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Exploring the bereavement experiences and prevalence of prolonged grief disorder among 2023 Turkish earthquake survivors with advanced chronic disease: a mixed methods study

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ABSTRACT

Objective While traumatic experience of a loved one's death and having a chronic disease are both risk factors for prolonged grief disorder, there are no published studies on bereavement among earthquake survivors with advanced chronic disease. The objective of this study is to explore the bereavement experiences and prevalence of prolonged grief disorder (PGD) among 2023 Türkiye earthquake survivors with advanced chronic diseases.

Design/setting A mixed methods design of cross-sectional survey using the Prolonged Grief Scale (PG-13) and semi-structured interviews was used to provide a detailed understanding of the grief phenomenon in the context of bereaved adults with advanced chronic disease after the earthquake in Türkiye.

Participants 143 participants completed the survey, and interviews were conducted with 12 bereaved survivors with advanced chronic disease.

Results Our results indicated a prevalence of PGD among bereaved adults of 23.8%. The traumatic death of first-degree relatives was associated with a higher PGD prevalence (p<0.001). PGD developed in 50% of retirees (n=6). Six themes were identified: (1) bereavement reactions, (2) coping style, (3) disrupted grieving, (4) impact of grief on chronic disease, (5) moving forward and (6) unmet needs.

Conclusions We recommend a person-centred bereavement care that prioritises early identification and reduction of prolonged grief risk factors. We propose a framework for bereaved survivors to use in the development of an effective bereavement service model. This model may be used by mental health professionals and policymakers to respond sensitively to the values, needs and preferences of bereaved survivors who have experienced the unnatural death of a loved one.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ A unique study combining both qualitative thematic analysis and quantitative analysis provides a comprehensive understanding of bereavement experiences.
⇒ The quantitative survey, using the Prolonged Grief Scale, facilitates the identification of prolonged grief disorder prevalence and its associated risk factors among bereaved survivors.
⇒ The qualitative component, which is based on semi-structured interviews, offers in-depth insights into the lived experiences of bereaved individuals with advanced chronic illness following the earthquake.
⇒ Data were collected from one of the earthquake zones in 11 provinces, and the small sample size limits the generalisability of the findings to other settings.

INTRODUCTION

Prolonged grief disorder (PGD) is a distinct syndrome that is characterised by intense and persistent symptoms by a constellation of cognitive, emotional and behavioural responses.[1 2] The unexpected and unnatural death of a loved one due to natural disasters, traffic accidents or suicides puts bereaved individuals at great risk for PGD.[3] Studies focusing on risk factors for PGD found that death of a partner or child, being female,[4] living in a rural area, low monthly income and chronic diseases are associated with more severe PGD symptoms.[5] In addition, the risk for PGD following the unnatural death of a loved one is at a low level in high-income countries compared with low-middle-income countries.[6]

Earthquakes are one of the most devastating natural disasters that occur suddenly causing death injuries to thousands of people within minutes.[7–9] The Türkiye earthquake on 6 February 2023 was measured at 7.7 ranked as the deadliest natural disaster in Türkiye's history since the 1939 Erzincan earthquake.[4 10] The earthquake ruptured a 400 km segment of the East Anatolian Fault at a depth of 10 km and caused over 53 000 deaths and 107 000 injuries in 11 provinces. Apart from the destruction of the natural

environment, the Türkiye earthquake caused long-lasting and widespread psycho-socio-economic issues among bereaved individuals, resulting in a high risk of PGD.[10]

Survivors become vulnerable to a variety of mental health problems including PGD after unnatural death, which include sudden and violent deaths[1 2 11 12] such as disaster in Türkiye.[10] In a systematic review and meta-analysis, the estimated prevalence of PGD in an adult bereaved population was 9.8% following natural causes of death.[13] However, studies have reported that unnatural deaths are associated with a considerably higher rate of PGD compared with expected and natural deaths.[2 4 6–8] In the literature, the prevalence of PGD among earthquake-bereaved survivors ranged from 8.5% to 79% following a natural disaster.[2 4 6–8] A recent systematic review and meta-analysis have highlighted that approximately half of the bereaved individuals following unnatural deaths, such as accidents and disasters, have experienced symptoms which meet the diagnostic criteria for PGD.[6] Similarly, another systematic review and meta-analysis published in 2024 reported the prevalence of PGD after natural disasters to be 38.81%.[14] Studies show that time is also an influential variable on PGD and post-traumatic stress disorder,[15 16] for example, after the death of a loved one, the bereaved individual recovers over time and the side effects of the PGD gradually decrease. PGD symptoms recover within 6–25 months after the death in people who experienced the death of a loved one from natural causes.[15–17] Nevertheless, PGD caused by unexpected disasters such as earthquakes has a longer recovery period.[7] Several studies[4 7] have followed bereaved people up to 7 and 8 years after an earthquake and reported that a small percentage (between 8.5%[7] and 8.9%[4]) still met the criteria for PGD.

The death of a loved one can be one of the most stressful life events[18]; stress caused by PGD has a negative impact on the prognosis of chronic diseases.[18–21] As a result of stress conditions, the hypothalamic-pituitary-adrenocortical axis is stimulated and activates the secretion of cortisol into the bloodstream. As an adaptation to the stressor, cortisol secretion first increases and then decreases to normal levels; however, this dysregulation of cortisol negatively affects physical health conditions.[21] Furthermore, these dysregulated cortisol patterns have been shown to lead to an increased risk of death in bereaved people.[22 23] Zhou *et al*[5] confirmed that comorbid chronic physical diseases were associated with severe PGD symptoms. Similarly, Xiu *et al*[24] reported that chronic physical diseases were significantly related to the risk of grief severity. However, these cross-sectional studies[5 24] did not reveal a specific rationale for the causal relationship between grief reactions and chronic physical diseases. PGD may be associated with an increased risk of medical conditions such as cardiovascular disease, cancer and immunological dysfunction.[19] Thus, an increase in hospital-based service utilisation for chronic diseases as a result of prolonged grief reactions is evident.[20 21] In conclusion, chronic diseases do affect grief symptoms.[5 24] Although there is limited knowledge on the causal relationship between PGD and chronic diseases, evidence suggests that PGD affects the prognosis of chronic diseases.[18–21] Thus, there is a dual effect: the presence of a chronic disease has been shown to be both a risk factor for PGD and adversely affects the prognosis of chronic disease. This renders individuals with chronic disease vulnerable to the development of PGD, with a particularly deleterious effect when compared with the general population.

Given this background, there are several factors that make bereaved individuals vulnerable to developing PGDs after the devastating earthquake in Turkey: living in a middle-income country, having a chronic disease and a history of unnatural death of a loved one.[5–8] While having a chronic disease and the unexpected and traumatic experience of a loved one's death are risk factors for developing PGD,[2 6–8] there are no published studies focusing on the bereavement among earthquake survivors with advanced chronic illness who had faced the death of a loved one. Expanding our understanding of PGD is urgently needed to prepare for future humanitarian crises that may lead to traumatic bereavement and, to provide recommendations for policy-driven bereavement care. Hence, this current study aimed to explore the grief experiences of bereaved survivors with advanced chronic disease following the 2023 Turkey earthquake.

Aims and objectives

The aim of this mixed methods study was to explore the grief experiences of bereaved survivors with advanced chronic disease after the 2023 earthquake in Turkey.

The objectives were: (1) to identify specific themes of bereavement experience among bereaved survivors, (2) to investigate the prevalence and factors of PGD among earthquake survivors in a severely affected area 6 months after the earthquake and (3) to provide recommendations for improving bereavement care from the perspective of bereaved survivors.

METHODS

Design

A mixed methods design of qualitative using thematic analysis (semi-structured interviews) and quantitative (cross-sectional survey) methods was used to provide a detailed understanding of the grief phenomenon in the context of bereaved survivors with advanced chronic disease after the earthquake in Türkiye. The qualitative approach provided the exploration of grief experiences as described by bereaved survivors in the earthquake context.[25] The quantitative approach was used to investigate the ratio and predictors of probable PGD. Mixed methods are permitted to broadly explore and to gain a comprehensive understanding of bereaved individuals' experiences rather than only using one approach to data-gathering.[26]

In the absence of standard guidelines to report mixed-methods research, the Consolidated criteria for

Reporting Qualitative research including their comprehensive 32-item checklist to support rigour and transparency in the design and conduct of the study component and the subsequent reporting of the qualitative research findings was used.[27] The Strengthening the Reporting of Observational Studies in Epidemiology reporting guideline for cross-sectional studies was also used.[28]

Setting

Data were collected from the bereaved survivors living in Hatay, the province most affected by the 7.8 magnitude earthquake that occurred on 6 February 2023 in Türkiye.[10]

Participants

The sample included 143 individuals: (1) 143 bereaved survivors with advanced chronic disease after the 2023 earthquake in Turkey completed a cross-sectional survey between August 2023 and September 2023, (2) survey respondents who expressed an interest in providing further information were invited and participated in an in-depth qualitative interview regarding their experiences and (3) of the 34 respondents who expressed an interest in being involved in follow-up research, a total of 12 bereaved individuals consented and were interviewed between September 2023 and November 2023.

Sampling and recruitment

The sample size formula for prevalence studies was used to ascertain the minimum required number of participants for the quantitative study. In a study conducted after the 2011 Van earthquake in a similar population, PGD prevalence was reported to be 8.9%. The formula reported by Daniel[29] indicated that a minimum of 125 participants is required under the conditions of a 95% CI, a 5% margin of error, and an 8.9% proportion. Considering the potential for attrition, the sample size was increased by 15% to 143 participants.

Purposive sampling was used in the recruitment of participants, with the objective of capturing a wide range of experiences.[30 31] Participants living in Hatay, the province with the highest number of fatalities among the 11 earthquake-affected provinces,[5] were reached in the temporary shelter community (in Hatay, with a total population of 1 544 640 in 2023, approximately 22 000 people died in the earthquake.[32]) Subsequent to the recruitment of the initial participants, the team adopted a deliberate methodological approach to expand the study by recruiting additional participants from the shelter community via snowball sampling[30] with the objective of ensuring that the participant demographic reflected relevant diversity in terms of age, gender and chronic disease.

The inclusion criteria were being exposed to the 2023 Turkey earthquake. Participants were also considered eligible to complete the survey if they were ≥18 years old, individuals who had faced the death of at least one first-degree relative (parent, children or sibling) or second-degree relative (aunt, uncle, grandparent, grandchild, niece or nephew) as a result of the earthquake and, at least 6 months post bereavement. In addition, individuals who have cancer, congestive heart failure, chronic obstructive pulmonary disease or end-stage renal disease were included since these four conditions encompass a majority of patients living with either a chronic disease or a terminal illness.[33] Bereaved family members who have amnesia or psychosis were also excluded.

A total of 355 individuals were reached out to in this study; however, 132 of these were excluded from the study due to the absence of the aforementioned chronic disease. Furthermore, 28 individuals were excluded due to the absence of first-degree or second-degree relative loss. Finally, seven individuals were excluded due to being younger than 18 years old. In addition, 35 individuals were rejected on the basis of their decision not to participate in the study. The quantitative study was conducted with 143 participants.

Data collection

Quantitative

The participants were contacted by the last author (MSc female student specialising in internal medicine nursing) who resided in Hatay between August 2023 and September 2023. The aim and scope of the study were explained in detail to the potential participants; written informed consent was obtained prior to the commencement of the study. Agreed to participate during the specified data collection period. The quantitative phase of the study was completed with 143 participants over the age of 18 who completed the Prolonged Grief Scale (PG-13), a 13-item questionnaire designed to assess grief. Participants completed the questionnaire in person, with the research assistant present in their tents. Individuals who consented to further follow-up were approached to participate in the qualitative study.

Qualitative

Following the conclusion of the quantitative study, patients with PGD were selected for inclusion in the qualitative study. A total of 34 patients met the specified criteria for PGD.

The 12 semi-structured interviews were conducted by the first author (an experienced female assistant professor with experience of the palliative, end-of-life, bereavement care research). The criterion of sufficiency was based on previous studies focusing on the data saturation for thematic analysis, given a relatively homogenous sample.[34 35] The semi-structured method has given the participants the opportunity to elaborate and explain specific issues. Two pilot interviews were carried out to test the appropriateness of the questions without requiring significant changes (online supplemental material 2).

Potential participants who meet the criteria were interviewed on Zoom. The interviews were audio recorded and lasted between 30 and 65 min. The last author visited all participants before the intervention in their tent and provided them with a computer and assisted the

individuals to connect to Zoom. Participants' permission to audio-record the interview was obtained.[36] The unstructured nature of the interview allowed the bereaved participants to present their narratives and thus express their experiences. Depending on the context of the narratives, the interviewer then asked such exploratory questions as 'can you explain more?' Interviews began by asking participants about the relationship they had with the deceased who died in the earthquake. Participants were also asked about how they managed to stay resilient in spite of such a tremendous loss and what support services they received to cope with their grief (see the interview guide in online supplemental material).

Measures

A demographic, bereavement-related and chronic disease-related characteristics form was developed by the researchers in accordance with the relevant literature,[4 6 7 24] encompassing the following characteristics: gender, age, educational level, occupation, income level, marital status, chronic disease and closeness with the deceased (online supplemental material 1).

The Turkish form of PG-13[37] developed by Prigerson *et al*[1] was also used to assess symptoms of PGD in the bereaved individuals. The PG-13 contains 11 Likert-type questions and two 'yes/no' questions which is the latest structured diagnostic tool to assess prolonged grief by detecting prolonged impairment within social and occupational functioning. Likert-type questions assess 11 potential PGD symptoms in the previous month. Each of these items is answered on a 5-point scale ranging from 1 (never/not at all) to 5 (several times a day/severe) to represent increasing levels of symptom severity. The grief-score includes the sum of the score of each of the 11 grief symptoms and ranges from 11 to 55. The Turkish PG-13 has demonstrated predictive and criterion validity with good internal consistency (α=0.90).[37]

Data analysis

Quantitative analysis

Quantitative data were analysed using descriptive statistics in SPSS V.29. Descriptive results of the study were presented as number (n), percentage (%), mean and SD. X^2 test was used to compare the frequency of PGD between the categorical groups. An independent samples t-test was used to compare continuous variables between PGD and others.

Qualitative analysis

The narrative data was coded using thematic analysis, which is a flexible method that allows reporting on the experiences, meanings and reality of participants in relation to the study intervention.[38] NVivo V.11 software facilitated the organisation of the data. The six steps of the thematic analysis method were used by two researchers (ÇFD and IT); familiarising yourself with your data; generating initial codes; searching for themes; reviewing themes; defining and naming themes and producing the report.[38] Two authors independently reviewed the data resulting in the inclusion of one subtheme and renaming of one theme. Discussions between researchers resulted through critical dialogue about the themes that emerged.

Patient and public involvement

The study was conducted with a bereaved survivor acting as coauthor (SM). She was involved in all aspects of the study and for its entire duration, from design to tools development, data analysis and writing. In addition, two participants provided feedback on the findings.

Ethical considerations

Recalling a traumatic event by recounting it or answering questions may cause temporary stress for bereaved individuals.[39] However, it is unlikely to re-traumatise them or cause long-term harm.[39]

Some participants were likely to be illiterate and only verbal consent was obtained for illiterate individuals. The researcher asked the literate participants to write their initial and the date in the tick box and to read out loud the consent form before signing. Respondents were only contacted to take part in interviews if they expressed an interest in being invited to provide further information. Participants were aware that they were free to withdraw at any point if they so wish without a requirement to justify their decision. Participants were not forced to answer the questions within the survey and interviews. There was no identity of participants (name, address) on the data sheet or transcription. The participants' identifications were anonymised and coded in accordance. Demographic data, informed consent and data from interviews were transcribed and saved on an encrypted device and stored along with the data analysis in a locked drawer in a locked room in the university. Only the researchers have access to the data; it will be stored in a locked drawer in a locked room for 5 years.

RESULTS

143 bereaved participants completed the survey (table 1). Most participants were women (n=86, 60.1%). About 79% of participants (n=113) were aged 50 years and over. Around 60% (n=80) had graduated from primary school, 81.8% were married (n=117), 57.3% (n=82) reported that they were not working and most participants had a low-income level. As a result of the destruction of many workplaces due to the earthquake, 61 of the participants (42.7%) reported that they had no income. Most participants had congestive heart failure (n=115, 62.5%), followed by cancer (n=33, 17.9%).

Our results indicated a prevalence of PGD among bereaved adults of 23.8%. Furthermore, most of the participants (n=119, 83.2%) had a second-degree relative who had died, but the rate of PGD was significantly higher in participants who had experienced the death of a first-degree relative (p<0.001). In addition, PGD developed in 50% (n=6) of retirees (table 1).

Table 1 Characteristics of the bereaved survivors

	PGD	
Total (n=143)	34 (23.8)	
Gender		
Female (n=86)	19 (55.9)	
Male (n=57)	15 (44.1)	
Test statistics	X^2=0.337	
P value	0.689	
Age		
Under 50 years old (n=30)	5 (14.7)	
50 years and over (n=113)	29 (85.3)	
Test statistics	X^2=1.059	
P value	0.346	
Education level		
Illiterate (n=41)	9 (26.5)	
Primary school (n=80)	21 (61.8)	
Secondary school (n=7)	2 (5.9)	
High school (n=9)	2 (5.9)	
University (n=6)	0 (0)	
Test statistics	X^2=2.308	
P value	0.722	
Occupation		
Not working (n=82)	19 (55.9)	
Working (n=49)	9 (26.5)	
Retired (n=12)	6 (17.6)	
Test statistics	X^2=5.361	
P value	0.074	
Family status		
Single (n=26)	8 (23.5)	
Married (n=117)	26 (76.5)	
Test statistics	X^2=0.857	
P value	0.445	
Closeness with the deceased		
First-degree relative (n=24)	17 (50.0)	
Second-degree relative (n=119)	17 (50.0)	
Test statistics	X^2=35.239	
P value	**<0.001**	
Income level (mean: 4874.8 Turkish liras)	4773.50	
Test statistics	t=0.814	
P value	0.919	
Chronic disease (a multiple-choice option is available)	n	%
Congestive heart failure	115	62.5
Cancer	33	17.9
Chronic obstructive pulmonary disease	29	15.8
End-stage renal disease	7	3.8

PGD, prolonged grief disorder.

The most prevalently identified PGD-13 items among the participants were as follows: 'Longing/yearning for the person lost', 'Intense emotional pain, sorrow, or pangs of grief', 'Shocked, stunned or dazed by the loss', 'Functional impairment (in social, occupational, or other areas)' and 'Duration of symptoms of at least 6 months'. The least common PGD-13 items were as follows: 'Feeling emotionally numb since loss', 'Avoiding reminders that the person lost is gone', 'Feeling confused about role in life, feeling that a part of oneself has died' and 'Trouble accepting the loss' (figure 1).

Qualitative findings

Six main themes were generated from the analyses: (1) bereavement reactions; (2) coping style; (3) disrupted grieving; (4) impact of grief on chronic disease; (5) moving forward; and (6) unmet needs. Each main theme contains several subthemes reflecting the content of the experiences of grief among bereaved survivors (table 2). A proposed framework for mourners in the context of earthquakes is presented in figure 2.

Bereavement reactions

Bereaved participants' bereavement reactions toward the death of their loved ones were categorised as emotional, cognitive, behavioural and physical (table 2).

The most typical responses participants experienced 9 months after the death of a loved one have been emotional ones such as emotional pain, guilt, emotional numbness, loneliness and despair. Among them, emotional pain and numbness were mentioned most, which are also symptoms of PGD. According to bereaved participants, the traumatic death of a loved one is overwhelming and the pain cannot be expressed in words. One of the bereaved fathers shared his intense emotional pain, saying:

> Unfortunately, all of us (his wife and two children) were trapped under the rubble at the same time. My wife was trapped under the rubble, so I tried to cut her arm by counting one, two, three (crying). After about 20 hours, we were pulled out from under the rubble with the help of our neighbours, but we could not reach my daughter. Volunteers and municipal workers tried very hard to pull my daughter out of the rubble, but hours later they reached her dead body and said that the only way to get her out was to cut her into three pieces. There are no words to express my pain at that moment (crying). I begged them to take her out in one piece, then the workers hugged me and cried, promised to take her out in one piece and finally gave her to me in one piece. Wishing to die, I hugged the dead body of my beautiful daughter and stayed with her for hours… (P8, bereaved father who has heart failure)

Some participants mentioned feelings of intense emotional pain caused by emotional numbness. A

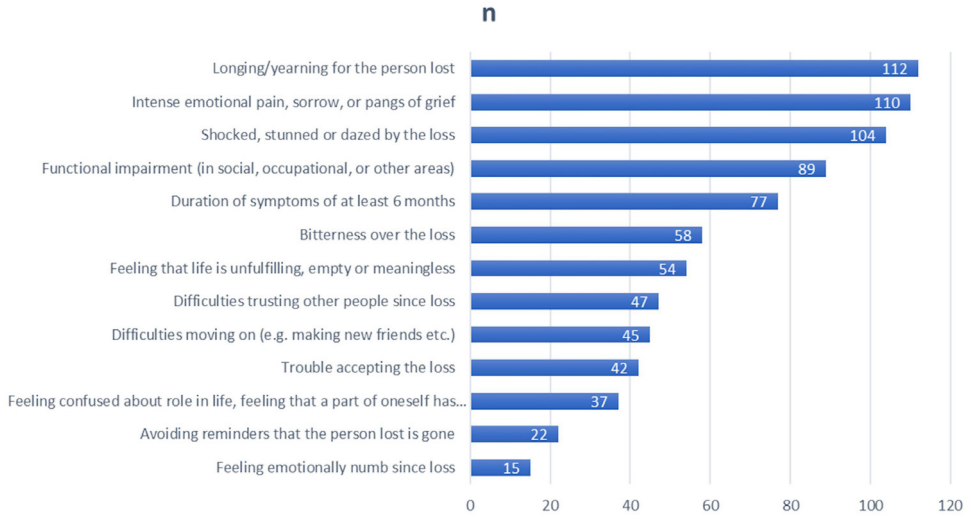

Figure 1 The prevalence of PGD-13 items in participants. The figure shows the number of respondents for each of the items. PGD, prolonged grief disorder.

bereaved mother whose son died in the earthquake stated:

> I'm breathing but there's no feeling. I do not know how I can explain this. My emotions disappeared. I think this unbearable pain eventually numbed me. (P1, bereaved mother who has heart failure)

Coping style

Some bereaved participants attributed meanings to the traumatic death of their loved ones, which helped them in the grieving process. There is no one way for anyone to cope with the death of a loved one, and everyone finds peace at their own pace. Bereaved survivors are often told that time will heal all wounds. A bereaved woman who has been trying to cope with her grief shared her experience, saying:

> I think we also need to learn to suffer. Life is not always a bed of roses. Sometimes there are rough roads, the important thing is to overcome the rough roads. Time heals… Time is cure of everything. Time heals… (P4, bereaved woman who has health failure)

Making sense of death also helped bereaved participants through spiritual and religious sense-making by explaining the death of their loved ones as part of a larger divine plan. Another bereaved woman whose sister died in the earthquake stated:

> I try to forget everything. After all, this disaster came from God. His plans are bigger than anything I can imagine. That's why I thank God every day. (P5, bereaved woman heart failure)

Disrupted grieving

Disruption to mourning rituals appeared to be affecting the grieving process of bereaved survivors, making the death seem 'surreal' and harder to accept. A bereaved woman whose sister and cousins died in the earthquake stated:

> You know how they say wounds heal day by day, on the contrary, they deepen. We still think our loved ones will come back… I still can't believe that what we went through was real. It was like a horror film. People were carrying their dead on their backs in black rubbish bags. No one could wash their deceased; our water was cut off and we slept with our deceased until the authorities gave us a mass grave. In the mass grave they opened big graves, and all the dead were buried on top of each other (crying). It was crowded there; everyone was in pain, and they didn't even know where they were going. I don't know, it's a pity… (P11, bereaved woman who has heart failure)

Bereaved individuals expressed their specific concerns about unfinished business in the context of important things left unsaid or unresolved. Some felt regret and guilt for not being able to say goodbye and save their loved ones. A bereaved father whose daughter died in the earthquake stated:

> It's hard (sighs and wipes his tears). You know, when you think about it… I'm so sorry I couldn't hug her and tell her how much I love her. I'm so sorry I couldn't save her (crying). (P3, bereaved father who has heart failure)

The loss of memories also disturbed the grieving process of bereaved survivors. They did not just lose their homes and their neighbourhoods. This disaster took their memories with it. A bereaved man expressed his experience as follows:

> Yesterday I could not find the location of the house where I lived for 35 years. So even though people are trying to heal their wounds, it will take years to recover… The earthquake not only took away our houses,

Table 2 Overview of qualitative themes

Major themes	Subthemes	Illustrative quotes
Grief reactions	Emotional reactions including intense emotional pain, guilt, emotional numbness, loneliness and despair.	'…municipal workers tried very hard to pull my daughter out of the rubble, but hours later they reached her dead body and said that the only way to get her out was to cut her into three pieces. There are no words to express my pain…(crying). I begged them to take her out in one piece, then the workers hugged me and cried, promised to take her out in one piece and finally gave her to me in one piece. Wishing to die, I hugged the dead body of my beautiful daughter and stayed with her for hours…' (P8, bereaved man)
	Cognitive reactions including emptiness, disbelief about death and dreams regarding the deceased.	'All I feel is a great emptiness. I'm not even sure if I'm dreaming or if I'm dead. The other day I looked at my phone book and realised that most of my loved ones were dead. Not one, not two. Most of our loved ones are no longer alive.' (P11, bereaved woman)
	Behavioural reactions including alcohol use and avoidance of reminders that the person is dead.	'I've been drinking more alcohol since the earthquake. Otherwise, it is very difficult to bear this pain. Sometimes I drink until three in the morning.' (P6, bereaved man)
	Physical reactions including loss of appetite and insomnia.	'After the earthquake, there was not a single day that I could sleep comfortably. I wake up three or four times a night. When I feel like I can't breathe, I wake up, sit down and smoke a cigarette…' (P1, bereaved woman)
Coping with grief	Making sense of the death	'After all, this disaster came from God. His plans are bigger than anything I can imagine. That's why I thank God every day.' (P5, bereaved woman)
	Reconstruction of meaning	'Life is not always a bed of roses. Sometimes there are rough roads, the important thing is to overcome the rough roads. Time heals… Time is the cure for everything. Time heals…' (P4, bereaved woman)
Disrupted grieving	Disruption to mourning rituals	' …No one could wash their deceased; our water was cut off and we slept with our deceased until the authorities gave us a mass grave. In the mass grave they opened big graves, and all the dead were buried on top of each other…' (P11, bereaved woman)
	Unfinished business	'…I'm so sorry I couldn't hug her and tell her how much I love her. I'm so sorry I couldn't save her (crying).' (P3, bereaved man)
	The loss of memories	'…The earthquake not only took away our houses, roads and neighbourhoods, but also our memories. This place is no longer like the city where I was born and raised.' (P6, bereaved man)
Impact of grief on chronic disease	Increased metabolism problems Increased cardiovascular problems	'After the earthquake, my illnesses increased, I swear, they did not decrease at all, they increased. I feel much more tired and weak after the earthquake. I had blood pressure, now it is always high. My blood sugar goes up and down.' (P3, bereaved man)
Moving forward	Being strong for others	'I have two more children and a wife for whom I am responsible. I also have close friends and relatives. I must be stronger for them. After all, life still goes on.' (P8, bereaved man)
	New activities such as gardening or knitting	'After the earthquake, we planted rocket, garlic and lettuce with the neighbours. Gardening makes us happy. If I didn't have new hobbies, I would keep thinking about the same things in my head. This is how I try to forget.' (P10, bereaved man)
	Support from others	'Here we cook together with the neighbours in the tents. We set a big table together and eat together. We are trying to get through these days by supporting each other.' (P7, bereaved woman)
	Positive future thinking	'Women from Hatay (earthquake region) are strong and hardworking. We will make Hatay what it used to be. Whatever happens, we have not given up hope for the future.' (P2, bereaved woman)

Continued

Table 2 Continued

Major themes	Subthemes	Illustrative quotes
Unmet needs	Basic needs	'…Water remains a significant issue here: it is constantly cut off, and we are unable to access clean drinking water. There is no means of transport from one place to another. It has been nine months since the earthquake, but our transport and water problem are still not solved.' (P7, bereaved woman)
	Bereavement support needs	'Our psychology is very bad, but there are not enough doctors here and there is nowhere we can get support… There are still bodies under the rubble that have not been found. So, there is a dead smell everywhere. Recently, we heard that someone whose entire family died in the earthquake attempted suicide out of grief. We are all alone here with our grief.' (P8, bereaved man)
	Medical needs	'Hospitals and pharmacies were destroyed in the earthquake. Many people here could not access their medicine. We still don't have a hospital. Tents were set up for the medicines sent by volunteers, and volunteer pharmacists tried to help us as much as possible.' (P8, bereaved man)
	Support needs with financial	'Many businesses were destroyed in the earthquake. People became unemployed. The shopping centre where my children work was also destroyed. I am very worried about my children. Although ten months have passed since the earthquake, they could not find a job.' (P11, bereaved woman)

roads and neighbourhoods, but also our memories. This place is no longer like the city where I was born and raised. (P6, bereaved father who has chronic obstructive pulmonary disease)

The impact of grief on chronic disease

Most bereaved survivors with advanced chronic diseases who experienced the traumatic death of a loved one complained that the severity of their disease symptoms increased after the earthquake.

A bereaved man stated:

> The more I get upset, the worse my illness gets. After the earthquake, I have greater fatigue, increased shortness of breath. (P10, bereaved man who has heart failure)

Similarly, another bereaved man said:

> After the earthquake, my illnesses increased, I swear, they did not decrease at all, they increased. I feel much more tired and weak after the earthquake. I had blood pressure, now it is always high. My blood sugar goes up and down. I don't know what to do.

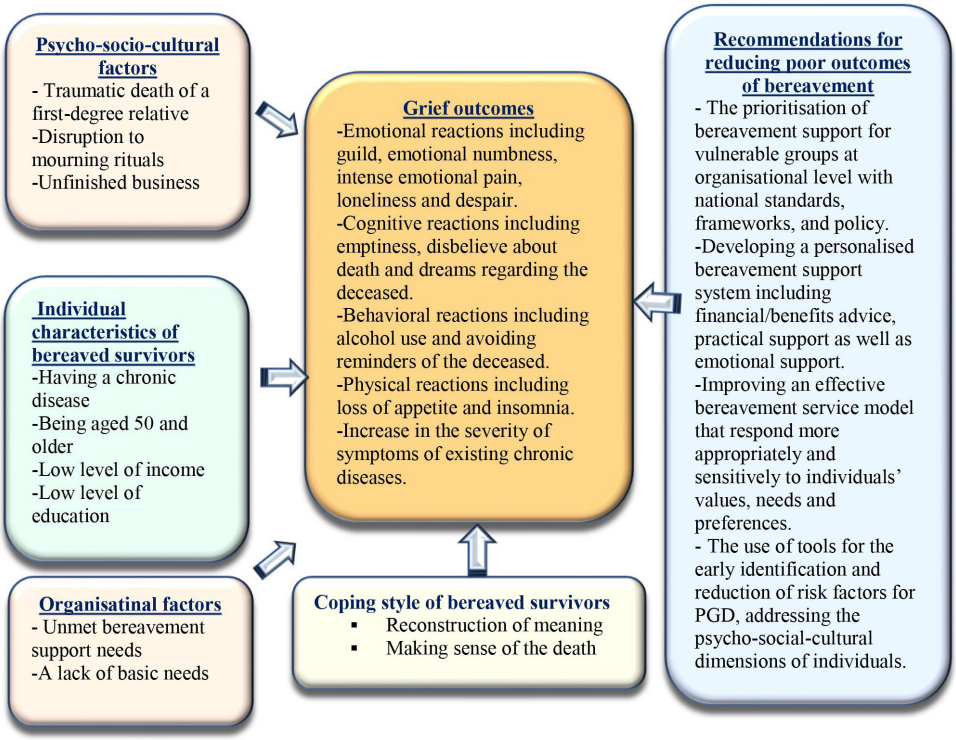

Figure 2 A proposed framework for bereaved survivors in the earthquake context. PGD, prolonged grief disorder.

Our hospital was destroyed in the earthquake. There is no doctor or hospital to go to. (P3, bereaved father who has heart failure)

Moving forward

Each individual processes the death of a loved one in their own way. When they felt lost, they were able to take steps to live a happier and more fulfilling life. Bereaved survivors highlighted four factors that contributed to their resilience: being strong for others, new activities such as gardening or knitting, support from others and positive future thinking (table 2).

A bereaved man who was trying to be strong for others shared his experience, saying: 'I have two more children and a wife for whom I am responsible. I also have close friends and relatives. I must be stronger for them. After all, life still goes on.' (P8, bereaved father who has heart failure).

Another bereaved man who had new activities after the earthquake shared his experience as follows: 'After the earthquake, we planted rocket, garlic and lettuce with the neighbours. Gardening makes us happy. If I didn't have new hobbies, I would keep thinking about the same things in my head. This is how I try to forget' (P10, bereaved man who has heart failure).

Some women, especially those living in Hatay, which is the earthquake region, stated that they have not lost hope for the future: 'Women from Hatay are strong and hard-working. We will make Hatay what it used to be. Whatever happens, we have not given up hope for the future' (P2, bereaved woman who has heart failure).

Unmet needs

Bereaved survivors mentioned four crucial unmet needs that could directly affect their health outcomes: basic needs such as safe drinking water and shelter, bereavement support, medical needs and support needs with financial matters. For instance, a woman was feeling hopeless because she still could not meet her basic needs, even though 9 months had passed since the earthquake: 'We are still staying in the tent. Water remains a significant issue here: it is constantly cut off, and we are unable to access clean drinking water. There is no means of transport from one place to another. It has been nine months since the earthquake, but our transport and water problem are still not solved' (P7, bereaved woman who has heart failure).

Some bereaved survivors highlighted how the lack of bereavement support affected them: "I still don't want to believe that my daughter is dead. I have lost my appetite, and I don't enjoy what I eat anymore. I also can't sleep at night. Our psychology is very bad, but there are not enough doctors here and there is nowhere we can get support… There are still bodies under the rubble that have not been found. So, there is a dead smell everywhere. Recently, we heard that someone whose entire family died in the earthquake attempted suicide out of grief. We are all alone here with our grief." (P8, bereaved father who has heart failure)

DISCUSSION

To our knowledge, this is the first study to explore the grief experiences of bereaved earthquake survivors who have advanced chronic illness. The objectives were: (1) to identify specific themes of bereavement experience among bereaved survivors, (2) to investigate the prevalence and factors of PGD among earthquake survivors in a severely affected area 6 months after the earthquake and (3) to provide recommendations for improving bereavement care from the perspective of bereaved survivors.

According to the results of this study, about a quarter of bereaved adults with advanced chronic disease had PGD. Lundorff *et al*[13] estimated the prevalence of PGD in an adult bereaved population at 9.8% following non-violent causes of death. Most studies have also reported that unnatural deaths are associated with a considerably higher rate of PGD compared with expected and natural deaths.[2 4 6–8] There was a large range in prevalence of PGD among earthquake-bereaved survivors (8.5–79%) reported in several studies following a natural disaster.[2 4 6–8] In a recent study conducted in Türkiye, the prevalence of PGD among bereaved adults 8 years after the Van earthquake was found to be 8.9%.[4] Similarly, in the Wenchuan earthquake, 8.47% of earthquake survivors were diagnosed with PGD 7 years after the event.[7] However, a higher prevalence of PGD was observed in the present study. This result may be attributed to the fact that the time elapsed after death in previous studies[4 7] (7–8 years) was much longer than that observed in our study (6–9 months) and that the previous studies population did not include people with advanced chronic diseases. It appears that time is an important factor in the recovery of people with long-term bereavement disorders.[40] A study of a large sample of Chinese Sichuan earthquake survivors found that the PGD rate decreased from 79% (1–1.5 years after the earthquake)[8 41] to 8.47% after 7 years following the earthquake.[7] Nevertheless, the lack of serious attention to the affected people and preventive measures after natural disasters can lead to serious consequences, such as suicide.[14] In addition, grief occurs differently across cultures, as evidenced by the prevalence of PGD and related factors.[42] In the literature, it has been emphasised that cultural differences as well as the religious and spiritual beliefs of the survivors are effective factors in the development of PGD.[14] For a deeper understanding of the grief phenomenon, there is a need for further studies using tools that address the psycho-social-cultural dimensions of individuals for bereaved people from different backgrounds.

The qualitative findings of this study have demonstrated that most bereaved survivors with advanced chronic diseases who have experienced the traumatic

death of a loved one complained that the severity of their disease symptoms increased after the earthquake. The death of a loved one can be one of the most stressful life events.[18] Several studies have shown that stress caused by PGD has a negative impact on the prognosis of chronic diseases.[5 18–21 43] Furthermore, studies show that dysregulated cortisol patterns lead to an increased risk of death in bereaved people.[22 23] Zhou *et al*[5] also confirmed that comorbid chronic physical diseases were associated with PGD. The findings of this mixed-methods study have also highlighted, consistent with previous studies,[6 7 44 45] that closeness to the deceased has a significant impact on PGD after deaths associated with a natural disaster. Bereaved people who had experienced the death of a first-degree relative were at higher risk for PGD than those who had faced the death of someone else.[6 7 44 45] In some studies, in addition to closeness to the deceased, the risk factors of PGD have included educational status, age and lower socioeconomic status.[7 41 46–48] In our study, in line with other studies,[46 48] it was found that the risk of PGD development increased with ageing. However, in contrast to previous studies, educational status was not a factor associated with PGD; however, only six out of bereaved individuals included in this study had a bachelor's degree or higher, which may have affected the findings. In addition, since most bereaved individuals in our study were of low economic status, it was not possible to make comparisons with others in different economic groups. In the literature, women have generally been more vulnerable to PGD than men.[46 49 50] In this study, no significant effect of sex was found when other variables related to the earthquake or death were taken into account, which is similar to some previous studies.[7 8 44 51] Inconsistent findings in studies may be due to the statistical methods used (bivariate regression vs multivariate regression) or diversity variation in the study population.[8] Most of the women living in Hatay have husbands working abroad and this may contribute to their resilience.[52] In the qualitative findings of this study, some women emphasised how resilient they were:

> Women from Hatay are strong and hardworking. We will make Hatay what it used to be. Whatever happens, we have not given up hope for the future. (P2)

Some bereaved participants attributed meanings to the traumatic death of their loved ones, which helped them in the grieving process. There is no one way for anyone to cope with the death of a loved one, and people find peace at their own pace. Bereaved survivors are often stated that time will heal all wounds. Neimeyer *et al*[53]. consider grief as a process of meaning reconstruction. The death of a loved one challenges an individual's established set of meanings and these need to be reconstructed following bereavement.[54] Most bereaved participants included in this study have also highlighted that disruption to mourning rituals appeared to be affecting the grieving process of bereaved survivors. For example, washing the body of the deceased is an important ritual in Islam,[55] but the bereaved individuals in this study mentioned that they could not even wash the deceased due to the lack of water after the earthquake. Funerals are a crucial component of cultural and religious bereavement systems, facilitating social and psychological support for the bereaved people and providing an opportunity to convey love and respect for the deceased.[55] In a mixed-methods study of people bereaved during the COVID-19 pandemic, a bereaved daughter who has unfinished business described this process as 'a constant prolonging of a goodbye'.[56]

The initial response of the Turkish government faced significant challenges due to the scale of the disaster and the existing regional complexities.[57] The 2023 Turkey earthquake has highlighted critical aspects of disaster preparedness and response that need to be improved. Addressing systemic issues such as compliance with building codes, developing early warning systems and improving crisis communication are key steps in preparing for possible future disasters.[57] In addition, the Turkish Psychiatric Association organised a comprehensive programme of initial, medium and long-term actions for psychosocial support and psychiatric care. Volunteers were recruited, webinars were organised and an online support system for health workers and first responders was established.[58]

While having a chronic disease and the unexpected and traumatic experience of a loved one's death are risk factors for developing PGD,[2 6–8] there are no published studies focusing on the bereavement among earthquake survivors with advanced chronic disease. This mixed methods study highlights the urgent need for early screening for the risk of PGD in earthquake survivors and the immediate initiation of bereavement interventions for individuals diagnosed with PGD. Moreover, there are no bereavement care national standards or frameworks or policies in Turkey; therefore, our study is also important in terms of providing evidence that will enable recommendations to be made to the Ministry of Health to develop policies and improve practice in this area.

Strengths and weaknesses

The present study is not without limitations. First, the results and framework derived from the findings may not be generalised to other settings or populations due to the relatively small sample size. It is recommended that future studies include a larger sample size, which may include the other 10 affected provinces in Türkiye.

Second, the study lacks detailed information on pre-trauma and post-trauma factors. Such factors include pre-existing mental illness, history of bereavement, trauma exposure, cultural influences and social support systems. All of these factors may potentially influence PGD. It is therefore recommended that future research adopts a longitudinal approach to assess how these variables evolve over time and interact with grief-related outcomes.

In addition, the diverse experiences of all bereaved people may not be fully captured by the study setting—a temporary shelter community. Some survivors may have

moved to other cities to stay with relatives, and their grief trajectories may differ. Future research should consider a more inclusive sampling strategy that includes participants from a range of living arrangements.

This study did not investigate how long it takes for the affected population to recover. Further studies are recommended to investigate the recovery duration of the affected population.

Notwithstanding these limitations, the study's utilisation of a mixed-methods design serves to reinforce the findings by offering both quantitative prevalence data and in-depth qualitative insights into the lived experiences of bereaved survivors. This methodological approach contributes to the extant evidence base for the improvement of bereavement interventions in disaster contexts and informs the development of a sustainable, culturally sensitive bereavement support model.[26]

In contrast to the previous studies conducted in high-income countries, this research examines PGD in a middle-income country affected by a large-scale natural disaster. The findings contribute to the global understanding of grief in culturally diverse populations and highlight the importance of context-sensitive bereavement care.

Conclusion and implications for policy and practice

The results of this study have highlighted that the prevalence of PGD among bereaved adults is high and that this particularly vulnerable group requires urgent attention. This first mixed-methods study of bereavement among earthquake survivors with advanced chronic illness can help prepare for future humanitarian crises that may lead to traumatic bereavement by providing recommendations for policy-driven bereavement care. We propose a framework for bereaved survivors to use in the development of an effective bereavement service model. This model may be used by mental health professionals and policymakers to respond sensitively to the values, needs and preferences of bereaved survivors who have experienced the unnatural death of a loved one.

Based on the study findings, we make four recommendations to improve support for bereaved people with advanced chronic disease:

- Raise awareness of symptoms of bereavement and post-traumatic grief disorder (PGD) among healthcare professionals and researchers.
- It is imperative that bereavement support for vulnerable groups is prioritised at the organisational and policy level. This should be accompanied by the establishment of national standards, frameworks and policy.
- The utilisation of instruments for the timely identification and mitigation of risk factors for PGD, with a focus on the psycho-social-cultural dimensions of individuals, is important.
- The implementation of person-centred bereavement interventions is also crucial for individuals diagnosed with PGD.
- It is imperative to acknowledge the heightened vulnerability to PGD individuals afflicted with chronic illnesses, among older survivors and those who have experienced the loss of first-degree relatives by developing targeted outreach initiatives to ensure early identification and support for at-risk individuals, for example, by mobile health services and community-based interventions.
- The development of a personalised bereavement support system, encompassing financial and benefits advice, practical assistance and emotional support.
- The development of an effective bereavement service model is evident, one that is shaped by bereaved survivors' personal experiences and social and cultural contexts.

Our evidence-based recommendations and proposed framework (figure 2) can also be used to better address bereaved individuals' support needs related to death, grief and bereavement and reduce the risk of prolonged grief following deaths related to natural disasters. Future research may focus on identifying psycho-socio-cultural assessment and intervention strategies aimed at early identification and reduction of risk factors for poor bereavement outcomes in this vulnerable population.

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REFERENCES

1 Prigerson HG, Horowitz MJ, Jacobs SC, *et al*. Prolonged grief disorder: Psychometric validation of criteria proposed for DSM-V and ICD-11. *PLoS Med* 2009;6:e1000121.
2 Eisma MC, Lenferink LIM, Chow AYM, *et al*. Complicated grief and post-traumatic stress symptom profiles in bereaved earthquake survivors: a latent class analysis. *Eur J Psychotraumatol* 2019;10:1558707.
3 Aoun SM, Breen LJ, Howting DA, *et al*. Who needs bereavement support? A population based survey of bereavement risk and support need. *PLoS One* 2015;10:e0121101.
4 Ergün D, Şenyüz S. Prolonged grief disorder among bereaved survivors after the 2011 Van Earthquake in Turkey. *Death Stud* 2022;46:1364–71.
5 Zhou N, Wen J, Stelzer E-M, *et al*. Prevalence and associated factors of prolonged grief disorder in Chinese parents bereaved by losing their only child. *Psychiatry Res* 2020;284:S0165-1781(19)31920-1.
6 Djelantik AAAMJ, Smid GE, Mroz A, *et al*. The prevalence of prolonged grief disorder in bereaved individuals following unnatural losses: Systematic review and meta regression analysis. *J Affect Disord* 2020;265:146–56.
7 Yi X, Gao J, Wu C, *et al*. Prevalence and risk factors of prolonged grief disorder among bereaved survivors seven years after the Wenchuan earthquake in China: A cross-sectional study. *Int J Nurs Sci* 2018;5:157–61.
8 Li J, Chow AYM, Shi Z, *et al*. Prevalence and risk factors of complicated grief among Sichuan earthquake survivors. *J Affect Disord* 2015;175:218–23.
9 Li L, Reinhardt JD, Van Dyke C, *et al*. Prevalence and risk factors of post-traumatic stress disorder among elderly survivors six months after the 2008 Wenchuan earthquake in China. *BMC Psychiatry* 2020;20:78.
10 Qu Z, Wang F, Chen X, *et al*. Rapid report of seismic damage to hospitals in the 2023 Turkey earthquake sequences. *Earthquake Research Advances* 2023;3:100234.
11 Sveen J, Bergh Johannesson K, Cernvall M, *et al*. Trajectories of prolonged grief one to six years after a natural disaster. *PLoS One* 2018;13:e0209757.
12 Fu F, Chen L, Sha W, *et al*. Mothers' Grief Experiences of Losing Their Only Child in the 2008 Sichuan Earthquake: A Qualitative Longitudinal Study. *Omega (Westport)* 2020;81:3–17.
13 Lundorff M, Holmgren H, Zachariae R, *et al*. Prevalence of prolonged grief disorder in adult bereavement: A systematic review and meta-analysis. *J Affect Disord* 2017;212:138–49.
14 Zareiyan A, Sahebi A, Nejati-Zarnaqi B, *et al*. The prevalence of prolonged grief disorder (PGD) after the natural disasters: A systematic review and meta-analysis. *Public Health Pract (Oxf)* 2024;7:100508.
15 Wen F-H, Prigerson HG, Chou W-C, *et al*. Comorbid Prolonged Grief, PTSD, and Depression Trajectories for Bereaved Family Surrogates. *JAMA Netw Open* 2023;6:e2342675.
16 Djelantik AAAMJ, Smid GE, Kleber RJ, *et al*. Early indicators of problematic grief trajectories following bereavement. *Eur J Psychotraumatol* 2017;8.
17 Bonanno GA, Malgaroli M. Trajectories of grief: Comparing symptoms from the DSM-5 and ICD-11 diagnoses. *Depress Anxiety* 2020;37:17–25.
18 Ghesquiere A, Bagaajav A, Ito M, *et al*. Investigating associations between pain and complicated grief symptoms in bereaved Japanese older adults. *Aging & Mental Health* 2020;24:1472–8.
19 Khosravi M, Kasaeiyan R. A current challenge in classification and treatment of DSM-5-TR prolonged grief disorder. *Psychol Trauma* 2024;16:1239–41.
20 Holland JM, Graves S, Klingspon KL, *et al*. Prolonged grief symptoms related to loss of physical functioning: examining unique associations with medical service utilization. *Disabil Rehabil* 2016;38:205–10.
21 Carey IM, Shah SM, DeWilde S, *et al*. Increased risk of acute cardiovascular events after partner bereavement: a matched cohort study. *JAMA Intern Med* 2014;174:598–605.
22 Miller GE, Chen E, Zhou ES. If it goes up, must it come down? Chronic stress and the hypothalamic-pituitary-adrenocortical axis in humans. *Psychol Bull* 2007;133:25:25–45:.
23 Richardson VE, Bennett KM, Carr D, *et al*. How Does Bereavement Get Under the Skin? The Effects of Late-Life Spousal Loss on Cortisol Levels. *J Gerontol B Psychol Sci Soc Sci* 2015;70:341–7.
24 Xiu D, Maercker A, Woynar S, *et al*. Features of Prolonged Grief Symptoms in Chinese and Swiss Bereaved Parents. *J Nerv Ment Dis* 2016;204:693–701.
25 Creswell JW, Tashakkori A. *Developing publishable mixed methods manuscripts*. Los Angeles, CA: Sage Publications, 2007:107–11.
26 Johnson RB, Onwuegbuzie AJ, Turner LA. Toward a Definition of Mixed Methods Research. *J Mix Methods Res* 2007;1:112–33.
27 Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *Int J Qual Health Care* 2007;19:349–57.
28 von Elm E, Altman DG, Egger M, *et al*. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement: Guidelines for reporting observational studies. *Int J Surg* 2014;12:1495–9.
29 Daniel WW. *Biostatistics: a foundation for analysis in the health sciences. 7th edn. Archives of Orofacial Sciences*. Wiley, 1999.
30 Martínez-Mesa J, González-Chica DA, Duquia RP, *et al*. Sampling: how to select participants in my research study? *An Bras Dermatol* 2016;91:326–30.
31 Taherdoost H. Sampling Methods in Research Methodology; How to Choose a Sampling Technique for Research. *SSRN Journal* 2016;5.
32 Government Turkey. Population and Distribution in Hatay, 2023. Available: http://www.hatay.gov.tr/nufus-ve-dagilimi#:~:text=Hatay'%C4%B1n%201.544.640%20ki%C5%9Filik,binde%201%2C1%20olarak%20ger%C3%A7ekle%C5%9Fmi%C5%9Ftir.2025
33 Xu J, Murphy SL, Kochanek KD, *et al*. Deaths: Final Data for 2016. *Natl Vital Stat Rep* 2018;67:1–76.
34 Braun V, Clarke V. To saturate or not to saturate? Questioning data saturation as a useful concept for thematic analysis and sample-size rationales. *Qual Res Sport Exer Health* 2021;13:201–16.
35 Guest G, Namey E, Chen M. A simple method to assess and report thematic saturation in qualitative research. *PLoS One* 2020;15:e0232076.
36 Alsaawi A. A Critical Review of Qualitative Interviews. *SSRN Journal* 2014;3.
37 Işıklı S, Keser E, Prigerson HG, *et al*. Validation of the prolonged grief scale (PG-13) and investigation of the prevalence and risk factors of prolonged grief disorder in Turkish bereaved samples. *Death Stud* 2022;46:628–38.
38 Braun V, Clarke V. *Thematic analysis: a practical guide*. London: Sage, 2022.
39 Omerov P, Steineck G, Dyregrov K, *et al*. The ethics of doing nothing. Suicide-bereavement and research: ethical and methodological considerations. *Psychol Med* 2014;44:3409–20.
40 Kokou-Kpolou CK, Park S, Lenferink LIM, *et al*. Prolonged grief and depression: A latent class analysis. *Psychiatry Res* 2021;299:S0165-1781(21)00161-X.
41 Hu X-L, Li X-L, Dou X-M, *et al*. Factors Related to Complicated Grief among Bereaved Individuals after the Wenchuan Earthquake in China. *Chin Med J (Engl)* 2015;128:1438–43.
42 Stelzer E-M, Zhou N, Maercker A, *et al*. Prolonged Grief Disorder and the Cultural Crisis. *Front Psychol* 2019;10:2982:2982:.
43 Saavedra Pérez HC, Direk N, Milic J, *et al*. The Impact of Complicated Grief on Diurnal Cortisol Levels Two Years After Loss: A Population-Based Study. *Psychosom Med* 2017;79:426–33.
44 Kristensen P, Weisaeth L, Heir T. Predictors of complicated grief after a natural disaster: a population study two years after the 2004 South-East Asian tsunami. *Death Stud* 2010;34:137–50.
45 Johannesson KB, Lundin T, Hultman CM, *et al*. Prolonged grief among traumatically bereaved relatives exposed and not exposed to a tsunami. *J Trauma Stress* 2011;24:456–64.
46 Kersting A, Brähler E, Glaesmer H, *et al*. Prevalence of complicated grief in a representative population-based sample. *J Affect Disord* 2011;131:339–43.
47 Stammel N, Heeke C, Bockers E, *et al*. Prolonged grief disorder three decades post loss in survivors of the Khmer Rouge regime in Cambodia. *J Affect Disord* 2013;144:87–93.
48 Szuhany KL, Malgaroli M, Miron CD, *et al*. Prolonged Grief Disorder: Course, Diagnosis, Assessment, and Treatment. *Focus (Am Psychiatr Publ)* 2021;19:161–72.

49 Ghafari NA, Gandomkar M, Ahmadi MM, *et al*. Brief report: The prevalence of complicated grief among Bam earthquake survivors in Iran. 2007.
50 Neria Y, Gross R, Litz B, *et al*. Prevalence and psychological correlates of complicated grief among bereaved adults 2.5–3.5 years after September 11th attacks. *J Trauma Stress* 2007;20:251–62.
51 Shear MK, McLaughlin KA, Ghesquiere A, *et al*. Complicated grief associated with hurricane Katrina. *Depress Anxiety* 2011;28:648–57.
52 Kolutek M, Savasgur AV. An Evaluation of The Workers Departing from Hatay to Middle East Countries. *Gaziantep University J Soc Sci* 2023;22:176–88.
53 Neimeyer RA, Burke LA, Mackay MM, *et al*. Grief Therapy and the Reconstruction of Meaning: From Principles to Practice. *J Contemp Psychother* 2010;40:73–83.
54 Draper P, Holloway M, Adamson S. A qualitative study of recently bereaved people's beliefs about death: implications for bereavement care. *J Clin Nurs* 2014;23:1300–8.
55 Burrell A, Selman LE. How do Funeral Practices Impact Bereaved Relatives' Mental Health, Grief and Bereavement? A Mixed Methods Review with Implications for COVID-19. *Omega (Westport)* 2022;85:345–83.
56 Harrop E, Goss S, Farnell D, *et al*. Support needs and barriers to accessing support: Baseline results of a mixed-methods national survey of people bereaved during the COVID-19 pandemic. *Palliat Med* 2021;35:1985–97.
57 Demir E. The Turkey/Syria Earthquake 2023: Theoretical Framework of Post-Disaster Logistics and Its Flawed Application. *JETMM* 2023;5:47.
58 Başar K. Organized professional response to a large-scale disaster: Earthquakes in Türkiye. *Eur Psychiatr* 2024;67:S34–5.