Disaster Medicine and Public Health Preparedness

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Examining Predictors of Post-Traumatic Changes Among Mothers in Turkey Following Earthquakes

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Original Research

Cite this article: Kerimoğlu Yıldız G and Turk Delibalta R (2024). Examining Predictors of Post-Traumatic Changes Among Mothers in Turkey Following Earthquakes. *Disaster Medicine and Public Health Preparedness*, **18**, e282, 1–8
https://doi.org/10.1017/dmp.2024.275

Received: 27 December 2023
Revised: 04 June 2024
Accepted: 21 August 2024

Keywords:
earthquakes; mothers; post-traumatic growth; spiritual well-being

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Abstract

Objectives: This study aims to assess the prevalence of Post-Traumatic Stress Disorder (PTSD) in mothers affected by the February 2023 earthquakes in Turkey and to explore the influence of spiritual well-being and other factors on their Post-Traumatic Growth (PTG) levels.

Methods: The study's sample consisted of mothers invited to participate voluntarily through online social media platforms between October-December 2023. The Mother Information Form, Post-Traumatic Stress Disorder Control List, Post-Traumatic Growth Scale, and Spiritual Well-Being Scale (SWBS) were used as data collection instruments.

Results: A total of 303 mothers participated in this study. The mean total PTSD score was 49.35 (*SD*: 19.76), and 83.5% of mothers were categorized under severe anxiety levels. There was a statistically significant weak and positive relationship between PTSD and PTG levels (*r*: 0.282, *P*:0.000). When the predictors of PTG are considered, the spiritual well-being of mothers significantly predicts PTG (*F*: 43.944, *P*: 0.000). It accounts for 12.7% (*R* Square = 0.127) of the variance in mothers' PTG.

Conclusions: Mothers showed high PTSD levels 9 months after the earthquakes, but alongside these high levels, it has a positive relation with their PTG, which may show mothers becoming stronger after their traumatic experience. Study results showed the mothers' spiritual levels were a significant predictor for PTG.

Natural disasters, ranging from pandemics and wars to earthquakes, have a profound impact on a substantial portion of the global population. The magnitude of such events correlates with heightened psychological distress experienced by individuals residing in the affected regions.[1] A meta-analysis has highlighted numerous studies documenting an upswing in general mental health issues post-disasters, including tsunamis, floods, landslides, and hurricanes.[2] Specifically focusing on earthquakes, the literature reveals an escalating incidence and prevalence of post-traumatic stress disorder (PTSD).[3,4] Reports vary widely, with PTSD prevalence spanning from 1.2% to 82.64%.[5–8] This variability can be attributed to factors such as the earthquake's magnitude and severity, survivors' intense exposure to traumatic events, financial losses, and the loss of acquaintances. The timing of PTSD assessment also plays a role.[9,10] Recent studies underscore the association between PTSD and certain demographic factors, such as being female, being young, having a lower educational level, limited social support, and experiencing the loss of a family member post-earthquake.[11–15] A recent study conducted in Turkey, following earthquakes in February 2023, sought to examine the prevalence of PTSD among survivors three months after the seismic events. The study revealed that over half of the survivors exhibited symptoms indicative of PTSD.[15]

While the repercussions of trauma often extend into the long term, a person's persistent mental revisitation of the event can lead to cognitive shifts. Paradoxically, the unpleasant emotions stemming from the trauma can act as a motivator, propelling individuals to distance themselves from the distressing event.[16] Furthermore, some individuals may undergo positive transformations as a result of trauma, perceiving themselves as stronger and placing a higher value on their lives than before—an occurrence known as post-traumatic growth (PTG).[17] PTG is characterized as an active and constructive process that reshapes an individual's life, promoting not only survival but also an enhancement of mental well-being. This phenomenon occurs when an individual gains a deeper understanding of the meaning behind traumatic events and begins to cultivate hope for the future.[18–20] This transformative process may manifest in various aspects of life, including a heightened appreciation for life and shifts in priorities. Recent research has shown that roughly two-thirds of individuals undergo the process of PTG following diverse traumatic experiences, such as natural disasters,[21] confronting life-threatening illnesses in themselves or their children,[22] and exposure to war.[23]

Spirituality emerges as a crucial individual characteristic in effectively navigating the process of coping with post-traumatic psychosocial challenges. Recognized by the World Health

Organization (WHO) as the fourth dimension of human health, spiritual health is commonly defined as an individual's beliefs and behaviors shaped by their connection to a higher power in the world.[24] Research suggests that spirituality plays a pivotal role in fostering resilience among individuals confronting stressful situations, including life-threatening illnesses, disasters, or moments of crisis.[24,25] Tausch et al. (2011), in a qualitative study exploring coping strategies post-severe hurricanes, found that participants emphasized the significance of spirituality for personal development and adaptation during the post-disaster period.[26] Following earthquakes, factors such as financial losses, the loss of a relative, relocation, and various other stressors can adversely impact family dynamics.[27] It is noteworthy that women and children may be particularly susceptible to psychological challenges in the aftermath of these disasters.[28] The repercussions of mothers' traumatic experiences and the ensuing negative mental processes on their children are complex. In this context, PTSD symptoms in mothers may carry more significant consequences, potentially influencing the child's growth and development.[29] A study indicates a correlation between mothers' depressive symptoms and subsequent behavioral maladjustments in their children.[30] Particularly for mothers with young children, the heightened caregiving needs of their offspring may intensify their experience of this challenging process. An investigation exploring the impact of earthquake-related anxiety on the well-being of mothers with preschool children post-earthquakes revealed low well-being and heightened earthquake anxiety among mothers in this demographic.[31]

In February 2023, a series of earthquakes struck Turkey and Syria, with the largest registering at 7.6 magnitude. These seismic events resulted in significant loss of life and compelled numerous individuals to relocate due to home damage. While some resettled in different cities, many opted to remain in the earthquake-affected areas. Throughout this process, numerous mothers, serving as primary caregivers to their children, were exposed to this traumatic experience. The earthquakes impacted 11 provinces in Turkey, and in the aftermath, the potential psychological repercussions for the affected population remain unpredictable. The need for comprehensive studies on the psychological effects of these earthquakes is evident. Unfortunately, the existing literature lacks sufficient studies to discern the psychological challenges experienced by mothers with young children following earthquakes and similar traumatic events. Moreover, there is a dearth of research shedding light on the factors influencing positive or negative experiences post-trauma. Hence, this study endeavors to fill this research gap by investigating the incidence of PTSD in mothers with children aged 0-9 residing in the regions affected by the earthquakes that impacted 11 provinces in Turkey. Additionally, the study aims to elucidate the predictive levels of spiritual well-being and other factors believed to exert influence on PTG levels.

Methods

Objective of the Study

The primary objective of this study is to assess the prevalence of PTSD in mothers affected by the February 2023 earthquakes and to explore the influence of spiritual well-being and other factors on their PTG levels. The study endeavors to answer the following key questions:

- What is the extent of PTSD among mothers post-earthquake?
- Is there a correlation between PTSD and PTG in mothers post-earthquake?
- Do levels of spiritual well-being predict PTG in mothers post-earthquake?
- What factors predict PTG levels in mothers post-earthquake?

Participants

The population of this study comprises mothers residing in the 11 provinces most severely impacted by the earthquakes that transpired in Turkey on February 6, 2023, and who have children aged 0-9. The study's sample is drawn from mothers accessible through online social media platforms during the period from October 2023 to December 2023. Given the absence of precise information on the exact number of mothers in the earthquake-affected provinces, all mothers meeting the inclusion criteria—possessing Turkish language proficiency, having at least one child aged between 0-9, and being present in the region during the earthquakes—were invited to participate voluntarily. Prior to concluding data collection, the study's results were subjected to a post hoc power analysis to assess their significance. The effect size was determined to be 0.39, the alpha margin of error was set at 0.05, and the number of predictors was established as nine. The sample size of 303 participants was found to yield a robust power of 1.00 in the post hoc power analysis. G-Power 3.1 was employed for the power analysis.

Study Design

The authors employed the Google Forms software to craft the data collection forms, and these forms were subsequently distributed to mothers residing in the earthquake-affected zone through email and popular social media platforms such as Facebook, Instagram, and WhatsApp, where they received an online form link.

The online form was structured across five stages. In the initial stage, mothers were presented with a consent form containing comprehensive information about the study's objectives, content, and inclusion criteria. This stage aimed to ensure clarity and transparency regarding their participation. At each subsequent stage, participants, who were primarily mothers, provided responses related to their youngest child (aged between 0 and 9) and shared their personal experiences with the earthquake. Including mothers with children under the age of nine was intentional, aiming to evaluate the mental health of mothers in conjunction with children who might not be capable of independent self-care. This deliberate inclusion sought to establish homogeneity within the sample group, particularly concerning the potential impact of the children's age on maternal experiences.

Upon obtaining consent, participants progressed to the second stage, responding to questions pertaining to the demographic characteristics of both mothers and their children, as well as their experiences during the earthquake. The third stage focused on assessing spiritual well-being, while the fourth stage delved into determining PTSD levels. The final stage included questions to evaluate the level of PTG.

Data Collection

In this study, four instruments—namely, the "Mother Information Form," "Post-Traumatic Stress Disorder Control List," "Post-Traumatic Growth Scale," and "Spiritual Well-Being Scale"—were employed for the purpose of data collection.

Data Collection Tools

The researchers designed a comprehensive Mother Information Form comprising 13 questions focused on gathering demographic

https://doi.org/10.1017/dmp.2024.275 Published online by Cambridge University Press

data from mothers and information about their children, as well as their experiences with earthquakes. This form was divided into two parts. The first part consisted of nine questions exploring socio-demographic characteristics of mothers, including age, occupation, educational and marital status, the geographical regions of residence for mothers and their children, and their current health and life status. The second part included four questions concerning the age and gender of their children.

The Posttraumatic Stress Disorder Checklist for DSM-5 is a self-administered questionnaire designed to assess stress levels following traumatic events. Widely used as a screening tool, it evaluates PTSD symptomatology experienced in the last 30 days. Developed by Blevins et al. (2015), the questionnaire aligns with the American Psychiatric Association DSM-V symptom criteria.[32] For the Turkish population, Boysan et al. (2017) adapted it.[33] Comprising 20 questions, the PCL-5 employs a 5-point Likert scale in line with DSM-V PTSD diagnostic criteria. The questionnaire is structured in four subdimensions: Criteria B for re-experiencing, Criteria C for avoidance, Criteria D for negative changes, and Criteria E for hyperarousal. Responses are scored from 0 to 4 ("0" for None, "1" for Very few, "2" for Moderately, "3" for Quite a lot, and "4" for Extremely). Total scores fall within the range of 0-80. In the study by Boysan et al. (2017), the cut-off score was determined to be 47.[33] In this study, the Cronbach alpha coefficient of the scale was found to be 0.95.

The Post-Traumatic Growth (PTG) Scale, developed by Tedeschi and Calhoun, serves as a tool to assess positive changes experienced by individuals following traumatic events.[17] This scale comprises 21 items rated on a 6-point Likert scale ("0" for I did not experience this change because of what happened to me; "1" for I experienced this change very little because of what happened to me; "2" for I experienced this change somewhat because of what happened to me; "3" for I experienced this change at a moderate level because of what happened to me; "4" for I experienced this change quite a lot because of what happened to me; and "5" for I experienced this change a lot because of what happened to me). The scale encompasses five sub-dimensions: changes in interpersonal relationships and self-perception, understanding the value of life, awareness of new options, and development in the belief system. The total score ranges from 0 to 105, with an elevated score indicating a higher level of PTG. The Turkish adaptation of the scale was conducted by Dürü in 2006, demonstrating a high level of internal consistency with an internal consistency coefficient of 0.93.[34] In the present study, the Cronbach alpha coefficient for the scale was determined to be 0.94.

The Spiritual Well-being Scale (SWBS) was crafted for adults to explore the meaning of life in alignment with their values.[35] Comprising three sub-dimensions—transcendence, harmony with nature, and anomie—the SWBS is a valid and reliable scale designed to measure the spiritual well-being of adults. The scale's validity and reliability have been established through extensive studies, with a reported Cronbach's alpha value for the total scale reaching 0.88. In the current study, the Cronbach's alpha value for the entire scale was 0.92.

Statistical Analysis

Statistical analysis was performed using IBM SPSS Statistics for Macintosh, version 26.0 (IBM Corp., Armonk, NY, USA). The normality of all continuous variables was assessed using the Kolmogorov-Smirnov test, indicating that they deviated from a normal distribution. Skewness and Kurtosis values were scrutinized, confirming that the study exhibited a normal distribution.[36] In the analysis of the study data, categorical variables were presented as frequency (number, percentage), while numerical variables were described using descriptive statistics (mean, standard deviation). The Pearson correlation coefficient was employed to interpret the relationship between two independent numerical variables. Bivariate Linear Regression Analysis was applied to explore the sole impact of Spiritual well-being on PTG. Multiple Linear Regression Analysis was used to investigate the combined impact of other predicted factors, in addition to spiritual well-being, on PTG. Variance Inflation Factor (VIF) values were examined to assess the presence of multicollinearity in the model.[37] Durbin-Watson values were scrutinized to test for potential autocorrelation issues within the model.[38] The level of statistical significance was set at 0.05.

Ethical Considerations

Permission to utilize the scales in this study was acquired through written consent from the original authors. Furthermore, approval for the study was granted by the University's Social and Human Sciences Ethics Committee. An online form detailing the purpose and methodology of the survey was sent to mothers who expressed willingness to take part in the study. Their informed consent was subsequently obtained. This study aligns with the ethical principles outlined in the Declaration of Helsinki. Participation in the study was entirely voluntary, and the confidentiality of participants' personal identity information was strictly upheld.

Results

A total of 303 mothers actively participated in this study, aiming to assess the PTSD levels among mothers in the earthquake-stricken areas during the February events in Turkey and to identify potential predictors influencing PTG.

Table 1 provides an overview of the demographic characteristics of the participating mothers. The average age of the mothers was 34.21 (*SD:* 5.80). The majority of mothers (83.8%) had 1-2 children, with an average of 1.422 children under the age of 9 (*SD:* 0.62). The mean age of their youngest children is 3.99 (*SD:* 2.64), and the gender distribution of the youngest children under the age of nine was predominantly female (52.1%). A significant portion of mothers (94.4%) was married, and a substantial proportion (75.9%) held a university degree. Approximately half of the mothers (48.8%) were employed in the health sector. The vast majority (98.3%) of the mothers reported residing in one of the provinces within the earthquake zone during the seismic events. The majority (67.3%) of the participants hail from Hatay City, and a significant proportion (91.1%) still resides in the earthquake-affected areas. Concerning employment, 69.6% of mothers noted that they work full-time in the earthquake zone. Regarding losses experienced, a substantial number of mothers (62.7%) reported facing financial setbacks, while 40.6% acknowledged losing a relative due to the earthquake. In terms of post-earthquake support provided by public and private organizations, more than half of the participating mothers (57.4%) expressed that the aid was perceived as "insufficient."

Table 2 presents an analysis of the PTSD and PTG levels among the participating mothers, including their mean total scores and the intricate relationship between PTSD levels and PTG. The mean total PTSD score for the mothers was identified as 49.35 (*SD:* 19.76) and 68.91 (*SD:* 24.90) for PTG. Furthermore, upon exploring the

https://doi.org/10.1017/dmp.2024.275 Published online by Cambridge University Press

Table 1. Demographic characteristics and opinions on the earthquake experience of participating mothers

Descriptive characteristics		Mean ± SD	Min- max
Mothers'	Age	34.21 ± 5.80	22–50
	Number of children aged<9	1.422 ± 0.62	1–6
	Age of the youngest child	3.99 ± 2.64	0–9
		n	%
Total number of children	1–2	254	83.8
	3–4	43	14.2
	5–6	1	0.3
	7–8	4	1.3
	9<	1	0.3
Gender of youngest child	Female	158	52.1
	Male	145	47.9
Marital status of mothers	Married	286	94.4
	Not married	17	5.6
Educational status	Primary school	8	2.6
	Secondary school	6	2.0
	High school	30	9.9
	University	230	75.9
	Post-graduate	29	9.6
Profession	Health field	148	48.8
	Not working/ Housewife	49	16.2
	Education field	39	12.9
	Governmental field	34	11.2
	Private	33	10.9

Earthquake experience		***n***	%
Were you living in the earthquake zone during the earthquakes?	Yes	298	98.3
	No	5	1.7
In which of the following cities were you located during the earthquakes?	Hatay	204	67.3
	Adana	26	8.6
	Şanlıurfa	22	7.3
	Gaziantep	15	5.0
	Diyarbakır	11	3.6
	Kahramanmaraş	9	3.0
	Adıyaman	7	2.3
	Malatya	6	2.0
	Osmaniye	3	1.0
	Kilis	0	-
	Elazığ	0	-

(*Continued*)

Table 1. (*Continued*)

Earthquake experience		***n***	%
What is your working situation in the earthquake zone in the post-earthquake period?	Full time	211	69.6
	Not working	72	23.8
	Temporary assignment	10	3.3
	Part time	6	2.0
	Permanent workplace change	4	1.3
Do you still live in an earthquake zone?	Yes	276	91.1
	No	27	8.9
Have you experienced any financial loss due to earthquakes?	Yes	190	62.7
	No	113	37.3
Have you lost someone close to you due to earthquakes?	Yes	123	40.6
	No	180	59.4
How do you find the support you receive from public and private institutions/ organizations in the earthquake zone?	Insufficient	174	57.4
	Moderate	71	23.4
	Sufficient	55	18.2

Table 2. PTSD and PTG levels of mothers and relationship between PTSB and PTG levels

		Mean ± SD (Min-Max)	*r*	*P*
Total Scores	**PTSD**	49.35 ± 19.76	0.282	0.000*
		(2– 80)		
	PTG	68.91 ± 24.90		
		(6– 105)		
PTG Total	**PTSD Total**	**Mean ± SD**	***t***	***P***
	≥ 47	76.22 ± 22.86	5.593	0.001*
	<47	60.95 ± 24.65		

PTSD, posttraumatic stress disorder; PTG, posttraumatic growth; *t*, independent samples t test; *r*, Pearson correlation; *SD*, standard deviation, *$P<0.005$.

connection between PTSD and PTG levels, a statistically significant weak and positive relationship was observed (*r*: 0.282, *P*: 0.000). This relationship shows that the PTG levels were increasing according to PTSD levels. When it was analyzed regarding the cutoff point of post-traumatic stress disorder score averages as "47," a significant difference was found between the post-traumatic growth score averages. Accordingly, it was found that the mean post-traumatic growth score of mothers with a post-traumatic stress disorder score of 47 and above was higher than that of other mothers, with 76.22 (*SD*: 22.86: *t*: 5.593; *P* :0.001).

https://doi.org/10.1017/dmp.2024.275 Published online by Cambridge University Press

Table 3. Examining the predictors for the mothers' PTG levels

	Unstandardized coefficients		Standardized coefficients	*t*	*P*	95.0% *CI*		*VIF*
	B	*SE*	β			Lower bound	Upper bound	
(Constant)	10.475	8.917		1.175	0.241		28.022	
SWBS[x]	0.507	0.077	0.357	6.629	**0.000**	0.357	0.658	
Other factors								
(Constant)	29.883	13.514		2.211	0.028	3.285	56.480	
SWBS[y]	0.405	0.088	0.285	4.585	**0.000**	0.231	0.580	1.365
PTSD[y]	0.129	0.081	0.102	1.592	0.112	–0.030	0.288	1.453
Age (mother)[y]	–0.482	0.264	–0.122	–1.828	0.069	–1.001	0.037	1.332
Age of the youngest child[y]	0.921	0.578	0.098	1.594	0.112	–0.216	2.058	1.327
Number of children aged<9[y]	–0.163	2.220	–0.004	–0.074	0.941	–4.533	4.206	1.094
Residence during the earthquake[y]	2.992	10.624	0.015	0.282	0.778	–17.917	23.902	1.044
Current residence[y]	–4.039	4.726	–0.046	–0.855	0.393	–13.341	5.262	1.033
Financial loss[y]	5.881	2.875	0.114	2.046	**0.042**	0.224	11.539	1.102
Loss of acquaintance[y]	–2.586	2.741	–0.051	–0.943	0.346	–7.981	2.809	1.033

[x]Bivariate Linear Regression Analysis, *F*: 43.944, *P*: 0.000; *r*: 0.357, *R2*: 0.127; Adjusted *R2*: 0.124; *Durbin-Watson*: 1.866.
[y]Multiple Linear Regression Analysis, *F*: 6.590, *P*: 0.000; *r*: 0.410; *R2*: 0.168; Adjusted *R2*: 0.143; *Durbin-Watson*: 1.903.
r, Pearson Correlation; CI, confidence interval; *SE*, standard error; β, standardized regression coefficient; PTSD, post-traumatic stress disorder; SWBS, spiritual well-being scale; VIF, variance inflation factor.

Table 3 delves into the predictive factors influencing mothers' PTG, specifically focusing on the 3-factor SWBS and various other variables. Basic linear regression was employed to analyze the predictive performance of mothers' PTG levels based on the total score averages from the SWBS. The results reveal that the spiritual well-being of mothers significantly predicts PTG (*F:* 43.944, *P*: 0.000). Solely considering SWBS levels, they accounted for 12.7% (*R* Square = 0.127) of the variance in mothers' PTG. A 1-point increase in SWBS resulted in a 0.357 unit rise in PTG levels (95% CI, 0.357 to 0.658). Multiple linear regression analysis was conducted to forecast SWBS levels and other variables believed to influence mothers' PTG levels. The considered predictive variables encompassed the age of the mothers, the number of children under the age of 9, the age of their youngest child, residing in the earthquake zone during and after the earthquake, financial losses, loss of relatives due to earthquakes, SWBS levels, and PTSD levels. The resulting model for PTG ($F_{(9,293)}$: 6.590, *P*: 0.000) demonstrated statistical significance. Crucially, no multicollinearity or autocorrelation issues were identified in the model (*Durbin Watson*=1.903; *VIF*<10), as shown in Table 3. According to this comprehensive model, the combined influence of the mother's SWBS level and the experience of financial loss due to earthquakes explained 16.8% of the variance in PTG. Pertinently, considering the significance tests of the regression coefficients, both the mother's SWBS level (β = 0.405; $t_{(303)}$ = 4.585; *P* = 0.000) and financial loss due to earthquakes (β = 0.114; $t_{(303)}$ = 2.046; *P* = 0.042) emerged as noteworthy and statistically significant predictors of PTG.

Discussion

To the best of the authors' knowledge, this study marks a pioneering effort in examining the relationship between SWBS levels and post-traumatic changes among mothers residing in an earthquake-affected area in Turkey. The significance of this study lies in its unprecedented exploration of this relationship, contributing valuable insights to the existing body of literature.

Traumatic events pose not only a threat to an individual's physical, psychological, and social well-being but also exert a profound impact on their mental health.[39–41] The enduring repercussions of the Sichuan earthquake, which occurred on May 12, 2008, remain visible, underscoring the persistent psychological trauma even years after the event.[42] Such traumatic experiences can precipitate adverse effects, including depression, anxiety, and PTSD.[43] Notably, the present study revealed that even nine months after the earthquake in Turkey, mothers exhibited a substantial level of stress, with the total mean score on PTSD reaching 49.35 (*SD:*19.76) (Table 2). In the aftermath of the Ceyhan earthquake in Turkey in 1998, the prevalence of PTSD stood at 42% after 1 month and 23% after 13 months.[44] Similarly, three years following the Marmara earthquake in Turkey in 1999, the PTSD prevalence was reported to be 19.2%.[45] A study by Yang et al. examining the effects of the Ludian earthquake revealed PTSD prevalence rates of 23%, 14%, and 7% at one, three, and 18 months post-event, respectively.[46] Contrarily, studies focusing on Sichuan earthquake survivors showcased a decline in PTSD prevalence, with rates of 62.8% after one month and 40.1% after one year.[12,47] While existing research generally suggests a decrease in PTSD scores over time, our study offers a distinct observation, indicating a steady increase in PTSD levels nine months after the earthquakes in Turkey, as compared to Ilhan et al.'s results.[15] Numerous studies have consistently demonstrated that individuals surviving earthquakes often grapple with severe stress and PTSD symptoms.[48–50] Nevertheless, the present study unveils a notable deviation as the prevalence of PTSD remains high even nine months post-earthquake. This prolonged impact and heightened stress levels could potentially be

https://doi.org/10.1017/dmp.2024.275 Published online by Cambridge University Press

attributed to the unique demographic focus of our research, targeting mothers with young children between the ages of 0-9. Existing literature has identified a gender-specific trend, with females exhibiting higher rates of PTSD.[51]

PTG manifests in the aftermath of symptoms induced by a traumatic experience.[17] In the current study, an examination of the relationship between PTSD and PTG levels revealed a statistically significant weak and positive correlation (*r*: 0.282, *P*: 0.000). Although the relationship between PTG and PTSD means is weak, when the PTSD cut-off point is taken as 47, the difference between the mothers' PTG score averages supports this relationship. PTG scores of mothers with an average PTSD score of 47 and above were found to be higher than other mothers. This shows that high levels of post-traumatic stress, even nine months after the earthquake, support post-traumatic growth in mothers (Table 2). Prior studies in the literature have also established a positive association between PTSD symptoms and PTG.[52,53] For instance, a survey conducted among adolescents following the Ya'an earthquake found that PTSD at six months positively predicted PTG at 12 months post-event.[54] Similarly, a study among adult Wenchuan earthquake survivors demonstrated that PTG at 12 months alleviated PTSD at 18 months.[55] The weak yet positive relationship identified in our study aligns with these patterns. Notably, as indicated in Table 3, the absence of a predictive effect of PTSD on PTG might be attributed to the mothers being in the early stages of trauma processing. Nevertheless, these results underscore a prevailing optimistic outlook and a potential for positive transformation in individuals' coping processes following natural disasters and trauma.

Spirituality has been an inherent aspect of the human experience, permeating every stage from birth to death.[56] In a qualitative exploration of religious coping after hurricanes, participants emphasized the integral role of spirituality in personal development and adaptation during the post-disaster period.[26] Following crises, individuals who have undergone trauma often turn to spirituality as a coping mechanism.[40,41] Moreover, existing research has underscored the significance of spirituality in fostering PTG.[17,49] In the present study, the SWBS level of mothers emerged as a robust predictor of PTG (*F:* 43.944, *P*: 0.000). An impactful revelation is that mothers' SWBS levels independently account for 12.7% of their PTG (*R* Square = 0.127), with a 1-point increase correlating with a 0.357 unit rise in PTG levels (95% CI, 0.357-0.658, Table 3). This result aligns with a separate study where participants' spirituality levels explained 10.7% of their PTG,[57] corroborating our study's outcomes and in line with existing literature. The influence of spirituality on PTG manifests through fortifying individuals, nurturing their interpersonal relationships, instilling gratitude for life, and facilitating spiritual transformation.

Limitations of the Study

Despite the large sample size and the inclusion of data from diverse provinces, it's important to note that the study participants may not fully represent all mothers who survived the earthquakes due to the specific sampling method employed. Another limitation lies in the non-proportional sampling of mothers from all earthquake-affected regions. Although leveraging social media for recruitment enabled access to a broad spectrum of society, it introduced its own set of limitations. Notably, participation in the study might be biased toward mothers interested in the subject, and there is a potential exclusion of mothers without internet access or smartphones, limiting the study's inclusivity. Additionally, the cross-sectional design of the study introduces a constraint in evaluating variables like PTSD, PTG, and SWBS within a confined timeframe. Consequently, the study could not capture long-term changes in participants' situations or their enduring effects.

Conclusions

In conclusion, mothers with children aged 0-9 who endured the earthquake displayed elevated levels of PTSD. The persistent high levels of PTSD, potentially attributed to numerous aftershocks following the seismic activity, underscore the enduring impact of what has been described as the century's disaster. A significant result of this study is the compelling role of mothers' spirituality in fostering PTG. This highlights the importance of incorporating spirituality into the psychological support and counseling services provided by healthcare professionals to individuals grappling with the aftermath of a major disaster, such as an earthquake. Recognizing the potential of spirituality to aid mothers in overcoming post-earthquake traumas emphasizes its value as a supportive element in the recovery process. As a traumatic event has occurred, it is imperative to delve into potential long-term issues that individuals may face and to identify and address these challenges in the aftermath of such disasters.

Acknowledgments. The authors thank all the mothers who contributed to this study with their valuable opinions in such a post-earthquake situation.

Author contribution. Gizem Kerimoğlu Yıldız: Concept, literature review design, data collection, statistical analysis, and final approval.

Rukiye Türk Delibalta: Concept, literature review, data collection, and final approval.

Competing interest. The authors do not declare any conflict of interest.

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