing and holding a pencil

Table 6. Regression in basic skills (before and after the earthquake).

"*Yes, he became very afraid of swimming pools, shopping malls, and horse riding, he constantly withdrew himself from such environments. His crying fits increased, he did not want to go to crowded places, and when he did he would cry a lot. He distanced himself from social circles, he spent more time on the phone*" (Participant 9).

This response also indicates that children with ASD may develop emotional reactions to certain situations and objects that were previously neutral after the earthquake. In addition, it is understood that the child may turn to spending more time on the phone as a means of escape or coping with stressful situations.

Another area of concern frequently mentioned by parents was sleep and sensory problems. Participant 11 described their child's sleep problem as follows: "*They cannot sleep in their own bed. After sleeping in a room with the light on, I take them to their own bed, and they constantly talk in their sleep at night.*" Participant 12 stated that their child could not sleep outside the car for a long time. In addition, the vast majority of parents stated that their children, whose sensory sensitivity increased after the earthquake, developed excessive reactions to light and sound. Furthermore, some parents reported that their children had difficulty perceiving their surroundings and sometimes experienced confusion.

A significant problem observed in children with ASD after the earthquake was communication difficulties and behavioural problems. Children with ASD, who often experience problems with communication skills, saw these problems intensify after the earthquake. Participant 15 described the problems they experienced in this regard as follows:

"*My child used to be able to express themselves more easily. However, they now find it very difficult and become frustrated when they cannot do so, and start repeating the same words*" (Participant 15).

Additionally, parents reported an increase in obsessive behaviours in their children with ASD, particularly the emergence of inappropriate interest in the opposite sex among boys. Participant 16 stated that their child had started putting their hand inside their underwear and, when they tried to stop them, attempted to put both hands in. Participant 6 reported that their ASD child had started biting their own hand. Regarding the increase in obsessive behaviours, Participant 3 expressed their views as follows:

"*We are especially having problems with dressing. We have become obsessed with a sweater and shoes, he still goes to school with torn sneakers. His clothes are the same color, he uses the same shoes*" (Participant 3).

As can be understood from parents' views, it can be said that obsessive behaviours in children with ASD have become more frequent and increased after the earthquake, and that some behavioural tendencies have become more entrenched.

Findings related to the theme of regression in basic skills in children with ASD are presented in Table 6. According to parental views, significant regression and deterioration occurred in self-care skills, communication skills, attention & perception, and psychomotor skills in children with ASD after the earthquake. Parents frequently reported regression in personal care habits such as toileting, eating and drinking, dressing, and tooth brushing within the scope of self-care skills. Participant 7 shared the problems they experienced in this regard in detail as follows:

"*We had difficulty in toilet skills. After the earthquake, the toilet in the shelter allocated to us by the state was far away, there was some difficulty and regression, there was a regression in eating and drinking, he became very choosy, and he stayed in the same clothes for 2 months after the earthquake. He did not want to take them off. He almost doesn't dress himself anymore, I dress him, and his teeth brushing has regressed*" (Participant 7).

When discussing declines in self-care skills, it is understood that participants believe living conditions also play a role. In addition, participants largely attribute the decline in their ASD children's skills to the interruption in support services they received before the earthquake. For example, participant 13 shared that their child had made significant progress in motor skills while attending school before the earthquake, but experienced regression after the earthquake due to school closures and was unable to perform many skills due to regression in psychomotor skills. Participant 5 expressed their views on communication problems as an important area of regression as follows:

"*There were regressions in her skills due to the limitations we experienced in terms of opportunities after the earthquake. Maybe if she had continued her education, her communication skills could have been much better. Unfortunately, she cannot speak now, so I cannot always understand her under all circumstances. For this reason, my child becomes uneasy*" (Participant 5).

This participant also emphasised the limited opportunities and disruption to schooling following the earthquake when discussing the decline in their child's abilities. Furthermore, it is understood that the decline in their ASD child's speech both unsettles the child and creates a psychological burden on the parents.

While difficulties in making eye contact are a common occurrence in children with ASD, many parents reported that their children's eye contact duration decreased significantly after the earthquake. Furthermore, not

wanting to participate in games and avoiding social interactions were reported as fundamental problems related to social interaction skills.

Discussion

In this study, the difficulties experienced by children diagnosed with ASD following the earthquakes centered in Kahramanmaraş, Türkiye, were examined in detail in line with the views of their parents. The research findings reveal the multifaceted effects of the earthquake on these individuals. It was determined that factors such as difficulties in accessing social services, interruptions in education, and inadequacies in health services have profound effects on the general development of children.

To provide a clearer understanding, the discussion is structured thematically under the following subsections: socioeconomic impacts, access to health and education services, intersectional vulnerabilities, emotional and behavioral effects, regression in basic and adaptive skills, and resilience and coping.

Socioeconomic impacts

As a result of the research, it is seen that individuals diagnosed with ASD experienced socio-economic difficulties after the earthquake. It is observed that children diagnosed with ASD, together with their families, experienced various difficulties in meeting basic needs in the early periods after the disaster. Disruptions in accessing social services and lack of financial assistance made it difficult to meet the needs of individuals diagnosed with ASD. Approximately 75 thousand houses were delivered to their beneficiaries 1 year after the Kahramanmaraş earthquake[42]. However, since difficulties were experienced with factors such as housing problems and temporary residence until the delivery process of the houses, the living conditions of the families became difficult. After the Kahramanmaraş earthquake, all student dormitories across the country were opened to the service of disaster-affected citizens in order to meet the housing needs of people in earthquake zones. However, the housing needs of students could not be met in this way, and education and training in Türkiye were carried out online[43]. During this process, it was determined that children diagnosed with ASD were alienated from their social environments and had difficulties in reaching support networks. In a study conducted by Luther et al.[44], parents stated that having a child diagnosed with ASD caused stress factors such as financial difficulties, loss of personal freedom, and marital disharmony. The most common strategies they used to cope with these difficulties were to seek social support. In a different study, many parents stated that the services provided were not sufficient or did not fully meet the needs of their children. In particular, in issues such as housing and social life support, parents emphasized that the existing services were not suitable for their children's situation[45]. In this context, our results underline more comprehensive and holistic approaches to the basic needs of families with children diagnosed with ASD after a disaster.

Access to health and education services after the earthquake

Another finding of the study was related to the difficulties experienced by families with children diagnosed with ASD in healthcare services. It was revealed that individuals diagnosed with ASD had problems accessing healthcare services after the earthquake. Appointment problems and the lack of specialists disrupted children's regular check-ups and treatment. It is stated that the problems experienced in obtaining medicine and the difficulties in using medicine in the first weeks of the earthquake made the treatment process difficult. This situation shows that institutions may face significant capacity challenges after large-scale disasters such as the Kahramanmaraş earthquake. In this respect, institutions that were not damaged should be identified and rehabilitation interventions should be provided quickly with the coordination of physicians, physiotherapists, psychologists, and other health professionals in order to protect and improve the health of earthquake victims. In Türkiye, primary health care services are developing. Primary health care services, which provide easy access to individuals in need, are advantageous in this respect. Primary care is at a very important point in terms of accessing rehabilitation services for earthquake victims in natural disasters such as earthquakes, which have widespread effects on individuals, and reducing the intensity so that more people can access treatment without losing time. It is emphasized that the employment of these health professionals in primary care should be increased and earthquake victims should be supported biopsychosocially with appropriate rehabilitation strategies. To achieve this, it is stated that rehabilitation rooms should be established in family health centers and the necessary equipment support should be provided[46].

In a study conducted by Wilson and Peterson, families with children diagnosed with ASD may experience many difficulties in the healthcare process. Parents expressed the problems they experienced in making medical appointments, communicating with doctors, and complex healthcare environments. Communication problems and insufficient knowledge of healthcare professionals about ASD are among the important obstacles[47]. In different studies, parents have expressed the problems experienced by their children in accessing health services[48], finding specialist doctors, and obtaining medicine[49]. It is thought that this situation may be due to various reasons. Limited ASD knowledge among healthcare staff lowers service quality. Especially in the post-disaster period, when healthcare professionals work under an intense workload, the time and attention allocated to special needs groups may decrease. This situation may cause parents to have difficulty communicating with healthcare professionals and not benefit sufficiently from health services.

The study concluded that children with ASD have difficulties in their education. Schools, especially in earthquake zones, were damaged and closed for long periods. Such interruptions in access to education have negatively affected both the academic and social development of children. This shows the importance of parental competence in supporting ASD children's education[50]. In a study conducted by Gray and Donnelly[51], it was determined that families with children with ASD experience significant differences in access to education and support services. While traveling families had great difficulty finding suitable schools for their children,

settled families were able to receive more support. However, both groups had difficulty accessing educational opportunities that were appropriate for their children's needs.

Intersectionality and pre/post-earthquake challenges

The findings obtained in the post-earthquake period also point to the intersectional vulnerabilities experienced by children with Autism Spectrum Disorder. These vulnerabilities are not solely due to the special needs of individuals diagnosed with ASD; rather, they are further deepened when combined with other factors such as low socio-economic status, loss of housing, parental stress, and limited access to health and educational services. From the perspective of intersectionality, the coexistence of multiple disadvantages may result in more severe exclusion and vulnerability. Therefore, in the context of disasters, children diagnosed with ASD often face cumulative challenges, which creates the need for more comprehensive support mechanisms.

In the study conducted by Crawford et al., it is emphasized that individuals with special needs may be disproportionately affected by disasters due to layers of marginalization arising from the interaction of personal, social, economic, political, and environmental factors[52]. When these variables intersect with gender in particular, they may lead to additional discrimination and social exclusion that reinforce inequality and stigma. The same study, based on a comprehensive review of disaster risk reduction efforts in OECD countries, highlights that the interaction between disability and gender is rarely addressed, pointing to a significant gap in inclusive planning. In this context, our study did not directly reveal gender-based differences or increased stigma affecting girls with Autism Spectrum Disorder living in container settlements after the earthquake, as reported by parents. Beyond these intersectional considerations, it is also important to examine pre- and post-earthquake conditions to illustrate the specific impacts observed in our study.

A comparative consideration of pre- and post-earthquake conditions reveals the impact of the disaster more clearly. Parents frequently stated that their children had established certain routines, educational progress, or basic self-care skills before the earthquake, but that these were disrupted or regressed afterwards. For example, some children who had previously achieved toilet training lost this skill, while others had to "start education from the beginning". Parental accounts indicate that the earthquake disrupted developmental processes and challenged existing gains, highlighting the sensitivity of children with ASD to environmental changes.

Emotional and behavioral effects

As expressed by parents (e.g., Parent 9 and Parent 12), children with ASD experienced anxiety, fear of earthquakes, and sleep disorders after the earthquake. According to the research findings, these difficulties were often accompanied by crying spells and increased irritability. In a study on the COVID-19 pandemic process conducted by Arıcı-Doğan and Görgü[53], it was found that interruptions in access to special education negatively affected the social interaction skills and problematic behaviors of children diagnosed with ASD. Our research findings reveal that social isolation and psychological regression lead to significant declines in the general health and well-being of these children. This situation has led to children forgetting what they had learned and experiencing negative changes in their behavior. A bibliometric study conducted in the field shows that individuals diagnosed with ASD are most commonly exposed to traumatic events such as accidents, disasters, violent acts, and sexual abuse. Such traumas cause an increase in symptoms such as deterioration in social and communication skills, aggression, distraction, sleep disorders, hyperactivity, and self-harm in individuals diagnosed with ASD[54]. Nguyen and Minh Pham[55] state that natural disasters affect children's educational processes through various channels and that these effects negatively affect not only academic success but also children's psychosocial development. It has been stated that the condition of individuals diagnosed with ASD with psychological disorders may worsen after the disaster. This situation shows how critical post-disaster psychological support services are for individuals with special needs[56]. After the earthquakes in Nepal in 2015, individuals with special needs faced higher risks and difficulties in disasters. Individuals with special needs encountered problems such as access problems, lack of information, and social exclusion during and after the disaster[57]. Similarly, after the Christchurch earthquakes, children with special needs faced serious difficulties in preparing for and coping with disasters[58]. Studies show that psychiatric disorders such as depression, anxiety, and behavioral disorders may increase in individuals diagnosed with ASD after the earthquake[59]. In the study conducted by Aslan and Şahinöz (2023), the difficulties encountered by individuals with special needs during the evacuation process and the inadequacies of disaster management systems during the Izmir earthquake were emphasized. This situation shows that individuals with special needs are more vulnerable during disasters and can be more affected psychologically[60]. In addition, the social interaction and communication difficulties experienced by these individuals further increase the difficulties they experience after the earthquake. Especially after the disaster, sudden changes, loud noises, and encounters with people they do not know can have more negative effects on these children[18].

Regression in basic and adaptive skills: resilience and coping

As noted by parents (e.g., Parent 7 and Parent 18), children with ASD experienced regressions in daily life skills such as toilet training, eating, and dressing after the earthquake. According to the research findings, these regressions negatively affected children's self-care and were further affected by the disruption of routine habits such as brushing teeth.

In addition, deficiencies in language use and difficulties in expressing oneself limit children's communication capacities; difficulties in perception, eye contact, and socialization negatively affect social adaptation processes. Families play a critical role in providing emotional support and developing self-care skills for children and adolescents with special needs. The extent to which families of children with special needs are affected by natural disasters has a direct impact on the difficulties these children face and the traumatic reactions they show. The trauma and stress experienced by families can negatively affect the psychosocial adaptation and

general development processes of children with special needs[61]. A study has shown that individuals with ASD show symptoms such as deterioration in social interaction and communication skills, increased stereotypical behaviors, aggression, distraction, sleep disorders, agitation, hyperactivity, and loss of self-care skills when exposed to trauma. The most common type of trauma among children with a history of trauma was found to be witnessing accidents or violent events or being a victim of such events[62]. In a similar study, after the 2023 Kahramanmaraş earthquakes, parents experienced serious difficulties in accessing basic needs such as self-care, medication, personal hygiene, and food. This situation negatively affected the health and nutritional status of both parents and individuals with mental disabilities[63].

The effectiveness of post-earthquake intervention and rehabilitation programs plays a critical role in the recovery process of individuals diagnosed with ASD. However, earthquake-related damage in physical therapy centers is associated with such regressions. In a study conducted by Valenti et al., it was stated that intensive rehabilitation programs implemented after the earthquake partially improved the adaptive functions of children diagnosed with ASD, but longer-term interventions were needed for full recovery[64]. Similarly, access to physical activity is of great importance for both the physical and mental health of individuals diagnosed with ASD. Yarımkaya et al. emphasized that the difficulties experienced by individuals diagnosed with ASD in accessing physical activity after the earthquake have negative effects on the health and social skills of these individuals[24]. It is thought that the regressions in the psychomotor skills of children diagnosed with ASD after the earthquake may arise from the disruption of their routines, stress and trauma, and deficiencies in their social support networks. Because children diagnosed with ASD may experience regressions in their skills due to disruptions in their routines[65], the trauma experienced by children diagnosed with ASD may affect their physical functions[66], and it is emphasized that there is a relationship between the social environment of these children and their psychomotor skills[67].

Parents frequently emphasized the difficulties they experienced in meeting basic needs such as housing, food, and access to health services after the earthquake, as well as the regressions observed in their children due to the interruption of education. However, their accounts also revealed the strategies they developed to cope with these challenges. Some families relied on the support of teachers who provided tablets and educational materials, or on aid that covered basic necessities such as diapers and food. Others stated that when schools reopened and housing conditions improved, they "started education from the beginning" and tried to re-establish daily routines for their children. These accounts demonstrate that, despite facing significant hardships after the earthquake, families showed resilience by making use of available support resources and attempting to rebuild disrupted routines. These observations provide a basis for linking the findings to resilience theories.

The findings of this study can also be interpreted within the framework of resilience theories. In particular, Masten's concept of *Ordinary Magic*[68] emphasizes that resilience is not an extraordinary trait, but rather emerges through support systems such as family support, schooling, and community resources. In our study, parents' reliance on teachers who provided educational materials and basic necessities, as well as their efforts to re-establish routines when schools reopened, illustrate how such supports functioned as protective factors and facilitated the adaptation of children with ASD in the post-earthquake period.

Interruptions and implications

The current findings appear to be consistent with evidence from other disaster contexts. Research on Hurricane Harvey in the United States demonstrated that individuals with special needs faced significant barriers in accessing education, health, and social services, and that disruptions in daily routines created long-term challenges[69]. Similarly, Peek and Stough emphasized the social vulnerability of children with special needs in disasters, noting that disasters tend to exacerbate existing inequalities. These parallels suggest that the difficulties and regressions reported by parents in our study reflect situations also observed internationally[6].

Studies conducted in Hatay and Şanlıurfa found an increase in autism symptoms and increased levels of irritability after the earthquake. This increase was especially evident in regions that had to suspend special education for longer periods[23]. Another study reported that the routine education processes of children with special needs were interrupted after the earthquake, and this caused negative changes in the children's behavior. It has been reported that the disruption of the routines of children with ASD, in particular, caused behavioral problems to reoccur. Although these children have a high desire to continue their education, this demand may be insufficient under current conditions[70]. In this context, strategies that systematically incorporate the educational, health and social needs of children with ASD into crisis and disaster management policies are necessary to prevent service disruptions following disasters. The negative effects of interruptions in education and support services on children's development become even more pronounced following traumatic events such as earthquakes. To ensure the continuity of education and therapy for children with ASD after disasters, priority should be given to technology-based interventions such as tablet-based ABA programmes, mobile support applications, and teletherapy services, and these interventions should be incorporated into national disaster preparedness policies and special education practices. Furthermore, it is crucial to empower families through targeted psychosocial support programmes, strengthening the resilience and supporting the well-being of both children and their caregivers.

Future research should examine similar issues in different geographic regions to allow for broader comparisons and generalizations. In addition, combining qualitative findings with quantitative analyses could yield more comprehensive results. Finally, long-term follow-up studies are needed to better understand the evolving post-disaster experiences of children with ASD and their families.

Conclusions

This study comprehensively examines the multifaceted effects of earthquakes on children with ASD and emphasizes the need for long-term, sustainable solutions to the needs of these children. The continuity of

education, health, and social support services is of critical importance in maintaining the well-being of individuals with ASD. In this context, it is of great importance that disaster preparedness and intervention strategies are designed to meet the special needs of individuals with special needs and that these individuals are actively involved in disaster management processes.

This study has several limitations. First, since it was conducted within the first year after the earthquake, long-term changes and developments could not be observed. Second, in terms of sampling, it included only parents living in Malatya province. This sampling situation limits the generalizability of the findings to other regions. Third, reliance on semi-structured interviews as the primary data collection method means that the results are based on parents' subjective experiences, which may have influenced the depth and focus of the information obtained.

Data availability

The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

Received: 22 July 2025; Accepted: 3 October 2025
Published online: 10 November 2025

References

1. Özdoğru, M. Özel Gereksinimli öğrencilerin Okul öncesi eğitiminde karşılaşılan Sorunlar. *Temel Eğitim* **11**, 6–16 (2021).
2. Şahbaz, Ü. & Kalay, G. Okulöncesi eğitimi öğretmen adaylarının kaynaştırmaya ilişkin görüşlerinin belirlenmesi. *Mehmet Akif Ersoy Üniversitesi Eğitim Fakültesi Dergisi* **19**, 116–135 (2010).
3. Cook, B. G. & Schirmer, B. R. What is special about special education? Overview and analysis. *J. Special Educ.* **37** (3), 200–205. https://doi.org/10.1177/00224669030370031001 (2003).
4. Francisco, M. P. B., Hartman, M. & Wang, Y. Inclusion and special education. *Educ. Sci.* **10** (9), 238 (2020).
5. Ünlü, E. Özel eğitime Gereksinim Duyan çocuklar ve özel eğitim. In *Özel eğitime Gereksinimi Olan öğrenciler Ve özel eğitim* (ed. Diken, İ. H.) 3–17 (Pegem Akademi Yayıncılık, 2022).
6. Peek, L. & Stough, L. M. Children with disabilities in the context of disaster: A social vulnerability perspective. *Child Dev.* **81** (4), 1260–1270. https://doi.org/10.1111/j.1467-8624.2010.01466.x (2010).
7. Espejo, R. *Are Natural Disasters Increasing?* (Greenhaven Publishing LLC, 2014).
8. Bilik, M. B. & Akdağ, M. Özel Gereksinimli Bireyler ve Ebeveynleri açısından Afet Zorlukları: 2011 Van depremi örneği. *Afet Ve Risk Dergisi*. **6** (1), 243–256 (2023).
9. Bouton, M. & Cooper, A. Children and disaster. In *Ciottone's Disaster Medicine*, 3rd ed. (ed Ciottone, G.) 58–67 (Elsevier, 2024).
10. Arslan, K. Afetlerin engelli bireylere etkisi. In *Sosyal Bilimler Üzerine Araştırmalar-II*, 197–209 (Özgür Yayın Dağıtım, 2023).
11. Akcay, E. & Başgül, Ş. S. Pandemi ve özel Gereksinimi olan/risk altındaki çocuklar. *Covid-19 Pandemisi Ve çocuk Ve Ergen Ruh sağlığı*. **1**, 55–61 (2020).
12. Ben-Pazi, H., Beni-Adani, L. & Lamdan, R. Accelerating telemedicine for cerebral palsy during the COVID-19 pandemic and beyond. *Front. Neurol.* **11** https://doi.org/10.3389/fneur.2020.00746 (2020).
13. Association, A. P. *Diagnostic and Statistical Manual of Mental Disorders*, 5th edn (American Psychiatric Association, 2013).
14. Scarpinato, N. et al. Caring for the child with an autism spectrum disorder in the acute care setting. *J. Spec. Pediatr. Nurs.* **15** (3), 244–254. https://doi.org/10.1111/j.1744-6155.2010.00244.x (2010).
15. Ahmad, E. S. N. The challenges faced by the parents of autistic children in Jordan. *J. Educ. Pract.* **11** (28), 74–82 (2020).
16. Eroğlu, M. & Yakşi, N. Changes in symptom severity and sleeping habits after earthquake in children and adolescents with autism spectrum disorder: the case of the Kahramanmaras earthquake in 2023, Turkey. Acıbadem Üniversitesi Sağlık. *Bilimleri Dergisi*. **14** (4), 577–586 (2023).
17. Valenti, M. et al. Autism after an earthquake: the experience of l'aquila (Central Italy) as a basis for an operative guideline. *Epidemiol. Prev.* **40** (2), 49–52 (2016).
18. Edmonds, C. O. Designing emergency preparedness resources for children with autism. *Int. J. Disabil. Dev. Educ.* **64** (4), 404–419. https://doi.org/10.1080/1034912X.2016.1264577 (2017).
19. Republic of Turkey Presidency Strategy and Budget Presidency. Kahramanmaraş and Hatay Earthquakes Report. https://www.sbb.gov.tr/wpcontent/uploads/2023/03/%202023-Kahramanmaras-ve-Hatay-Depremleri-Raporu.pdf (2023).
20. Koç, M. & Yalçın, S. Afetlerde Krize Müdahale: Kahramanmaraş depremi'nde aile ve Sosyal Hizmetler Bakanlığı'nın Çalışmaları. *Uluslararası Sosyal Hizmet Araştırmaları Dergisi*. **3** (2), 93–105 (2023).
21. Dogan Aslan, S. Exposure to the earthquake with a child with autism: A qualitative study on parenting experiences. *Int. J. Disaster Risk Reduct.* **113**, 104850. https://doi.org/10.1016/j.ijdrr.2024.104850 (2024).
22. Kahveci, G. & Bulut Serin, N. The negative effects of the earthquake on mothers of children with autism spectrum disorder. *Folklor/Edebiyat* **30** (120 Ek), 1403–1428. https://doi.org/10.22559/folklor.3820 (2024).
23. Eroglu, M., Efendi, G. Y., Temelturk, R. D. & Yaksi, N. Living on with autism after a devastating earthquake: experiences of children and adolescents in Turkey. *Int. J. Dev. Disabil.* **70** (4), 766–776. https://doi.org/10.1080/20473869.2023.2301184 (2024).
24. Yarımkaya, E. et al. Barriers to physical activity in individuals with autism spectrum disorders after the 2023 Kahramanmaraş earthquakes in Türkiye. *Int. J. Dev. Disabil.* 1–13. https://doi.org/10.1080/20473869.2024.2369742 (2024).
25. Garcia, D., Dukes, C., Brady, M. P., Scott, J. & Wilson, C. L. Using modeling and rehearsal to teach fire safety to children with autism. *J. Appl. Behav. Anal.* **49** (3), 699–704. https://doi.org/10.1002/jaba.331 (2016).
26. Merriam, S. B. & Tisdell, E. J. *Qualitative Research: A Guide To Design and Implementation* (Wiley, 2015).
27. Patton, M. Q. *Qualitative Research & Evaluation Methods: Integrating Theory and Practice* (Sage, 2014).
28. Wilson, A. A guide to phenomenological research. *Nurs. Standard (2014+)*. **29** (34), 38 (2015).
29. Yıldırım, A. & Şimşek, H. *Qualitative Research Methods in Social Sciences* (Seckin, 2016).
30. Fusch, P. & Ness, L. Are we there yet? Data saturation in qualitative research (2016).
31. Kvale, S. *Interviews: Learning the Craft of Qualitative Research Interviewing* (Sage, 2009).
32. Isobel, S. Trauma-informed qualitative research: some methodological and practical considerations. *Int. J. Ment. Health Nurs.* **30** (S1), 1456–1469. https://doi.org/10.1111/inm.12914 (2021).
33. Alessi, E. J. & Kahn, S. Toward a trauma-informed qualitative research approach: guidelines for ensuring the safety and promoting the resilience of research participants. *Qual. Res. Psychol.* **20** (1), 121–154. https://doi.org/10.1080/14780887.2022.2107967 (2023).
34. Edelman, N. L. Trauma and resilience informed research principles and practice: A framework to improve the inclusion and experience of disadvantaged populations in health and social care research. *J. Health Serv. Res. Policy*. **28** (1), 66–75. https://doi.org/10.1177/13558196221124740 (2022).
35. Abuse, S. & Administration, M. H. S. In *A Guide To GPRA Data Collection Using trauma-informed Interviewing Skills* (SAMHSA Washington, 2015).

36. Hsieh, H-F. & Shannon, S. E. Three approaches to qualitative content analysis. *Qual. Health Res.* **15** (9), 1277–1288 (2005).
37. Miles, M. B. & Huberman, A. M. *Qualitative Data Analysis* (Sage, 2014).
38. Çelik, H., Baykal, N. & Memur, H. Nitel veri analizi ve Temel Ilkeleri. *Eğitimde Nitel Araştırmalar Dergisi*. **8** (1), 379–406 (2020).
39. Merriam, S. B. *Qualitative Research: A Guide To Design and Implementation: Revised and Expanded from Qualitative Research and Case Study Applications in Education* (Jossey-Bass, 2009).
40. Golafshani, N. Understanding reliability and validity in qualitative research. *Qual. Rep.* **8** (4), 597–607 (2003).
41. Cresswell, J. In*Qualitative Inquiry & Research Design: Choosing Among Five Approaches* (Sage, 2013).
42. Republic of Türkiye Ministry of Environment Urbanization and Climate Change. Deprem bölgesinde kalıcı konutların teslimi. (2024). https://csb.gov.tr/deprem-bolgesinde-kalici-konutlarin-teslimi-devam-ediyor-bakanlik-faaliyetleri-40087.
43. Telli, S. G. & Altun, D. Türkiye'de deprem sonrası çevrimiçi öğrenmenin vazgeçilmezliği. *Üniversite Araştırmaları Dergisi*. **6** (2), 125–136. https://doi.org/10.32329/uad.1268747 (2023).
44. Luther, E. H., Canham, D. L. & Cureton, V. Y. Coping and social support for parents of children with autism. *J. School Nurs.* **21** (1), 40–47. https://doi.org/10.1177/10598405050210010901 (2005).
45. Marsack-Topolewski, C. N. & Weisz, A. N. Parents' perceptions of access to services for their adult children diagnosed with autism spectrum disorder. *Fam. Soc.* **101** (2), 190–204. https://doi.org/10.1177/1044389419881273 (2020).
46. Yılmaz, R. C. & Kocamaz, D. Yıkıcı deprem Sonrasında erken rehabilitatif Müdahaleler İle Sakatlık Önlenebilir: Kahramanmaraş-Pazarcık depremi Sonrası rehabilitasyon Çalışanlarına Mektup. *Turk. J. Fam. Med. Prim. Care*. **17** (1), 1–5 (2019).
47. Wilson, S. A. & Peterson, C. C. Medical care experiences of children with autism and their parents: A scoping review. *Child Care Health Dev.* **44** (6), 807–817. https://doi.org/10.1111/cch.12611 (2018).
48. Nicholas, D. B. et al. Experiences of emergency department care from the perspective of families in which a child has autism spectrum disorder. *Soc. Work Health Care*. **55** (6), 409–426. https://doi.org/10.1080/00981389.2016.1178679 (2016).
49. Lajonchere, C., Jones, N., Coury, D. L. & Perrin, J. M. Leadership in health Care, research, and quality improvement for children and adolescents with autism spectrum disorders: autism treatment network and autism intervention research network on physical health. *Pediatrics* **130** (Supplement_2), S62–S8. https://doi.org/10.1542/peds.2012-0900C (2012).
50. Karaca, M. A. & Sarı, H. The educational skills self-competence scale for parents of children with autism spectrum disorder: A validity and reliability study. *Anatol. J. Health Res.* **5** (1), 57–64. https://doi.org/10.61534/anatoljhr.1428323 (2024).
51. Gray, C. & Donnelly, J. Unheard voices: the views of traveller and non-traveller mothers and children with ASD. *Int. J. Early Years Educ.* **21** (4), 268–285. https://doi.org/10.1080/09669760.2013.842160 (2013).
52. Crawford, T. et al. The intersectionality of Gender, sexual Identity, and disability in disaster risk reduction in OECD countries: A rapid scoping review. *Disabilities* https://doi.org/10.3390/disabilities3040036 (2023).
53. Arıcı-Doğan, D. & Görgü, E. Investigation of the views' of the mothers of children with autism spectrum disorder on suspending special education during the Covid-19 pandemic process. *J. Qual. Res. Educ.* https://doi.org/10.14689/enad.30.5 (2022). (30).
54. Hernández-González, O. et al. Research mapping of trauma experiences in autism spectrum disorders: A bibliometric analysis. *Healthcare* https://doi.org/10.3390/healthcare11091267 (2023).
55. Nguyen, C. V. & Minh Pham, N. The impact of natural disasters on children's education: comparative evidence from Ethiopia, India, Peru, and Vietnam. *Rev. Dev. Econ.* **22** (4), 1561–1589. https://doi.org/10.1111/rode.12406 (2018).
56. Stough, L. M. & Kelman, I. People with disabilities and disasters. In *Handbook of Disaster Research*, 225–242 (2018).
57. Lord, A., Sijapati, B., Baniya, J., Chand, O. & Ghale, T. *Disaster, Disability, & Difference: A Study of the Challenges Faced by Persons with Disabilities in Post-earthquake Nepal* (United Nations Development Programme, 2016).
58. Ronan, K. R., Alisic, E., Towers, B., Johnson, V. A. & Johnston, D. M. Disaster preparedness for children and families: a critical review. *Curr. Psychiatry Rep.* **17** (7), 58. https://doi.org/10.1007/s11920-015-0589-6 (2015).
59. Kerns, C. M., Newschaffer, C. J. & Berkowitz, S. J. Traumatic childhood events and autism spectrum disorder. *J. Autism Dev. Disord.* **45** (11), 3475–3486. https://doi.org/10.1007/s10803-015-2392-y (2015).
60. Aslan, R. & Şahinöz, S. The experiences of people with disabilities in the 2020 Izmir earthquake: A phenomenological research. *Int. J. Disaster Risk Reduct.* **95**, 103868. https://doi.org/10.1016/j.ijdrr.2023.103868 (2023).
61. Altun, A., Erdur Baker, Ö. & Yıldırım, Z. Afetlerde Psikolojik Destek İçin Psikolojik Danışmanlara Yönelik Çevirimiçi Eğitim Geliştirilmesi. (2018). https://open.metu.edu.tr/handle/11511/49947.
62. Mehtar, M. & Mukaddes, N. M. Posttraumatic stress disorder in individuals with diagnosis of autistic spectrum disorders. *Res. Autism Spectr. Disord.*. **5** (1), 539–546. https://doi.org/10.1016/j.rasd.2010.06.020 (2011).
63. Yarımkaya, E. & Bakkaloğlu, H. Experiences of parents of individuals with intellectual disabilities after the 2023 Kahramanmaraş earthquakes in Türkiye: a phenomenological study. *Int. J. Dev. Disabil.*. https://doi.org/10.1080/20473869.2024.2363009
64. Valenti, M. et al. Adaptive response of children and adolescents with autism to the 2009 earthquake in L'Aquila, Italy. *J. Autism Dev. Disord.* **42** (6), 954–960. https://doi.org/10.1007/s10803-011-1323-9 (2012).
65. Siracusano, M. et al. The impact of COVID-19 on the adaptive functioning, behavioral problems, and repetitive behaviors of Italian children with autism spectrum disorder: an observational study. *Children* https://doi.org/10.3390/children8020096 (2021).
66. Michna, G. A. et al. Best practices and emerging trends in assessment of trauma in students with autism spectrum disorder. *Psychol. Sch.* **60** (2), 479–494. https://doi.org/10.1002/pits.22769 (2023).
67. Renobell, V. La Mejora de La sociabilidad y Las habilidades sociales mediante El Uso de La Psicomotricidad relacional En Menores Con síntomas de Autismo. *Revista De Psicoterapia*. **34** (125), 33–46. https://doi.org/10.5944/rdp.v34i125.37819 (2023).
68. As, M. *Ordinary Magic: Resilience in Development* (Guilford Press, 2014).
69. Stough, L. M., Sharp, A. N., Decker, C. & Wilker, N. Disaster case management and individuals with disabilities. *Rehabil. Psychol.* **55** (3), 211–220 (2010).
70. Söğüt, D. A. & Kaya, A. 'In order not to cry, we averted our eyes from each other:'experiences of special education professionals working in the field during the Turkey earthquake. *Int. J. Dev. Disabil.* 1–11 (2024).

Acknowledgements

We would like to thank the parents who participated in our study for their valuable contributions.

Author contributions

Me.A.K., Mu.A.K., O.T.C. and C.K. designed the study; Me.A.K. and Mu.A.K. collected the data; Me.A.K. and Mu.A.K. drafted the manuscript; O.T.C. conducted the analysis and interpreted the results; Me.A.K., Mu.A.K., O.T.C. and C.K. reviewed the final manuscript and gave their consent.

Funding

This study was supported by the Inonu University Scientific Research Projects Unit [Project ID: 4225; Project Code: SBA-2025-4225].

Declarations

Competing interests
The authors declare no competing interests.

Purpose of study
This study aims to evaluate the difficulties faced by children with ASD in the fields of education, health, and social support after the earthquake centered in Kahramanmaraş on February 6, 2023, from the perspective of parents and to comprehensively present their experiences in this process.

Ethical approval
The ethical committee approval was obtained from the Ethics Committee of Batman University (Decision no: 2024/01–44). All methods were carried out by the 1964 Helsinki Declaration. Informed consent was obtained from all the participants.

Additional information
Supplementary Information The online version contains supplementary material available at https://doi.org/10.1038/s41598-025-23025-8.

Correspondence and requests for materials should be addressed to M.A.K.

Reprints and permissions information is available at www.nature.com/reprints.

Publisher's note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Open Access This article is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License, which permits any non-commercial use, sharing, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if you modified the licensed material. You do not have permission under this licence to share adapted material derived from this article or parts of it. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit http://creativecommons.org/licenses/by-nc-nd/4.0/.

© The Author(s) 2025