

DEPRESSION AND ANXIETY RATES AND MOST PROMINENT RISK FACTORS AMONG WOMEN SURVIVORS OF “DISASTER OF THE CENTURY” A CROSS-SECTIONAL STUDY

YÜZYILIN FELAKETİNDEN KURTULAN KADINLAR ARASINDA DEPRESYON VE ANKSİYETE ORANLARI VE EN ÖNE ÇIKAN RİSK FAKTÖRLERİ KESİTSEL BİR ÇALIŞMA

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ABSTRACT

Purpose: This study investigated depression and anxiety rates and associated risk factors among women who lived through the 2023 Kahramanmaraş earthquake in Türkiye, described as the ‘disaster of the century.

Materials and Methods: A cross-sectional survey was performed two months after the earthquake. Beck Anxiety Inventory and Beck Depression Inventory were administered to all participants. Individuals volunteering to participate in the study were asked how the questions on the scales should be completed. Data were collected within 30-day period. The study was planned to be conducted with 500 women presenting to a Public Hospital obstetrics clinic for various reasons.

Results: Four hundred sixty patients were included in this study. Anxiety was identified 358 (68.8%). Depression was identified in 452 (87%) participants. Participants with poor income levels registered higher anxiety scores than those with average income, whereas their depression scores were similar ($p=0.034$). A significant difference was observed in the depression and anxiety scores in terms of the level of damage to the home ($p<0.001$ for both). Participants who had lost a first-degree relative registered higher anxiety scores than those who had lost no relatives and those who had lost second- or third-degree relatives ($p=0.02$, $p=0.028$, and $p=0.017$, respectively). Anxiety scores were zero in 102 (19.6%) participants, mild in 130 (25%), moderate in 113 (21.7%), and severe in 115 (22.1%). Depression scores were zero in eight (1.5%) participants, mild in 139 (26.7%), minimal in 136 (26.2%), moderate in 135 (26%), and severe in 42 (8.1%).

Conclusion: Measures designed to reduce anxiety and depression in populations affected by the Kahramanmaraş earthquake should focus on individuals with low incomes, who suffered severe damage to their homes, and who lost first-degree relatives.

Keywords: Anxiety, Depression, Earthquake.

ÖZET

Amaç: Bu çalışmada, Türkiye’de ‘yüzyılın felaketi’ olarak tanımlanan 2023 Kahramanmaraş depremini yaşayan kadınlarda depresyon, anksiyete oranları ve ilişkili risk faktörleri araştırıldı.

Yöntem: Depremden iki ay sonra kesitsel araştırma yapıldı. Tüm katılımcılara Beck Anksiyete Envanteri ve Beck Depresyon Envanteri uygulandı. Araştırmaya katılmaya gönüllü olan kişilere ölçeklerdeki soruların nasıl doldurulması gerektiği soruldu. Veriler 30 günlük süre içerisinde toplandı. Araştırma deprem bölgesindeki bir Devlet Hastanesi kadın doğum kliniğine çeşitli nedenlerle başvuran 500 kadın ile yapılması planlandı.

Bulgular: Bu çalışmaya 460 hasta dahil edildi. Anksiyete 358 (%68,8) olarak belirlendi. 452 (%87) katılımcıda depresyon tespit edildi. Gelir düzeyi düşük olan katılımcıların kaygı puanları ortalama gelirli katılımcılara göre daha yüksek iken, depresyon puanları benzerdi ($p=0,034$). Evin hasar düzeyine göre depresyon ve anksiyete puanlarında anlamlı farklılık gözlemlendi (her ikisi için de $p<0,001$). Birinci dereceden yakını kaybeden katılımcıların kaygı puanları, yakını kaybetmeyenlere ve ikinci veya üçüncü derece yakını kaybedenlere göre daha yüksekti (sırasıyla $p=0,02$, $p=0,028$ ve $p=0,017$). Katılımcıların 102’sinde (%19,6) kaygı düzeyi sıfır, 130’unda (%25) hafif, 113’ünde (%21,7) orta, 115’inde (%22,1) ise şiddetli düzeyde kaygı görüldü. Depresyon puanları sekiz katılımcıda (%1,5) sıfır, 139’unda (%26,7) hafif, 136’sında (%26,2) minimal, 135’inde (%26) orta ve 42’sinde (%8,1) şiddetli idi.

Sonuç: Kahramanmaraş depreminden etkilenen toplumlarda kaygı ve depresyonun azaltılmasına yönelik tedbirlerin, gelir düzeyi düşük, evleri ağır hasar gören ve birinci derece yakınlarını kaybeden bireylere odaklanması gerekiyor.

Anahtar Kelimeler: Anksiyete, Depresyon, Deprem.

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Bu makaleye atıf yapmak için / Cite this article: Yoruk, N. (2023). Depression and Anxiety Rates and Most Prominent Risk Factors Among Women Survivors of “Disaster of the Century” A Cross-Sectional Study. *Gevher Nesibe Journal of Medical & Health Sciences*, 8(4), 1010-1017. <http://doi.org/10.5281/zenodo.1004763>

INTRODUCTION

Depression is a widespread disease that severely restricts psychosocial functionality and that lowers quality of life. It generally creates difficulties for clinicians in terms of diagnosis, course and prognosis, and the variable response to treatment. The prevalence varies widely among countries, but is generally approximately 6% (Beck et al., 1961; Lee et al., 2016). The prevalences of depressive disorder are similar between high-income (5.5%) and low- and moderate-income countries (5.9%) (Bromet et al., 2011; da Silva Dantas et al., 2021; Zhang et al., 2021). In addition, although social and cultural factors can play a role in depression (Cárdenas et al., 2022) genomic and other underlying factors also lead to the emergence of the disease (Heim et al., 2012)

Depressive disorder is ubiquitous, and almost one-fifth of individuals have been shown to experience an episode at some time in their lives (Lee et al., 2016). Post-disaster follow-up studies have shown that exposure to earthquakes is associated with a high risk of various psychopathologies. Depression is one of the most common psychological problems following exposure to disasters, and particularly earthquakes (Zhang et al., 2021). Psychopathologies that can develop in the wake of trauma include post-traumatic stress disorder, anxiety, and nightmares. Epidemiological research has found that women are more susceptible to disasters than men (Altındağ et al., 2005). Depression criteria are set out in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) (Bromet et al., 2011). In contrast, anxiety disorder is a condition in which the individual regards a situation or object encountered in daily life as more threatening than it really is, and worries about it more than it merits. A high rate of comorbidity is observed between depression and anxiety. If anxiety accompanies depression, then the treatment of depression should be planned differently, and both depression and anxiety disorder should be addressed in a coordinated and solution-oriented manner during the therapeutic process (Henry et al., 2023).

Early intervention in mental health not only helps improve the quality of life of disaster victims, but also prevents the chronicization of psychological disorders such as anxiety and depression experienced following earthquakes (Lu et al., 2023; Tian et al., 2018)

The feature distinguishing the 6 February, 2023, events from previous earthquakes is their 'strike-slip' character, meaning that they were more destructive and more extensive. The earthquake has been described as one of the world's worst natural disasters, and 'the disaster of the century', due to its type, magnitude, and intensity, and to the effects being felt in a highly populated region. This study was intended to investigate anxiety and depression rates and potential risk factors in women who survived the two separate major earthquakes and to contribute to the measures that might be adopted to reduce such problems in subsequent disasters. In addition, the rapid identification of patients experiencing earthquake-related anxiety and depression makes it possible to investigate anxiety and depression levels and to contribute to the psychological treatments needed for rehabilitation. To the best of our knowledge, this is the first study in the earthquake with its epicenter in Kahramanmaraş.

MATERIALS AND METHODS

Study design and ethical statement

All procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008. The study was approved by the Atatürk University ethical committee. It was conducted two months after the earthquake. Informed consent forms were obtained from all participants.

Data sources

Anxiety and depression levels were determined by applying the Beck Anxiety and Beck Depression inventories. These self-report scales consist of 21 items each, scored between 0 and 3. Higher scores indicate higher levels of anxiety and depression.

Study population

Women aged 18-55 were included in the research. Individuals consenting to take part were informed about how the scales should be answered. They were then asked to answer the questions in the form and the items in the scales. Data collection took place within 30 days. The study was planned for completion with 500 women presenting to the Gaziantep İslahiye Public Hospital obstetric clinic for various reasons, in close proximity to the provinces of Hatay, Gaziantep, Kahramanmaraş, and Osmaniye, through personal visits to the earthquake zone. Demographic characteristics such as age, sex, education status, occupation, marital status, number of children, and income level were recorded. Women aged 18-55,

with no previous known psychiatric disease, and who lived through the earthquake were enrolled. The age range was determined in the light of the individuals' ability to complete the forms given in the interviews. Patients using drugs and substances, with other diseases capable of causing anxiety and depression, with previously identified psychiatric diseases, who were unwilling to speak or complete the questionnaire, who were aged under 18 or over 55 since these might not be able to understand the questions, who were normally resident in the earthquake but who were elsewhere at the time of the quake, and migrant patients due to communication problems were excluded from the study. Patients with moderate or high levels of anxiety or depression were referred to the psychiatric clinic.

Statistical analyses

Data obtained from the sample group were transferred to a computer and subjected to statistical analysis (SPSS version 20.0). The participants' scale scores were presented as mean plus standard deviation values. Normality of data distribution was assessed using the Kolmogorov-Smirnov test. Additionally, two-stage clustering analysis was applied to divide the scores into homogeneous subgroups to perform more detailed examinations of the participants' scale scores. Relationships between homogeneous subgroups were examined using the chi-square test. Correlations between participants' scale scores were investigated using the non-parametric Spearman correlation analysis. Multinomial logistic regression analysis was applied to determine the predictive effect of independent variables obtained in the research on the dependent variable.

RESULTS

Four hundred sixty patients were included in the study. The participants' demographic characteristics and mean depression and anxiety scores are shown in Table 1.

Table 1. Participants' (n= 460) Demographic Characteristics and Anxiety And Depression Scores

	Mean ±Standard Deviation	Minimum	Maximum
Age (years)	30.18±8.66	15.00	53.00
Gravidity (n)	1.72±1.62	0.00	17.00
Parity (n)	1.72±1.61	0.00	7.00
Abortus (n)	0.44±1.13	0.00	14.00
Living (n)	1.68±1.58	0.00	7.00
Anxiety score	17.80±12.24	0.00	55.00
Depression score	15.21±9.40	0.00	51.00

Anxiety scores were zero in 102 (19.6%) participants, mild in 130 (25%), moderate in 113 (21.7%), and severe in 115 (22.1%). Depression scores were zero in eight (1.5%) participants, mild in 139 (26.7%), minimal in 136 (26.2%), moderate in 135 (26%), and severe in 42 (8.1%). Individuals with poor income status registered higher anxiety scores than those with moderate income ($p=0.034$). Individuals on the minimum wage or with moderate and good income levels registered similar anxiety scores (Table 2). Individuals with poor income status, on the minimum wage, and with moderate or good income levels all exhibited similar depression scores (Table 2).

Table 2. Participants' Depression and Anxiety Scores According to Income Levels

	Poor (n=125)	Minimum wage (n= 6)	Moderate (n= 251)	Good (n= 78)	P value
Anxiety score	19.75±13.40	12.00±6.98	16.91±12.03	18.00±10.90	0.145
Depression score	16.32±11.12	15.50±7.91	14.72±8.76	14.98±8.45	0.478

No difference in depression or anxiety scores was observed in terms of education (Table 3). However, depression and anxiety scores differed significantly according to the degree of damage to the home ($p<0.001$ for both).

Table 3. Participant's Depression and Anxiety Scores according to Education Status

	Illiterate (n=37)	Elementary school (n= 135)	Middle school (n= 76)	High school (n= 110)	University graduate (n= 102)	P value
Anxiety score	17.86±12.99	17.83±11.17	15.26±10.88	17.81±12.97	19.62±13.31	0.265
Depression score	14.56±8.24	16.64±9.69	13.65±8.65	15.32±10.85	14.58±8.08	0.390

Individuals whose homes had collapsed or suffered severe damage registered higher depression and anxiety scores than those whose homes suffered moderate, little, or no damage ($p < 0.001$ for all). In addition, participants whose homes had collapsed had higher depression and anxiety scores than those whose homes were severely damaged ($p = 0.027$ and $p = 0.014$, respectively) (Table 4).

Table 4. Participant's Depression and Anxiety Scores according to Damage to the Home

	No damage (n=102)	Minimal damage (n= 148)	Moderate damage (n= 62)	Severe damage (n= 102)	Collapse (n= 46)	P value
Anxiety score	16.34±11.91	15.79±11.81	14.43±11.38	20.78±12.29	25.45±11.17	0.000
Depression score	13.06±8.55	14.18±8.59	12.11±8.83	17.78±9.93	21.73±9.18	0.000

Anxiety scores were higher among participants who had lost a first-degree relative than those who had lost any relations, and those who had lost second- or third-degree relatives ($p = 0.02$, $p = 0.028$, and $p = 0.017$, respectively). At the same time, those who had not lost any relatives registered lower depression scores than those who had lost first- and second-degree relatives (0.001 and 0.024, respectively) (Table 5). Analysis revealed a positive correlation between damage to the home and depression and anxiety scores ($r = 0.257$ and $r = 0.218$, respectively; $p < 0.000$ for both). A positive correlation was also determined between anxiety and depression scores ($p < 0.001$, $r = 0.653$).

Table 5. Participant's Depression and Anxiety Scores according to Loss Of Relatives

	No loss (n= 171)	Loss of first- degree relative (n= 89)	Loss of second- degree relative (n= 132)	Loss of third-degree relative (n= 68)	P value
Anxiety score	16.48±10.80	21.37±13.83	17.68±13.05	16.69±11.08	0.017
Depression score	13.63±9.22	17.73±9.99	16.07±9.65	14.20±7.72	0.004

DISCUSSION

The results of this research show that women registered significantly high depression and anxiety scores following the earthquake. In addition, women with poor income had high anxiety rates, although no association was observed between depressive disorder and income. Individuals whose homes had collapsed and those who lost first-degree relatives were more affected in terms of anxiety and depressive disorders. However, no significant difference was observed in terms of education status. The results show that survivors experience severe mental health problems.

The high scores in this study may be due to the magnitude of the earthquake and to the research being conducted within two months of such a major trauma.

A study performed 10 days after an earthquake in Iran in 2017 in which 620 individuals died reported that 70% of victims experienced moderate anxiety and 45% depressive symptoms (Moustafa et al., 2022). Consistent with that research, anxiety and depression scores were also high in the present study.

Depression and anxiety are the two diseases most frequently encountered in the community, and there is a high likelihood of their being comorbid with one another. Anxiety must not be overlooked

when treating depression. If anxiety is comorbid with depression, then treatment must be provided accordingly, and both must be overcome in a coordinated manner during the therapeutic process (Henry et al., 2023).

The onset of depression is generally gradual, but may sometimes be sudden, and the lifetime course of depression varies significantly. The course is episodic for the majority of patients, and these feel better between acute depressive periods. Depressive disorder is a lifelong recurrent disease, for which reason improvement is not a particularly accurate term. In practice, the term is employed for patients who are no longer symptomatic and who have regained their normal functioning following a major depressive attack. Attacks generally last 3-6 months with treatment, and most patients improve within 12 months (Touloumis et al., 2021). Although approximately three-quarters of affected individuals improve within a year, a significant proportion of patients (up to 27%) do not improve and contract a chronic depressive disease (Chen et al., 2022; Anthonia et al., 2023).

Greater awareness of depression improves successful diagnosis rates. However, depressive disease screening at the population level is not easy, and this generally renders identification and diagnosis more difficult (Reynolds et al., 2016; Guo et al., 2022). A significant proportion of depression is in all likelihood missed, patients who are unaware of the disease do not present to relevant institutions for help and are not identified, for which reason published figures do not reflect the true scale of the disease. The diagnosis and treatment of and methods for coping with depression are difficult even under normal circumstances, but the importance of depression becomes more evident in the wake of traumatic events, such as earthquakes. This is because in order for social, economic, and physical aid to achieve their objectives, the mental health of the recipient also needs to be sound.

Several studies published after the earthquake in Haiti in 2010 focused on post-traumatic stress disorder, depression, anxiety, and other mental health problems (including psychological distress and discomfort, suicidal ideation, and increased alcohol consumption) among survivors of this major traumatic event (Zhang et al., 2016; Cadichon et al., 2017; Cénat et al., 2015; Cénat et al., 2017; Derivois et al., 2014).

These studies sought to synthesize the results of research into the prevalence and risk and protective factors associated with the principal mental health problems investigated in individuals affected by earthquakes. However, it is also important to report the effects of earthquakes on the mental health of survivors. The knowledge of both researchers and clinicians regarding risk and protective factors associated with mental health problems following such major traumatic events needs to be improved. Such syntheses can also be of assistance to relevant institutions in terms of how to respond to major natural disasters and can help reduce the risk of mental health problems in surviving populations and serve as a guide to psychologists.

The most important demographic characteristic emerging after disasters such as earthquakes in previous studies is gender, with women appearing to develop more psychological symptoms, such as depression, than men (Kun et al., 2013). Women's low psychological flexibility in the wake of challenging life events and the difficulty they experience in cognitive adaptation to changing environments and situations have been linked to high depression (Streb et al., 2014; Zhang et al., 2021). Studies have reported that since women may experience more severe emotions due to less access to positive social support following disasters, since they are more affected in biological terms by such disasters, and since they are more emotional than men, and that this may affect their experiencing these emotions in a more intense manner (Mukherji et al., 2014). Since women in developing countries have to be more occupied in such activities as cooking, washing-up, and cleaning, they may be more affected than men by the destruction of the home and migration (Pham et al., 2021). All these studies consistently support the idea that women are at a higher risk of developing depressive disorder than men. In the light of the conclusions of such studies, the present research was also performed with women patients presenting to the gynecology and obstetrics clinic. In conclusion, post-earthquake intervention programs should focus more on the psychopathological effects of depression-related risk factors in women compared to men.

Another finding of this study is that no significant difference was found when the participants' anxiety and depression scores were compared in terms of education levels. While some studies have reported higher post-earthquake depression scores among individuals with higher levels of education, (Zhang et al., 2021; Chen et al., 2020). Others have reported a higher likelihood of depression among those with low levels of education (Rahail et al., 2015; Guo et al., 2014). These inconsistencies may

derive from the severity of the trauma experienced by participants, its duration, and when studies were conducted in the wake of the earthquakes.

Another study finding was that depression and anxiety scores were significantly higher among individuals whose homes had collapsed or suffered severe damage and in the event of the loss of a first-degree relative. Previous studies have reported that having family members who were injured during earthquakes was associated with depression, but not with anxiety. However, those studies were carried out between one and three years after earthquakes, and this may have resulted in inconsistencies (Zhang et al., 2011; Pan et al., 2015).

Studies carried out 20 months after the 1999 Turkish earthquake by Salcioglu et al. and 14 months after it by Livanoglu et al. reported higher depression rates among individuals who had lost relatives during it. These findings may be attributable to the cultural importance of family ties in Türkiye (Salcioglu et al., 2003; Livanou et al., 2002).

Earthquakes can happen anywhere in the world, although their effects on different areas and cultures may differ. Consideration of the results of studies to be performed in the wake of earthquakes will contribute to accelerating aid programs faster and making them more effective.

Anxiety levels were also high among patients with high levels of depression in this study. Early intervention in mental health, relatively good living conditions, and access to adequate social and health services may help prevent the chronicization of psychological problems among earthquake victims.

CONCLUSION

The results of this study reveal the importance of identifying psychiatric complaints in the early period among survivors of disasters such as earthquakes that can result in the loss of property and life. Psychiatric diseases can be quickly diagnosed and appropriate measures taken in the early period by means of psychiatric symptoms emerging in the early period. The widespread nature and difficulty in diagnosis mean there is a risk of the disease becoming chronic. It can even result in suicide in subsequent periods. It is therefore of the greatest importance for the condition to be diagnosed and for early psychiatric and psychological support to be provided. Psychiatric symptoms and diseases can begin to be healed and indirect improvement can also be achieved through the precautionary measures that are adopted. Support and assistance programs should concentrate on individuals with low incomes, with severe damage to their homes, and with losses of first-degree relatives.

Limitations

The findings of this study add to our current knowledge regarding the long-term mental health outcomes of natural disasters. However, it also has a number of limitations. The first is that due to its cross-sectional nature it provides no information concerning time-dependent changes in the prevalence of post-earthquake depression. Studies involving longitudinal data can therefore be used to observe gradual changes in the prevalence of depression in adults. The present research was designed as a relational and cross-sectional study. It therefore examined participants' current levels at the data collection stage in the light of their responses to the scales. In addition, the research was performed among women voluntarily consenting to take part.

Future studies might be carried out using experimental or longitudinal models that include other sections of society such as children, adolescents, the elderly, and the disabled. Positive character strengths, psychological resilience, problem-solving skills, and coping methods might also be added as variables in future studies.

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