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Harnessing spiritual coping to foster resilience: insights from post-trauma mental health after the Kahramanmaraş earthquake

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The objective of this study was to examine the protective effects of spiritual coping on post-traumatic stress, anxiety, and depression, and its contribution to well-being in individuals affected by the Kahramanmaraş earthquake on 6 February 2023. This study was based on the premise that spiritual coping acts as a protective factor against psychological distress. It aimed to identify the mechanisms through which spiritual coping alleviates the negative psychological effects of trauma and enhances mental health. The study sample comprised 382 individuals, the majority of whom (75.9%) were women, aged between 16 and 50, primarily young adults, who had experienced varying levels of impact from the earthquake. Structural equation modelling (SEM) was employed to analyse both the direct and indirect effects of spiritual coping on depression, stress, and anxiety. The findings indicated that spiritual coping was associated with a notable reduction in psychological distress, including stress, anxiety, and depression, and an increase in overall well-being. Furthermore, the model illustrated that spiritual coping contributes to enhanced psychological resilience by fostering adaptive mechanisms in the aftermath of trauma. These findings indicate that the incorporation of spiritual coping strategies into post-trauma interventions may prove an effective means of enhancing individuals' mental health and resilience.

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Introduction

Natural disasters, most notably earthquakes, have been identified as a primary cause of severe psychological distress in affected individuals. According to Kessler et al. (1995), traumatic experiences are generally defined as situations in which an individual's life is threatened or the individual witnesses life-threatening events experienced by others. Such events frequently result in symptoms of post-traumatic stress, depression, anxiety, and overall psychological distress (Sönmez Düzkeya and Yıldız 2015; Bozkurt et al. 2015). The substantial seismic event that occurred in Türkiye on 6 February 2023, known as the Kahramanmaraş Earthquake, serves as a prime illustration of this phenomenon. The twin earthquakes (Mw 7.7 and Mw 7.6) affected over 11 provinces, resulting in more than 50,000 deaths, the displacement of millions, and widespread material and psychological devastation (Karaarslan et al. 2023). In such high-impact trauma contexts, understanding how individuals cope becomes both a scientific and societal priority.

Psychological responses to trauma vary widely across individuals, shaped by a range of internal and external factors. While some develop severe symptoms such as depression, anxiety, or post-traumatic stress disorder (PTSD), others are able to maintain or even enhance their well-being through adaptive coping mechanisms (American Psychiatric Association 2015; Güler 2006; Xi et al. 2020). In recent years, spiritual coping has gained considerable attention as a protective mechanism that helps individuals to make sense of traumatic events, find meaning in suffering, and restore a sense of control and purpose (Pargament 1997; Dein 2006; Koenig 2012). Spiritual coping is defined as the utilisation of religious or spiritual beliefs and practices, including prayer, divine trust, and spiritual reframing, for the purpose of understanding, managing, or overcoming the adverse effects of stressful experiences (Ano and Vasconcelles 2005; Ekşi and Katılmış 2007). It has been hypothesised that this phenomenon functions as a psychological buffer, thereby enhancing resilience and facilitating growth, particularly within cultural contexts where religion and spirituality play a central role in daily life.

The psychological aftermath of earthquakes has been extensively documented across diverse global contexts, underscoring the prevalence of post-traumatic stress disorder (PTSD), depression, and anxiety among survivors (Cénat et al. 2020; Ekşi et al. 2007). Research undertaken following significant seismic events – including the 2010 Haiti Earthquake (Cénat et al. 2020), the 2015 Nepal Earthquake (Acharya Pandey et al. 2023), and the 2008 Wenchuan Earthquake in China (Xu and Wei 2013) – has repeatedly documented elevated levels of psychological distress, frequently moderated by access to social support and culturally pertinent coping mechanisms. In a similar vein, in the wake of the 2023 Kahramanmaraş Earthquakes in Turkey, preliminary research has indicated elevated levels of psychological symptoms across diverse demographic groups, notably including young people and athletes (Öztekin and Örki 2023; Tingaz et al. 2024).

Furthermore, extant evidence suggests that spiritual coping can mitigate these mental health consequences, especially when embedded within culturally endorsed belief systems (Ai et al. 2023; Meisenhelder and Cassem 2009; Osman et al. 2017). It has been reported that children and adolescents are particularly vulnerable to trauma-related symptoms in the aftermath of disasters, necessitating the implementation of contextually adapted intervention strategies (Judith and Cohen 2007). These findings provide a compelling rationale for examining how spiritual coping operates in culturally specific post-disaster settings, such as Türkiye, where religiosity and collective identity are tightly interwoven into the social fabric.

In Türkiye, where spirituality and religiosity are profoundly entrenched in the cultural fabric, individuals frequently resort to

spiritual coping mechanisms in times of crisis. Prayer, surrender to divine will (tevekkül), belief in being tested by God, and communal faith-based support are commonly used coping strategies after adversity (Ayten 2012; Ekşi and Dinçer 2013). In the aftermath of the seismic events that occurred on 6 February, recent empirical studies have emphasised the distinctive psychological function of spiritual coping mechanisms. For instance, Okan and Şahin (2024) developed the Post-Disaster Spiritual Coping Scale, a scale specifically tailored for the Turkish context, which demonstrated strong associations between spiritual coping and improved psychological outcomes. In a similar vein, Şahin and Okan (2024) introduced a scale to assess the motivational aspects of post-disaster coping, emphasising the spiritual dimension as a pivotal factor among survivors. The present studies underscore the importance of culturally adapted instruments in measuring spiritual resilience in Turkish disaster contexts.

However, it should be noted that spiritual coping represents merely one component of the more extensive coping repertoire that has been observed within Turkish society. In addition to spiritual strategies, a range of other culturally specific coping mechanisms have been documented. Uğur (2024) emphasised the significance of diverse coping strategies, encompassing problem-focused and emotion-focused approaches, in shaping subjective well-being among non-profit workers. In a similar vein, Ekşi and Dinçer (2013) identified a wide array of religious and spiritual coping practices commonly employed in Turkish society. Recent studies following the Kahramanmaraş earthquake (Karataş and Tüccar 2024; Çınaroğlu 2024; Kartol et al. 2025) further underscore the multifaceted nature of coping responses, which encompass religious, communal, cognitive, and emotional dimensions. Consequently, a comprehensive understanding of post-disaster resilience in Türkiye necessitates the integration of these diverse coping modalities into both research and intervention frameworks.

Whilst the concept of spiritual coping is predominantly examined in terms of its capacity to alleviate distress, it also possesses the potential to engender transformative outcomes by means of facilitating post-traumatic growth (PTG). PTG refers to the positive psychological change experienced as a result of confronting challenging life circumstances (Tedeschi and Calhoun 2004). Such changes may encompass enhanced appreciation of life, cultivated relationships, personal fortitude, spiritual growth, and the discernment of novel life prospects. In the field of trauma literature, PTG is regarded as a distinct concept from mere symptom reduction. It signifies the development of novel psychological capacities and shifts in worldview that occur in the aftermath of adversity (Zoellner and Maercker 2006; Doğan 2012). In the context of spiritual populations, positive religious coping has been demonstrated to be associated with higher positive transformation (PTG) scores (Dein 2006; Ahmadi et al. 2023). This finding suggests that spiritual coping may not only act as a buffer against psychological distress but also promote human flourishing, even in the aftermath of profound suffering.

The key outcome variable in this study is well-being, which has been conceptualised from various theoretical perspectives, including subjective well-being (Diener 1984), psychological well-being (Ryff 1989), and self-determination theory (Ryan and Deci 2001). Across these frameworks, well-being encompasses a broad range of positive attributes such as life satisfaction, absence of negative emotions, sense of purpose, meaning, quality relationships, and psychological vitality (Seligman 2011; Telef 2013). A substantial body of research has repeatedly demonstrated that adverse psychological states, including depression, anxiety, and stress, exhibit an inverse correlation with well-being (Beyhun et al. 2019; Compas et al. 2001). Consequently, it is imperative to

investigate the manner in which spiritual coping interacts with these mental health indicators to attain a comprehensive understanding of resilience in post-disaster contexts.

The present study contributes to the extant theoretical framework by exploring the hypothesis that spiritual coping contributes to psychological well-being by reducing psychological distress and enhancing adaptive responses. Although earlier studies have frequently concentrated on bivariate relationships between spirituality and well-being (Koenig 2012; Pargament 1997; Smith, McCullough and Poll 2003), there is a paucity of empirical research exploring how these associations function within a multivariate model involving mediating variables such as depression, anxiety, and stress. Furthermore, the spiritual coping strategies of earthquake survivors in Türkiye have not been sufficiently examined in terms of their predictive effects on well-being. The objective of this study is twofold:

- (1) Does spiritual coping predict levels of depression, anxiety, and stress among earthquake survivors?
- (2) Do these psychological distress variables mediate the relationship between spiritual coping and well-being?

To address these questions, we formulated the following hypotheses:

- **H1:** Spiritual coping is negatively associated with depression, anxiety, and stress.
- **H2:** Spiritual coping is positively associated with psychological well-being.
- **H3:** Depression, anxiety, and stress mediate the relationship between spiritual coping and psychological well-being.

The hypotheses under investigation were tested using structural equation modeling (SEM), a statistical technique that allows the simultaneous analysis of direct and indirect relationships among multiple observed and latent variables. The present study aims to contribute to both theory and practice in the fields of trauma psychology, spiritual coping, and post-disaster recovery by examining these dynamics in the context of a real-world disaster.

Method

Research design. The present study employed a correlational and cross-sectional design to examine the relationships between spiritual coping, psychological distress (i.e. depression, anxiety and stress) and psychological well-being among individuals affected by the 6 February 2023 Kahramanmaraş Earthquake. Given the hypothesized direct and indirect relationships among variables, path analysis was conducted to test the proposed mediation model. Path analysis is a methodological framework that facilitates the examination of multiple regression equations simultaneously, thereby enabling researchers to estimate the strength and direction of direct and indirect effects between observed variables (Kline 2016). This approach was deemed appropriate for testing the complex network of relationships specified in the current study.

Participants. The sample comprised 382 participants (290 women and 92 men) residing in regions affected by the 6 February 2023 Kahramanmaraş Earthquake in Türkiye. The age of the participants ranged from 16 to 50 years ($M = 22.7$, $SD = 4.9$), with the majority (over 80%) falling between the ages of 16 and 25. This demographic profile reflects a younger, predominantly female population, which may be characteristic of the university-centred recruitment channels used in the study.

Participants were recruited using a convenience sampling method through online platforms (e.g., social media, institutional

mailing lists) and printed announcements at universities located in or near the affected provinces (e.g. Kahramanmaraş, Hatay, Gaziantep, Adıyaman). Individuals were eligible to participate if they met the following criteria: (a) had reached the age of 16 years, (b) had experienced the earthquake directly (e.g. loss of home, injury, displacement) or indirectly (e.g. witnessing destruction, knowing someone who was harmed), and (c) provided informed consent. All participants were invited to report their own exposure to the disaster. Despite the absence of a formal trauma severity scale during the selection process, participants were asked screening questions regarding the extent to which they or their families had been affected. The inclusion of both directly and indirectly affected individuals is in alignment with prior trauma research, which suggests that secondary exposure can also produce significant psychological effects (Kessler et al. 1995). The data collection period spanned from April to June 2023, approximately two to four months following the earthquake. This timeframe has been identified in disaster literature as a critical period for observing early symptoms of trauma and the development of resilience. The survey was administered in both online and in-person formats, depending on the accessibility of the participants.

All procedures were conducted in accordance with the ethical standards outlined in the Declaration of Helsinki. The participants were informed of the purpose, scope, and voluntary nature of the study, and were assured that their responses would remain confidential and be used solely for academic purposes. Informed consent was obtained from each respondent prior to participation. Ethical approval was obtained from the Fırat University Social and Human Sciences Ethics Committee (Approval No: 20.06.2023-16911, Date: 20.06.2023). The approval covered the online collection of data from adult participants (aged 18 and above) focusing on the psychological effects of the Kahramanmaraş earthquake. No financial remuneration or inducements were offered for participation.

Measurement tools. Three validated self-report instruments were utilised to measure the key variables in this study: post-disaster spiritual coping, psychological distress (i.e., depression, anxiety, and stress), and general psychological well-being.

Postdisaster -Spiritual Coping Scale (Okan and Şahin 2024). The Post-Disaster Spiritual Coping Scale (PDSCS), developed by Okan and Şahin (2024), was used to assess individuals' use of spiritual strategies in coping with the psychological aftermath of the February 6, 2023 earthquake. The scale consists of 13 items rated on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree), with higher scores indicating greater use of spiritual coping.

Example items include:

"I believe that this disaster is a test from God."

"I pray to calm my heart and soul."

Exploratory and confirmatory factor analyses supported a unidimensional structure. Fit indices were acceptable ($\chi^2/df = 2.20$, $RMSEA = 0.061$, $CFI = 0.933$, $GFI = 0.908$), and Cronbach's alpha was .95, indicating excellent internal consistency. Table 1

DASS-21 Scale (Sarıçam 2018). The DASS-21, originally developed by Lovibond and Lovibond (1995) and adapted into Turkish by Sarıçam (2018), was used to assess levels of depression, anxiety, and stress. The scale includes 21 items, divided equally across three subscales (7 items each), rated on a 4-point Likert scale (0 = Never to 3 = Almost Always).

Example items include:

Depression: "I felt that life was meaningless."

Anxiety: “I felt scared without any good reason.”
Stress: “I found it difficult to relax.”
In the Turkish adaptation, internal consistency coefficients were reported as .87 (depression), .85 (anxiety), and .88 (stress). In this study, subscale reliability coefficients were similarly acceptable.

General well-being scale short form (Kalafatoğlu and Çelik 2020). General psychological well-being was measured using the General Well-Being Scale – Short Form developed by Longo et al. (2018) and adapted into Turkish by Kalafatoğlu and Çelik (2020). The scale consists of 14 items measuring physical, emotional, and psychological well-being. Responses are recorded on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree), with higher scores indicating better well-being.
Example items include:
“I feel satisfied with my life overall.” “I feel emotionally balanced and resilient.”
Confirmatory factor analysis indicated acceptable model fit ($\chi^2/df = 2.29$, RMSEA = .08, CFI = .93, GFI = .90). The Cronbach’s alpha was reported as .90, indicating high internal reliability.

Data collection process. The data collection process was conducted between April and June 2023, approximately two to four months after the Kahramanmaraş Earthquake. The temporal framework for this study was meticulously designed to allow for the stabilisation of the initial psychological impact of the trauma, thereby enabling the participants to engage in reflective practices concerning their coping strategies and mental well-being. The study utilised a mixed-mode data collection strategy, employing both online surveys and face-to-face questionnaires with the objective of enhancing accessibility and inclusivity. The collection of online data was conducted via secure survey platforms, while data from face-to-face interviews were obtained at university campuses and community centres located in earthquake-affected provinces (e.g., Kahramanmaraş, Hatay, Gaziantep). Prior to participation, all individuals were informed about the purpose, scope, and voluntary nature of the research. The respondents

were assured of anonymity and confidentiality, and that their responses would be used solely for academic purposes. Written informed consent was obtained electronically for online participants and via paper forms for in-person participants. No personally identifiable information (e.g., name, ID number) was collected. In order to ensure consistency, all participants received the same instructions prior to completing the questionnaires. A brief orientation was provided in both formats, including clarification of key terms and guidance on how to respond to Likert-scale items. Participants were encouraged to respond with candour and were given the opportunity to ask questions if required.

Data analysis method. All statistical analyses were performed using SPSS version 25.0 and AMOS version 24.0. Prior to conducting the primary analysis, the dataset was subjected to a rigorous screening process to ensure its accuracy, integrity, and normality. This process also involved the identification and exclusion of any values that were missing, outlying, or otherwise not aligned with the expected parameters. The assessment of normality was conducted through the examination of skewness and kurtosis values for all continuous variables. The values ranged between -1.23 and $+1.07$, indicating acceptable deviation from normality (Kline 2016). The Mahalanobis distance ($p < 0.001$) was utilised to conduct outlier analysis, and the presence of extreme multivariate outliers was not identified. The missing data were minimal (less than 2%) and were handled using listwise deletion, as the extent of missingness did not exceed the commonly accepted threshold (see Tabachnick and Fidell 2013).
A range of statistical analyses were conducted on the study variables to ascertain general trends and associations. These analyses included the calculation of descriptive statistics (means, standard deviations, and Pearson correlations). The internal consistency of each scale and subscale was assessed using Cronbach’s alpha, with all values exceeding the .80 threshold for acceptable reliability. In order to test the hypothesized model, path analysis was conducted using maximum likelihood estimation in AMOS. The analysis examined the direct and indirect effects of post-disaster spiritual coping on psychological well-being, mediated by depression, anxiety, and stress. The model’s fit was evaluated using the following indices:

- Chi-square to degrees of freedom ratio (χ^2/df)
- Comparative Fit Index (CFI)
- Goodness of Fit Index (GFI)
- Root Mean Square Error of Approximation (RMSEA)
- Standardized Root Mean Square Residual (SRMR)

The acceptable model fit was determined based on established guidelines: $\chi^2/df < 3.00$, CFI and GFI > 0.90 , RMSEA < 0.08 , and SRMR < 0.08 (Hu and Bentler 1999; Byrne 2016).

Findings
Descriptive statistics. The descriptive statistics for the primary study variables, encompassing post-disaster spiritual coping, depression, stress, anxiety, and psychological well-being, are delineated in Table 2. The means (M) and standard deviations

Table 1 Information on Participants.				
Demographic	Frequency	Percent	Valid Percent	Cumulative Percent
Gender				
Woman	290	75.9%	75.9%	75.9%
Male	92	24.1%	24.1%	100.0%
Total	382	100.0%	100.0%	
Your age				
16–20 years old	98	25.65%	25.65%	25.65%
21–25 years old	216	56.54%	56.54%	82.19%
26–30 years old	24	6.28%	6.28%	88.47%
31–35 years old	24	6.28%	6.28%	94.75%
36–50 years old	20	5.25%	5.25%	100.00%
Total	382	100.0%	100.0%	

Table 2 Basic Statistics of Variables.					
Variable	Mean	N	Std. Deviation	Kurtosis	Skewness
PostDisasterSpiritualCoping	59.0681	382	6.95321	0.561	−1.174
Depression	13.4241	382	5.40664	−0.497	0.563
Stress	13.5969	382	5.07268	−0.288	0.609
Anxiety	12.2147	382	4.42980	0.129	0.806
Wellbeing	47.1728	382	10.70906	0.069	−0.463

Table 3 Pearson Correlations Among Study Variables (N = 382).

Variables	PostDisaster SpiritualCoping	Depression	Stress	Anxiety	Wellbeing
PostDisasterSpiritualCoping	1	−0.566*	−0.523*	−0.474*	0.473*
Depression	−0.566*	1	0.881*	0.805*	−0.609*
Stress	−0.523*	0.881*	1	0.838*	−0.491*
Anxiety	−0.474*	0.805*	0.838*	1	−0.401*
Wellbeing	0.473*	−0.609*	−0.491*	−0.401*	1
N	382	382	382	382	382
Sig. (2-tailed)		0.000	0.000	0.000	0.000

**p* < 0.001

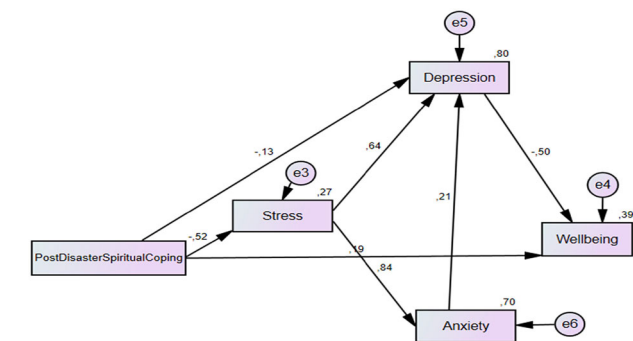


Fig. 1 Research Model.

(SD) reflect moderate levels of psychological distress and relatively high well-being in the sample. The skewness and kurtosis values for all variables fell within the acceptable range of ± 2.00 (Kline 2016), indicating approximate normality and supporting the use of parametric analyses.

Correlation analysis. Pearson correlation coefficients for all study variables are presented in Table 3. In accordance with predictions, spiritual coping post-disaster was found to be significantly and negatively correlated with depression ($r = -0.57$, $p < 0.001$), stress ($r = -0.52$, $p < 0.001$), and anxiety ($r = -0.47$, $p < 0.001$). The study also demonstrated a positive correlation with psychological well-being ($r = 0.47$, $p < 0.001$). These results are consistent with the theoretical expectation that spiritual coping serves as a protective factor, reducing psychological distress while enhancing subjective well-being. As indicated by the high inter-correlation coefficients ($r_s > 0.80$), depression, stress, and anxiety were found to be highly interconnected, a phenomenon that is prevalent in trauma-related responses. The findings indicated a negative correlation between all distress variables and well-being, thereby corroborating their conceptual role as risk indicators. It is noteworthy that these correlation coefficients fall within the moderate range, suggesting that while spiritual coping contributes meaningfully to psychological outcomes, it is likely one of multiple factors influencing post-disaster mental health.

Structural equation modelling analysis. The hypothesized path model was tested using AMOS 24 to examine the relationships between post-disaster spiritual coping, psychological distress (depression, stress, and anxiety), and psychological well-being. The standardized path coefficients are demonstrated in Fig. 1.

As demonstrated in the model, post-disaster spiritual coping exerted significant direct negative effects on stress ($\beta = -0.52$), depression ($\beta = -0.13$), and anxiety ($\beta = -0.19$). The study also demonstrated a direct positive effect on well-being ($\beta = 0.47$).

These findings lend further support to the notion that spiritual coping mechanisms can reduce psychological distress and promote mental health. The model also revealed several indirect pathways. For instance, the ability to cope with stress and depression has been demonstrated to have a detrimental effect on well-being, with depression and anxiety being negatively correlated with well-being ($\beta = -0.50$ and $\beta = -0.21$, respectively). This finding lends further support to the hypothesis that psychological distress variables play a mediating role in the relationship between coping mechanisms and overall well-being.

The total effects demonstrate that post-disaster spiritual coping exerts a substantial positive effect on well-being (total effect $\beta = 0.81$) and exhibits robust negative associations with all three distress variables. The results of the present study indicate that spiritual coping may function as both a protective and transformative factor in post-trauma recovery, in line with previous findings in the field of disaster mental health literature.

As demonstrated in Table 4, post-disaster spiritual coping exhibited substantial direct and indirect effects on psychological well-being. The direct effect of spiritual coping on well-being ($\beta = 0.47$) was complemented by significant indirect effects ($\beta = 0.34$), which operated through reductions in depression, anxiety, and stress levels. Specifically, spiritual coping was found to be associated with decreases in depression ($\beta = -0.13$ direct, -0.33 indirect), anxiety ($\beta = -0.19$ direct, -0.44 indirect), and stress ($\beta = -0.52$ direct). Conversely, depression and anxiety levels were found to have a substantial impact on reduced levels of well-being ($\beta = -0.50$ and -0.21 , respectively), thereby underscoring their mediating function. The results obtained lend support to the hypothesised mediation model, in which psychological distress variables function as pivotal pathways linking coping mechanisms to mental health outcomes. The total effect of spiritual coping on well-being ($\beta = 0.81$) indicates that its influence is not only statistically significant but also psychologically meaningful, offering strong empirical support for its role as a protective factor in post-traumatic adjustment.

Goodness of fit values for the model are given in Table 5.

As illustrated in Table 5, the fit indices for the hypothesised path model are presented. The chi-square/df ratio ($\chi^2/df = 1.59$) was found to be well below the recommended cutoff of 3.00, thereby indicating a satisfactory fit. The adequacy of the model was further substantiated by the support of other absolute and incremental fit indices. The GFI, AGFI, CFI, TLI, and IFI all exceed the conventional threshold of .90 (Hu & Bentler, 1999). The RMSEA value of .039 fell within the “good fit” range (< 0.06), and Hoelter’s critical $N = 717$, indicating that the sample size was more than adequate to yield reliable model estimation. Collectively, these indices suggest that the proposed path model provides an excellent representation of the data, thereby supporting the hypothesized relationships among spiritual coping, psychological distress, and well-being.

Table 4 Standardized Direct, Indirect, and Total Effects (N = 382).			
Predictor → Outcome	Direct Effect	Indirect Effect	Total Effect
Spiritual Coping → Stress	-0.52	—	-0.52
Spiritual Coping → Depression	-.013	-0.33	-0.46
Spiritual Coping → Anxiety	-0.19	-0.44	-0.63
Spiritual Coping → Well-being	0.47	0.34	0.81
Depression → Well-being	-0.50	—	-0.50
Anxiety → Well-being	-0.21	—	-0.21

Table 5 Model Goodness of Fit Values.			
Measure	Default Model	Independence Model	Recommended Cut-off Values
CMIN/DF	1.593	141.537	< 3 (good), < 5 (acceptable)
GFI	0.997	0.388	≥ 0.90
AGFI	0.975	0.082	≥ 0.90
NFI	0.998	0.000	≥ 0.90
IFI	0.999	0.000	≥ 0.90
TLI	0.996	0.000	≥ 0.90
CFI	0.999	0.000	≥ 0.90
RMSEA	0.039	0.607	< 0.08 (acceptable), < 0.06 (good)
Hoelter's Critical N (.05)	717	5	> 200 (preferred)

Discussion

The present study investigated the direct and indirect effects of post-earthquake spiritual coping on depression, anxiety, stress, and psychological well-being among individuals affected by the devastating Kahramanmaraş Earthquakes in Türkiye on February 6, 2023. Although structural equation modeling (SEM) software was utilised, the analytical model employed was technically a path model, as it consisted of observed variables only. The analysis demonstrated that spiritual coping significantly reduced psychological distress and indirectly enhanced well-being through its mediating effects via depression, stress, and anxiety. These findings contribute important insights to the fields of trauma psychology, coping theory, and culturally sensitive intervention design. The observed negative associations between spiritual coping and psychological distress indicators (depression, anxiety, and stress) are consistent with prior research on the protective role of spirituality in the aftermath of trauma (Koenig 2012; Pargament 1997; Sherman et al. 2021). In accordance with Lazarus and Folkman’s (1984) transactional model of stress and coping, spiritual coping can be defined as a positive reappraisal mechanism that allows individuals to reinterpret adversity in a way that restores meaning, coherence, and emotional regulation. Furthermore, it is important to acknowledge that within the Turkish cultural context, there may be a lack of clear distinction between ‘spiritual’ and ‘religious’ coping mechanisms. A plethora of coping practices, including prayer, trust in divine will (tevekkül), and communal religious rituals, are deeply entrenched in Islamic religious tradition (Ayten 2012; Ekşi and Dinçer 2013). Consequently, within the scope of this study, the term ‘spiritual coping’ is employed to encompass a comprehensive array of culturally entrenched religious and spiritual practices that reflect both individual faith and collective religious identity. The efficacy of these practices in mitigating distress and fostering well-being is

likely amplified in environments where they are normatively and spiritually embedded. The employment of a culturally adapted instrument, the Post-Disaster Spiritual Coping Scale (Okan and Şahin 2024), further facilitated the identification of these contextually grounded patterns. While the present findings underscore the utility of culturally embedded practices, it is important to situate these results within the broader literature on spiritual and religious coping. However, it should be noted that not all findings in the literature are uniform. While there is evidence from several studies to suggest an inverse relationship between spiritual coping and psychological symptoms (Radzi et al. 2014; Gaudette and Jankowski 2013), other studies have reported inconsistent results, including non-significant or even positive correlations (Ahmadi et al. 2023; Karakaya-Aydın 2019). These variations may be attributed to differences in the nature of religious coping (positive vs. negative), the severity or type of trauma experienced, and sociocultural or individual belief systems. The distinction between positive spiritual coping (e.g., benevolent religious reappraisal) and negative spiritual coping (e.g., spiritual struggle or feeling punished by a higher power) is of crucial importance in order to comprehend these equivocal findings (Pargament 1997; Dein 2006).

The present study also elucidated the mediating role of depression, anxiety, and stress in the relationship between spiritual coping and well-being. These findings serve to reinforce the multidimensional understanding of psychological well-being as being more than simply the absence of distress; rather, it is a construct that reflects positive functioning, adaptation, and flourishing. The findings of this study lend support to the theoretical proposition that spiritual coping facilitates well-being through its buffering effect on negative emotional states. These results are consistent with earlier studies highlighting the mediating impact of psychological distress on well-being outcomes in trauma contexts (Goenjian et al. 2000; Xi et al. 2020; Uzak and Yanardağ 2024). Moreover, this study makes a significant contribution to the field of positive psychology by substantiating well-being as an independent construct influenced by protective factors such as spirituality. Utilising Ryff’s (1989) model of psychological well-being and Seligman’s (2011) PERMA framework, the findings indicate that spiritual coping fosters domains such as meaning, emotional vitality, and personal growth. Although post-traumatic growth (PTG) was not directly measured, the strong positive relationship between spiritual coping and well-being suggests that many participants may have experienced such growth. This interpretation is in alignment with the work of Tedeschi and Calhoun (2004), who conceptualize PTG as a transformative process emerging from the struggle with adversity (see also Cesar 2014).

The notion of spiritual flexibility, defined as the adaptive adjustment of religious and spiritual beliefs in response to trauma, is a concept that merits further exploration. Such flexibility may enable individuals to integrate traumatic experiences into a coherent worldview, thereby fostering recovery and growth (Graça and Brandão 2024). It is recommended that future research examine spiritual flexibility as a moderator in trauma adaptation, utilising both quantitative and qualitative methodologies. The cultural embeddedness of coping strategies is a key dimension of this study. In accordance with the findings of recent studies (Çınaroğlu 2024; Karataş and Tüccar 2024), the results of this study demonstrate the efficacy of spirituality-informed models, rooted in Islamic meaning-making frameworks, in post-disaster mental health interventions within the Turkish cultural context. It is suggested that approaches such as Islam-based trauma-focused cognitive behavioral therapy (e.g., Çınaroğlu 2024) may be well-suited to enhance outcomes among trauma-exposed populations in religious societies.

Recent empirical studies have further demonstrated the psychological impact of natural disasters and the importance of culturally and contextually appropriate coping mechanisms. Longitudinal and trauma-focused studies have highlighted the persistence of PTSD and distress symptoms even a decade after major seismic events (Karamustafalıoğlu et al. 2023), suggesting the need for sustained psychosocial interventions. In Türkiye, a multitude of studies have examined the impact of the February 6 earthquakes on diverse populations. For instance, Koçoğlu et al. (2023) reported elevated levels of trauma among university students, while Aydos et al. (2025) emphasised the psychological and professional disruption experienced by preschool teachers. These findings are corroborated by Tupper and Karacaoğlu (2025), who observed that social solidarity and culturally responsive disaster education can serve as a psychological buffer and promote resilience. Furthermore, Bertinelli et al. (2023) provided global evidence linking seismic exposure to adverse mental health outcomes, especially in vulnerable populations. In this context, the spiritual dimension of coping assumes added significance. Karataş and Tüccar (2024) demonstrated that spirituality facilitated meaning-making and emotional healing among earthquake survivors in Türkiye. Within the domain of children's literature, as postulated by Bayoumy (2024), the narrative framing of disasters exerts a profound influence on the emotional processing of traumatic events by children. Collectively, these studies emphasise the significance of integrating spiritual and educational approaches within disaster recovery frameworks, particularly in regions exhibiting chronic seismic activity.

Methodologically, the integration of four interconnected psychological constructs—namely, depression, anxiety, stress, and well-being—within a cohesive path model provides a comprehensive perspective on mental health outcomes among trauma survivors. Whilst many previous studies have analysed these variables independently, this integrative approach offers a more ecologically valid and clinically informative understanding of the operation of coping mechanisms in real-world contexts. Furthermore, the model demonstrated excellent fit indices, thereby providing additional support for the validity of the hypothesized relationships and analytical structure (Hoyle 2012; Kline 2016). From a pragmatic perspective, these findings emphasise the significance of incorporating spiritual resources into mental health services in the aftermath of disasters. Community-based interventions that engage religious leaders, mosque-centred outreach, and spiritual psychoeducation have the potential to enhance accessibility, reduce stigma, and promote psychological recovery in culturally congruent ways. In societies where trauma has had a profound impact and where religious beliefs play a significant role, such approaches can be instrumental in complementing conventional psychological support systems.

In summary. This study provides preliminary evidence for the role of spiritual coping as a culturally embedded factor associated with reduced psychological distress and enhanced well-being among earthquake survivors in Türkiye. By modelling both direct and indirect pathways through depression, stress, and anxiety, the findings offer theoretical and empirical support for integrative, context-sensitive approaches to trauma recovery. The results of the study demonstrate the importance of incorporating culturally relevant spiritual frameworks into psychological assessment and intervention following large-scale disasters. It is recommended that future research should further explore the mechanisms of spiritual flexibility, post-traumatic growth, and culturally adapted therapeutic models with a view to enriching mental health outcomes in trauma-exposed populations.

Limitations. This study investigated the effects of spiritual coping on depression, anxiety, stress, and well-being among individuals affected by the February 6, 2023 earthquakes in Türkiye. While it provides valuable insight, several limitations should be noted:

- **Data Collection Method:** A portion of the data was collected online, which may raise concerns about the accuracy and sincerity of participant responses. Online surveys are susceptible to issues such as inattentive responding, limited control over participant environment, and potential social desirability bias. Given the sensitive and spiritually personal nature of the questions, participants may have responded in ways that reflect cultural or religious expectations rather than personal experience.
- **Sample Distribution:** The sample included a significantly larger proportion of female participants, which limits the generalizability of the findings, particularly regarding gender-based differences in spiritual coping. This imbalance may reflect cultural patterns in help-seeking behaviors, where women are often more likely to engage in psychological surveys and mental health studies. Future research should aim to achieve more gender-balanced sampling. Moreover, given that women generally report higher levels of religiosity (Koenig, 2012), this gender imbalance may have amplified the observed effects of spiritual coping in this sample.
- **Cross-Sectional Design:** The study used a cross-sectional design, which restricts the ability to draw conclusions about causal relationships or changes over time. While the path analysis identifies significant associations, it does not confirm causality. Longitudinal designs are recommended to better understand how spiritual coping and psychological well-being evolve post-trauma.
- **Limited Generalizability:** This study focused exclusively on survivors of a specific natural disaster in a particular cultural setting. As a result, the findings may not be generalizable to individuals affected by other types of trauma (e.g., war, displacement, chronic illness) or from different cultural or religious contexts. Replication studies in varied settings are needed to confirm the broader applicability of the findings.
- **Cultural Context:** The spiritual coping strategies explored in this study are rooted in Turkish and Islamic cultural norms. While this provides meaningful insights into context-specific coping, it may limit the relevance of the findings in secular or non-Islamic populations. Future cross-cultural comparative research would enhance understanding of spiritual coping's universality and variability.
- **Degree of Exposure**

The present study did not systematically assess the degree of participants' exposure to the earthquake (e.g. loss of loved ones, personal injury, destruction of property, displacement). It is conceivable that coping strategies, including spiritual coping, and their psychological impacts may vary according to the severity and nature of trauma exposure. For instance, spiritual practices such as trust in divine will (tevekkül) may function differently for individuals experiencing mild versus severe trauma. It is recommended that future research incorporate detailed exposure metrics in order to facilitate a more precise differentiation of the effects of coping strategies across varying trauma intensities.

Recommendations. Based on the findings of this study, which support the role of spiritual coping in reducing psychological distress and enhancing well-being, several practical and theoretical recommendations are proposed:

- **Develop Psychoeducation Programs:** Spiritual coping strategies should be integrated into community-based psychoeducational programs aimed at disaster-affected populations. These programs may include components of faith-based meaning-making, emotion regulation, and social support mechanisms that reflect culturally grounded spiritual practices.
- **Conduct Longitudinal Studies:** Longitudinal designs are crucial to tracking changes in spiritual coping over time and identifying at which post-trauma phases these strategies are most protective or transformative. Such studies will allow for stronger causal inference and more precise intervention design.
- **Include Diverse Populations and Trauma Types:** Future studies should examine spiritual coping among individuals exposed to other types of trauma, including forced migration, war, and chronic illness. Vulnerable and disadvantaged populations should be given particular attention, as their coping needs and resources may differ significantly.
- **Expand Qualitative Research:** In-depth interviews and ethnographic methods could provide a richer understanding of how individuals interpret and enact spiritual coping in everyday life. This would complement quantitative findings and uncover subjective meanings that cannot be captured by standardized scales.
- **Explore Cross-Cultural Differences:** To strengthen the external validity of spiritual coping research, international comparative studies should be conducted. Understanding how cultural, religious, and social contexts shape coping can guide the development of globally relevant interventions for post-disaster mental health.

Data availability

The datasets generated and analyzed during the current study are not publicly available due to confidentiality agreements and participant privacy, but are available from the corresponding author upon reasonable request.

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References

- Acharya Pandey R, Chalise P, Khadka S, Chaulagain B, Maharjan B, Pandey J, Nepal J, Pandey C (2023) Post-traumatic stress disorder and its associated factors among survivors of 2015 earthquake in Nepal. *BMC Psychiatry* 23(1):340. <https://doi.org/10.1186/s12888-023-04836-3>
- Ahmadi A, Heidarzadeh A, Dehghan M, Safarizadeh MH, Forouzi MA (2023) Spiritual coping strategies: Relationship with physical, anxiety, and depression symptoms of patients with cancer. *Indian J Cancer* 60(3):439–446. https://doi.org/10.4103/ijc.IJC_902_20
- Ai AL, Raney AA, Paloutzian RF (2023) Perceived spiritual support counteracts the traumatic impact of extreme disasters: Exploration of moderators. *Psychological Trauma: Theory, Res, Pract, Policy* 15:199–209. <https://doi.org/10.1037/tra0001133>
- American Psychiatric Association (2015) *DSM-5 Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5)* (E Köroğlu, Ed. transl.). Physicians Publication Association
- Ano GG, Vasconcelles EB (2005) Religious coping and psychological adjustment to stress: A meta-analysis. *J Clin Psychol* 61(4):461–480. <https://doi.org/10.1002/jclp.20049>
- Aydos EH, Yağın S, Öztürk İ et al. (2025) From crisis to classroom: preschool teachers' post-earthquake experiences. *Humanit Soc Sci Commun* 12:197. <https://doi.org/10.1057/s41599-025-04504-9>
- Ayten A (2012) Tevekkül tarzları ve psikolojik iyi oluş ilişkisi: Dini başa çıkma tarzı olarak tevekkülün işlevsel analizi [Types of tawakkul and their relation to psychological well-being: A functional analysis of tawakkul as a religious coping style]. *Dinbilimleri Akademik Araşt Derg* 12(2):1–30. <https://doi.org/10.33415/daad.1222558>
- Bayoumy HM (2024) Seeing disasters through the eyes of children: a critical reading of *One Snowy Night* and *The Storm in the Barn* through the lens of critical disaster studies. *Humanit Soc Sci Commun* 11:726. <https://doi.org/10.1057/s41599-024-03181-4>
- Bertinelli L, Mahé C, Strobl E (2023) Earthquakes and mental health. *World Dev* 169:1–21. <https://doi.org/10.1016/j.worlddev.2023.106283>
- Beyhun NE, Yavuzylmaz A, Sağlam D, Hamzaoglu K (2019) Sel sonrasında görülen post-travmatik stres bozukluğu: Kesitsel bir çalışma [Post-traumatic stress disorder following a flood: A cross-sectional study]. *Turkish J Public Health* 17(2):123–131. <https://doi.org/10.20518/tjph.416592>
- Bozkurt G, Yorulmaz C, Sönmez Düzkaya D (2015) Çocuklarda cinsel istismara bağlı travma sonrası stres bozukluğu: Olgü analizi [Post-traumatic stress disorder due to sexual abuse in children: Case analysis]. *Sağlık Bilimleri ve Meslekleri Derg* 1(2):68–74. <https://doi.org/10.17681/hsp.56025>
- Byrne BM (2016) *Structural equation modelling with AMOS: Basic concepts, applications, and programming* (3rd ed.). Routledge. <https://doi.org/10.4324/9781315757421>
- Cénat JM, McIntee S-E, Blais-Rochette C (2020) Symptoms of posttraumatic stress disorder, depression, anxiety, and other mental health problems following the 2010 earthquake in Haiti: A systematic review and meta-analysis. *J Affect Disord* 273:55–85. <https://doi.org/10.1016/j.jad.2020.04.046>
- Cesar SD (2014) *An examination of religious coping, spiritual coping, optimism, and psychological well-being as mediators of posttraumatic growth* (Unpublished doctoral dissertation). Walden University
- Compas BE, Connor-Smith JK, Saltzman H, Thomsen AH, Wadsworth ME (2001) Coping with stress during childhood and adolescence: Problems, progress, and potential in theory and research. *Psychol Bull* 127(1):87–127. <https://doi.org/10.1037/0033-2909.127.1.87>
- Çınaroglu M (2024) Kahramanmaraş depremleri sonrası manevi başa çıkma, travma sonrası stresbozukluğu (TSSB) ve İslam odaklı travma bazlı bilişsel davranışçı terapi (İO-TBBDT) [Spiritual coping after the Kahramanmaraş earthquakes, PTSD, and Islam-based trauma-focused CBT] *Eskiyeini* 52:351–376. <https://doi.org/10.37697/eskiyeini.1410050>
- Dein S (2006) Religion, spirituality and depression: Implications for research and treatment. *Prim Care Community Psychiatry* 11(2):67–72. <https://doi.org/10.1185/135525706X121110>
- Diener E (1984) Subjective well-being. *Psychol Bull* 95(3):542–575. <https://doi.org/10.1037/0033-2909.95.3.542>
- Doğan T (2012) Travma sonrası büyüme: Yeni bir kavramsal çerçeve [Post-traumatic growth: A new conceptual framework]. *Ank Üniversitesi Eğitim Bilimleri Fak iltisi Derg* 45(2):183–198. https://doi.org/10.1501/Egifik_0000001267
- Ekşi A, Braun KL, Ertem-Vehid H, Peykerli G, Saydam R, Toparlak D, Alyanak B (2007) Risk factors for the development of PTSD and depression among child and adolescent victims following a 7.4 magnitude earthquake. *Int J Psychiatry Clin Pract* 11(3):190–199. <https://doi.org/10.1080/13651500601017548>
- Ekşi H, Dinçer D (2013) Manevi başa çıkma: Dini başa çıkma ölçeği kısa formunun Türkçeye uyarlanması [Spiritual coping: Adaptation of the brief RCOPE into Turkish]. *Eğitim ve Bilim* 38(169):407–419
- Ekşi H, Katılmış A (2007) Maneviyata ilişkin yedi boyut ölçeği'nin Türkçeye uyarlanması ve maneviyatın benlik algısı ile ilişkisi [Adaptation of the seven dimensions of spirituality scale into Turkish and its relation to self-perception]. *Kuram ve Uygulamada Eğitim Bilimleri* 7(3):1441–1467
- Gaudette H, Jankowski KRB (2013) Spiritual coping and anxiety in palliative care patients: A pilot study. *J Health Care Chaplaincy* 19(4):131–139. <https://doi.org/10.1080/08854726.2013.823785>
- Goenjian AK, Steinberg AM, Najarian LM, Fairbanks LA, Tashjian M, Pynoos RS (2000) Prospective study of posttraumatic stress, anxiety, and depressive reactions after earthquake and political violence. *Am J Psychiatry* 157(6):911–916. <https://doi.org/10.1176/appi.ajp.157.6.911>
- Graça L, Brandão T (2024) Religious/spiritual coping, emotion regulation, psychological well-being, and life satisfaction among university students. *J Psychol Theol* 52(3):342–358. <https://doi.org/10.1177/00916471231223920>
- Güler G (2006) Mastalji, yaşam kalitesi ve depresyon [Mastalgia, quality of life, and depression] (Uzmanlık Tezi). Sağlık Bakanlığı Şişli Eğitim ve Araştırma Hastanesi
- Hoyle RH (2012) Ed. *Handbook of structural equation modelling*. The Guilford Press
- Hu LT, Bentler PM (1999) Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Struct Equ Modeling* 6(1):1–55. <https://doi.org/10.1080/1070519990540118>
- Judith A, Cohen MD (2007) Posttraumatic stress disorder in children and adolescents. In AH Bozkurt (Trans.), *Comprehensive Textbook of Psychiatry* (8th ed., pp. 3286–3295). Güneş Kitabevi
- Kalafatoğlu MR, Balcı Çelik S (2020) Genel İyi Oluş Ölçeği Kısa Formu'nun Türkçe'ye uyarlanması: Geçerlik ve güvenirlik çalışması [Adaptation of the Short Form of the General Well-Being Scale to Turkish: Validity and

- reliability study *OPUS Int J Soc Res* 15(25):3633–3653. <https://doi.org/10.26466/opus.644835>
- Karaarslan İ, Yavuz B, Özdemir S, Çakar S, Tatlı M (2023) 6 Şubat Kahramanmaraş depremleri sonrası ilkökullü öğretmenlerinin durumluk kaygı düzeylerinin incelenmesi [State anxiety levels of primary school teachers after the February 6 Kahramanmaraş earthquakes] *Int J Soc Humanit Sci Res* 10(97):1560–1564. <https://doi.org/10.5281/zenodo.8200759>
- Karakaya-Aydın Ş (2019) Arap zorunlu göçmenlerde travmatik yaşantılar, göç sonrası yaşam zorlukları ve manevi başa çıkma ve sosyal destek bağlamında psikolojik dayanıklılık [Traumatic experiences, post-migration challenges, and psychological resilience in the context of spiritual coping and social support among Arab refugees] (Yayınlanmamış yüksek lisans tezi). Fatih Sultan Mehmet Vakıf University
- Karamustafaoğlu OK, Fostick L, Çevik M, Zukerman G, Tankaya O, Güveli M, Bakım B, Karamustafaoğlu N, Zohar J (2023) Ten-year follow-up of earthquake survivors: Long-term study on the course of PTSD following a natural disaster. *J Clin Psychiatry* 84(2):45763. <https://doi.org/10.4088/JCP.22m14377>
- Karataş Z, Tüccar E (2024) Unveiling the healing power of spirituality: Exploring the impact on post-earthquake trauma among Türkiye survivors. *Spirit Psychol Counseling* 9(2):145–168. <https://doi.org/10.37898/spiritualpc.1393636>
- Kartol A, Üztemur S, Chen CY, Lin CY, Gökalep A, Potenza MN, Pakpour AH (2025) Trauma and related measures one year after the 2023 earthquakes in Türkiye: post-traumatic stress, post-traumatic growth, spiritual well-being, and self-compassion. *Curr Psychol* 44(6):5033–5043. <https://doi.org/10.1007/s12144-025-07563-y>
- Kessler RC, Sonnega A, Bromet E, Hughes M, Nelson CB (1995) Posttraumatic stress disorder in the National Comorbidity Survey. *Arch Gen Psychiatry* 52(12):1048–1060. <https://doi.org/10.1001/archpsyc.1995.03950240066012>
- Kline RB (2016) Principles and practice of structural equation modelling (4th ed.). Guilford Press
- Koçoğlu E, Demir FB, Ulukaya-Öteleş Ü, Özeren E (2023) Post-earthquake trauma levels of university students evaluation: Example of 6 February Kahramanmaraş Earthquake. *High Educ Stud* 13(2):121–127. <https://doi.org/10.5539/hes.v13n2p121>
- Koenig HG (2012) Religion, spirituality, and health: The research and clinical implications. *ISRN Psychiatry*, 2012:1–33. <https://doi.org/10.5402/2012/278730>
- Lazarus RS, Folkman S (1984) Stress, appraisal, and coping. Springer
- Longo Y, Coyne I, Joseph S (2018) Development of the short version of the scales of general well-being: The 14-item SGWB. *Personal Individ Differences* 124:31–34. <https://doi.org/10.1016/j.paid.2017.11.042>
- Lovibond PF, Lovibond SH (1995) The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behav Res Ther* 33(3):335–343. [https://doi.org/10.1016/0005-7967\(94\)00075-U](https://doi.org/10.1016/0005-7967(94)00075-U)
- Meisenhelder JB, Cassem EH (2009) Terrorism, posttraumatic stress, spiritual coping, and mental health. *J Spiritual Ment Health* 11(3):218–230. <https://doi.org/10.1080/19349630903081275>
- Okan N, Şahin Y (2024) Mental Health During Crisis: Development and Evaluation of the Post-disaster Spiritual Coping Scale in Turkey. *J Relig Health* 63:1609–1622. <https://doi.org/10.1007/s10943-023-01959-5>
- Osman MH, Saper MN, Bistamam MN, Junos MYM, Rashid FA (2017) Module spiritual coping strategies (MSDTK): An approach to deal with stress among teachers trainee. *Int J Academic Res Bus Soc Sci* 7(3):356–365
- Öztekin GG, Örkü H (2023) Effects of depression, anxiety, and stress on disaster preparedness: Evidence from the February 6 Turkey Earthquakes. *J Disaster Risk* 6(4):1332–1347. <https://doi.org/10.35341/afet.1326948>
- Pargament KI (1997) The psychology of religion and coping: Theory, research, practice. Guilford Press
- Radzi HM, Ramly LZ, Ghazali F, Sipon S, Othman K (2014) Religious and spiritual coping used by students in dealing with stress and anxiety. *Int J Asian Soc Sci* 4(2):314–319
- Ryan RM, Deci EL (2001) On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annu Rev Psychol* 52(1):141–166. <https://doi.org/10.1146/annurev.psych.52.1.141>
- Ryff CD (1989) Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *J Personal Soc Psychol* 57(6):1069–1081. <https://doi.org/10.1037/0022-3514.57.6.1069>
- Sarıçam H (2018) The psychometric properties of the Turkish version of the Depression Anxiety Stress Scale-21 (DASS-21) in health control and clinical samples. *J Cogn Behavioural Psychother Res* 7(1):19–30
- Seligman MEP (2011) Flourish: A visionary new understanding of happiness and well-being. Free Press
- Sherman AC, Simonton-Atchley S, O'Brien CE, Campbell D, Reddy RM, Guinee B, Anderson PJ (2021) Associations between religious/spiritual coping and depression among adults with cystic fibrosis: A 12-month longitudinal study. *J Relig Health* 60:2646–2661. <https://doi.org/10.1007/s10943-021-01185-x>
- Smith TB, McCullough ME, Poll J (2003) Religiousness and depression: evidence for a main effect and the moderating influence of stressful life events. *Psychological Bull* 129(4):614–636. <https://doi.org/10.1037/0033-2909.129.4.614>
- Sönmez Düzkaya D, Yıldız S (2015) Pediatrik yoğun bakımdan taburculuk sonrası görülen post-travmatik stres bozukluğu ve azaltılmasında hemşirenin rolü [Post-traumatic stress disorder seen after discharge from pediatric intensive care and the role of the nurse in its reduction]. *Sağlık Bilimleri ve Meslekleri Derg* 1(1):46–57. <https://doi.org/10.17681/hsp.61946>
- Şahin Y, Okan N (2024) Development of a scale examining post-disaster coping motivations in Turkey after the 6 February earthquake. *Int J Methods Psychiatric Res*. <https://doi.org/10.1002/mpr.2031>
- Tabachnick BG, Fidell LS (2013) Using multivariate statistics (6th ed.). Pearson
- Tedeschi RG, Calhoun LG (2004) Posttraumatic growth: Conceptual foundations and empirical evidence. *Psychol Inq* 15(1):1–18. https://doi.org/10.1207/s15327965pli1501_01
- Telef BB (2013) Psikolojik iyi olma ölçeği: Türkçeye uyarlama, geçerlik ve güvenilirlik çalışması [Psychological well-being scale: Turkish adaptation, validity and reliability study] *Hacet Üniversitesi Eğitim Fakültesi Derg* 28(3):374–384
- Tingaz EO, Kılıç BN, Erul B, Sevilmiş U, Akbaş Y, Engür B, Artan HŞ (2024) The role of mindfulness in the relationship between social media-induced secondary traumatic stress and mental health continuum in athletes after the 2023 Turkey earthquakes. *Resilience* 8(1):1–11. <https://doi.org/10.32569/resilience.1440323>
- Tupper J, Karacaoğlu ÖC (2025) Access to information and social solidarity in the 2023 Turkey earthquake: disaster education as citizenship education. *Humanit Soc Sci Commun* 12:386. <https://doi.org/10.1057/s41599-025-04707-0>
- Uğur ZB (2024) The role of coping strategies in subjective wellbeing indicators of non-profit workers. Voluntary Sector Review (published online ahead of print 2024). Retrieved Jun 3, 2025, from <https://doi.org/10.1332/20408056Y2024D000000013>
- Uzak B, Yanardağ MZ (2024) The relationship between perceived social support, traumatic stress, and psychological well-being: A study on earthquake victims. *J Med Soc Work* 12(23):74–96. <https://doi.org/10.46218/tshd.1364244>
- Xi Y, Yu H, Yao Y, Peng K, Wang Y, Chen R (2020) Post-traumatic stress disorder and the role of resilience, social support, anxiety, and depression after the Jiuzhaiguo earthquake: A structural equation model. *Asian J Psychiatry* 49:101958. <https://doi.org/10.1016/j.ajp.2020.101958>
- Xu J, Wei Y (2013) Social support as a moderator of the relationship between anxiety and depression: An empirical study with adult survivors of Wenchuan earthquake. *PLOS ONE* 8(10):e79045. <https://doi.org/10.1371/journal.pone.0079045>
- Zoellner T, Maercker A (2006) Posttraumatic growth in clinical psychology—A critical review and introduction of a two component model. *Clin Psychol Rev* 26(5):626–653. <https://doi.org/10.1016/j.cpr.2006.01.008>

Author contributions

All authors contributed to this research and the manuscript. NO designed the research, conducted the conceptualization and data collection, performed the initial analyses, and wrote the first draft of the manuscript. YŞ selected the theoretical framework, managed the overall research process, contributed to the interpretation of results, and critically reviewed the full manuscript. HG conducted the statistical analysis, organized the quantitative data, and contributed to the data visualization and result interpretation. MK assisted with the literature review, contributed to the discussion of the findings in light of the existing literature, and edited the final version of the manuscript. All authors read and approved the final version of the manuscript.

Competing interests

The authors declare no competing interests.

Ethical Approval

This study was conducted in full compliance with the ethical principles outlined in the Declaration of Helsinki. Ethical approval was obtained from the [Name of the Ethical Review Board/Institutional Review Board], which is responsible for reviewing research involving human participants in Türkiye. The details are as follows: • Name of the Approval Body: Fırat University, Social and Human Sciences, Research Ethics Committee • Approval Number: [20.06.2023-16911] • Date of Approval: [20.06.2023] • Scope of Approval: The study was approved for the online collection of data from human participants aged 18 years and older, focusing on the psychological impact of the Kahramanmaraş earthquake. • Confirmation: All research procedures adhered to the ethical guidelines and relevant regulations for research involving human participants, including maintaining confidentiality and minimizing participant distress. If additional documentation or clarification is required, I am happy to provide it upon request.

Informed consent

Informed consent was obtained from all participants before their inclusion in the study. The details are as follows: • Method of Consent: Informed consent was obtained online via a digital consent form included in the survey tool. When and By Whom: Consent was obtained at the time of survey completion in February 2024, facilitated through the online data collection platform. • Scope of Consent: Participants were explicitly informed about: • The purpose of the study and the voluntary nature of their participation. • The anonymity and confidentiality of their responses. • How the data would be utilized exclusively for research purposes. • Special Considerations • The study only included participants aged 18 years and older; therefore, no additional parental or legal guardian consent was required. • The online survey platform ensured secure data handling, and participants were provided with contact information for further inquiries or support if needed. • Confidentiality: Participants were assured of their anonymity, and no identifiable personal information was collected or disclosed. • Compensation or Incentives: No monetary or material incentives were provided for participation. If further information or documentation is required, I will provide it promptly.

Additional information

Correspondence and requests for materials should be addressed to Nesrullah Okan.

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