

Original Article



Frequency of Generalized Anxiety Disorder in the Population of East Azerbaijan Province and Its Association with Demographic Factors

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Abstract

Background: Over the past two decades, it has been demonstrated that anxiety disorders are the most common mental disorders in the general population worldwide. This study aimed to provide a prevalence of how generalized anxiety disorder (GAD) within the population of East Azerbaijan province. The results of this research can contribute to improving the availability and quality of mental health care.

Methods: A cross-sectional study was conducted from May to November 2018, involving 150 clusters of 10 households each, totaling 1500 households from Tabriz, Marand, Bonab, Osku, Varzeqan, and Khoda Afarin. A general questionnaire was utilized to assess key risk factors, including age, gender, marital status, education level, and employment status of the participants. The GAD-7 questionnaire was used to evaluate symptoms of GAD. Data were analyzed using SPSS software (v 18; SPSS, Inc., Chicago, IL). A chi-square test with a 95% confidence interval was applied, and *P* values less than 0.05 were considered statistically significant.

Results: A total of 2816 people participated in this study. Approximately 40% of the surveyed individuals exhibited different levels of anxiety. The overall prevalence of generalized anxiety in Tabriz and surrounding cities was 39.8%. Tabriz exhibited a notably higher prevalence of generalized anxiety compared to other cities in the province (43.2% in Tabriz vs 36.8% in other cities, *P*=0.04). The prevalence of generalized anxiety was found to be remarkably (*P*<0.05) higher in women (46.6% in women vs. 32.4% in men). As individuals age, the occurrence of generalized anxiety tends to rise, peaking at the age of 55, after which it gradually decreases. However, the age group of 45-55 years exhibited the highest rates of generalized anxiety (43% in the 45-55 age group). The GAD levels did not show any significant variation in marital status (*P*<0.05).

Conclusion: The results of this study indicate that being urban-dwelling, female, and aged 45-55 are significant factors affecting the prevalence of anxiety disorders. These findings highlight the need for targeted mental health interventions for at-risk groups.

Keywords: Anxiety disorders, Iran, Generalized anxiety, Frequency

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Introduction

Anxiety disorders represent a critical concern in global public health, impacting millions of individuals and significantly contributing to the overall global disease burden.¹ Generalized anxiety disorder (GAD) is recognized as a prevalent and distressing condition, characterized by overwhelming worry and heightened restlessness among anxiety disorders.²

Individuals suffering from GAD often experience

persistent feelings of restlessness, which can result in decreased social, occupational, and psychological functioning.³ GAD is a complex condition influenced by various factors such as genetics, neurobiology, and psychological elements.^{4,5} It is crucial to understand the frequency and factors influencing GAD to direct public health strategies, allocate resources, and develop targeted interventions to alleviate the impact of this condition. Various demographic factors such as age, gender, marital



status, education level, and social status have been recognized as potential influencers in the development and severity of GAD.^{2,6}

The association between GAD and demographic factors may vary across various populations and geographic regions.⁷ Epidemiological studies indicate notable variations in the prevalence of GAD across distinct geographical areas.⁸ Cultural values, availability of mental health services, and economic situations are key factors that influence the prevalence rates of anxiety disorders.⁹

The province of East Azerbaijan in northwestern Iran provides a unique setting for studying GAD within a specific regional context. Iran's rich cultural diversity and varying degrees of social progress across its provinces suggest that the prevalence of GAD in East Azerbaijan could differ from other regions of the country. Recent studies have highlighted the impact of demographic factors on the occurrence and manifestation of GAD.^{10,11} One notable finding is the consistent observation of gender disparities, with higher rates of GAD in males compared to females.¹² Moreover, age, marital status, education level, and social standing have all been linked to differences in the occurrence and intensity of GAD.^{10,11}

To our best knowledge, no recent data has been reported for the prevalence and associated factors of GAD in both urban and regional areas of East Azerbaijan Province. Exploring the relationship between demographic indicators and the occurrence of GAD in East Azerbaijan could offer valuable insights into the unique vulnerabilities and safeguards present in this specific population. The results of this study could significantly impact the development of mental health policies and strategies for the region. Therefore, this research aimed to assess the prevalence of GAD among the residents of East Azerbaijan, Iran, and explore its correlation with various demographic factors.

Methods

Study Design

This research is based on the comprehensive project titled "Assessment of the Efficacy of the Lifestyle Enhancement Program on the Occurrence of Behavioral, Clinical, and Non-communicable Risk Factors in East Azerbaijan Province," with the ethical code IR.TBZMED.REC.1400.1001 issued on August 28, 2023.

The primary objective was to conduct a cross-sectional study to examine the prevalence and occurrence of non-communicable diseases and their associated risk factors. The data from this large-scale project have been utilized in the current study.

The research was conducted between May and November 2018 in the urban areas of Tabriz, Marand, Bonab, Osku, Varzeqan, and Khoda Afarin. In each household, a minimum of two individuals (one female and one male) aged between 15 and 65 were randomly selected and assessed. If the selected individual was not present during the visit, an absentee form was filled out, noting their absence and the expected return time. The

household was then revisited at the scheduled time to complete the assessment.

The main study involved 1500 households from Tabriz, Marand, Bonab, Osku, Varzeqan, and Khoda Afarin, which were divided into 150 clusters, with 10 households in each cluster. These cities were selected based on socio-economic factors, proximity to urban centers, population density, and access to healthcare services, ensuring they were representative of other cities in the province.

Inclusion and Exclusion Criteria

The study included individuals between the ages of 15 and 65 who had resided in the household for at least 6 months and were Iranian citizens. Exclusion criteria comprised individuals with impaired consciousness, diagnosed mental illness, cognitive disorders, blindness, deafness, or speech impairments.

In urban areas, data collection involved face-to-face interviews, physical assessments, and laboratory sampling in accredited facilities. Clusters and cluster heads were identified using established frameworks such as postal codes from the Islamic Republic of Iran Post Company, national census data, telecommunications data, and reliable information from organizations like health centers and local authorities. A systematic approach, using the proportional to size (PPS), cluster sampling method, was employed to select clusters from across the entire province.

Upon receiving written consent from all participants, anthropometric measurements were taken, and general information concerning age, gender, menopausal status, medical history, and medication usage was gathered through a questionnaire.

The symptoms of GAD were assessed using the GAD-7 questionnaire, which has been previously validated for reliability.¹³ According to the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV), GAD is characterized by persistent anxiety, worry, and tension that occur on most days for at least 6 months. The individual's concerns typically revolve around everyday life events. Additionally, specific symptoms of autonomic arousal, muscle tension, and hypervigilance are present. Anxiety and worry are accompanied by three or more of the following key symptoms: restlessness, fatigue, concentration difficulties, irritability, muscle tension, and sleep disturbances. Developed by Spitzer et al in 2006, this questionnaire consists of 7 questions to assess the individual's psychological issues over the past two weeks. Each question is rated on a Likert scale ranging from 0 to 3. The scores from the seven questions are summed to calculate the overall anxiety score, which ranges from 0 to 21. A score of 5-9 indicates mild anxiety, 10-14 suggests moderate anxiety, and a score above 15 indicates severe anxiety.

Statistical Analysis of Data

The data were fed into the program by an operator at the

regional health center and analyzed using SPSS software (version 18; SPSS, Inc., Chicago, IL). The normality of variable distribution was determined through histograms, Kolmogorov-Smirnov testing, and chi-square analysis. Mean and standard deviation (SD) calculations were conducted for continuous variables, and proportions were determined for categorical variables. Group comparisons were made using independent t-tests or chi-square tests. Statistical significance was set at a *P* value lower than 0.05.

Results

A total of 2816 individuals were enrolled in this study. The age group 45-55 constituted the largest segment of the study population. Furthermore, 69.1% of participants had a diploma or sub-diploma education, while 52.9% of the individuals were unemployed (Table 1).

The prevalence of generalized anxiety and its various degrees within the population in East Azerbaijan province was examined. Nearly 40% of the studied population experienced varying levels of anxiety (Table 2).

Table 1. Demographic Characteristics of the Studied Population (Aged 15-65)

	Number of Subjects (N = 2816)	Percent
Age		
15-25	191	6.8
25-35	577	20.5
35-45	851	30.2
45-55	670	23.8
55-65	527	18.7
Gender		
Male	1367	48.5
Marital status		
Married	2458	87.3
Location		
Tabriz	1369	48.6
Other Cities	1447	51.4
Education		
Illiterate	366	13.0
Diploma and subsidiary diploma	1947	69.1
University	503	17.8
Job		
Unemployed	1490	52.9
Employed	1152	40.9
Student	174	6.2

Table 2. Prevalence of Generalized Anxiety and Its Different Degrees in the Studied Population

Generalized Anxiety	Total (%)
Normal	60.2
Mild	28
Moderate	9.8
Severe	2

The prevalence of generalized anxiety in Tabriz and other cities was recorded at 39.8%. It is worth noting that the prevalence of generalized anxiety in Tabriz was significantly higher than in other cities in the province, with a statistical significance of $P=0.04$ (Table 3).

The gender distribution of generalized anxiety prevalence and its various degrees in the studied population of East Azerbaijan province is as follows: 32.4% in men and 46.6% in women. As evident in Table 4, the prevalence of generalized anxiety was significantly higher in women than in men, with a statistical significance of $P<0.05$.

The age distribution of the prevalence of generalized anxiety and its various degrees in the studied population in East Azerbaijan province indicates that as age increases, the prevalence of generalized anxiety also increases until the age of 55, after which it decreases relatively. However, the highest prevalence of generalized anxiety was observed in the age group between 45 and 55 years (Table 5). Table 5 displays that the pre-elderly age group had a higher prevalence of generalized anxiety than those under 45.

The prevalence of generalized anxiety and its various degrees based on marital status in the studied population in East Azerbaijan province indicates no significant difference in the prevalence of generalized anxiety based on marital status, with a statistical significance of $P<0.05$ (Table 6).

Table 3. Prevalence of Generalized Anxiety and Its Different Degrees in the Studied Population in Tabriz and Surrounding Cities

Generalized Anxiety	Tabriz (%)	Other Cities (%)	<i>P</i> Value*
Normal	56.9	63.2	0.04
Mild	31.2	25.1	0.045
Moderate	10.2	9.5	0.14
Severe	1.8	2.2	0.17

Note. *Chi-square test.

Table 4. Gender Distribution of the Prevalence of Generalized Anxiety and Its Different Degrees in the Studied Population

Generalized Anxiety	Men (%)	Women (%)	<i>P</i> Value*
Normal	67.6	53.4	0.04
Mild	23.9	31.8	0.02
Moderate	7.4	12	0.03
Severe	1.2	2.8	0.04

Note. *Chi-square test.

Table 5. Age Distribution of the Prevalence of Generalized Anxiety and Its Different Degrees in the Studied Population

Age Groups (y)	Normal (%)	Mild (%)	Moderate (%)	Severe (%)	Total (%)
15-25	67.2	21.7	10	1.1	32.8
25-35	61.6	28.5	8.4	1.5	38.4
35-45	60.6	28.1	9.6	1.6	39.3
45-55	57.0	28.3	11.2	3.5	43
55-65	58.4	29.8	9.5	2.3	41.6

Table 6. Prevalence of Generalized Anxiety and Its Different Degrees Based on Marital Status in the Studied Population

Generalized Anxiety	Single (%)	Married (%)	P Value*
Normal	66.2	59.4	0.19
Mild	24.1	28.5	0.006
Moderate	8.2	10.0	0.67
Severe	1.4	2.1	0.18

Note. *Chi-square test.

Discussion

The current study explored the prevalence of generalized anxiety within the East Azerbaijan population in relation to demographic factors. With a sample size of 2816 participants, the research investigated the occurrence of GAD, its demographic associations, and regional disparities.

In this study, a significant prevalence of generalized anxiety in East Azerbaijan was 40%, indicating a rate higher than what was reported globally. In 2015, the World Health Organization (WHO) reported that approximately 3.6% of the world's population had GAD.¹⁴ Likewise, studies conducted in the USA (3.1%),¹⁵ Singapore (1.6%),¹⁶ Europe (2%),¹⁷ and Australia (6.1%)¹⁸ have reported lower rates of GAD compared to the 40% observed in our study. This higher prevalence in East Azerbaijan exceeds the global average, signifying a greater burden of GAD in this region.

In a study conducted by Hajebi et al, GAD was reported as the most prevalent anxiety disorder among the Iranian population, with a prevalence rate of 5.2%.¹⁹ Moreover, studies conducted in other cities of Iran such as Kermanshah (4.7%)²⁰ and Kashan (7.2%)²¹ have reported lower prevalence rates of GAD compared to our study. GAD is among the most prevalent mental health conditions in both Iran¹⁹ and worldwide,²² and the findings of this study align with the global rise in mental health concerns.³ However, there is a significant disparity between the percentages documented in our study compared to similar research conducted in Iran and internationally. These differences in prevalence may be attributed to variations in sample size, assessment methods, and study design.² In addition, considerable cultural variations may affect the prevalence rate of GAD.^{23,24} This discrepancy highlights the need for further research to better understand the true level of GAD in East Azerbaijan province.

The results of this study indicated a correlation between age and the prevalence of generalized anxiety in East Azerbaijan province, with the highest rate occurring in the age group of 45 to 55 years. These findings align with existing literature, which underscores age as a significant factor in the development and presentation of anxiety disorders.^{25,26} Multiple studies consistently demonstrate that anxiety disorders are more prevalent among middle-aged and older individuals.^{2,27} This can be attributed to various life stressors and transitions associated with the

aging process. For instance, individuals in middle age often encounter increased responsibilities related to work, family, and financial stability, which may contribute to higher levels of anxiety.^{28,29} However, the decline in anxiety prevalence observed in the East Azerbaijan study after the age of 55 contrasts with some existing literature. While anxiety levels may decrease in older populations,^{28,30} this is not universally true, as certain individuals may continue to experience symptoms of anxiety as they age.^{31,32} This discrepancy highlights the need for further research to explore the specific factors influencing the manifestation of anxiety across different age groups in East Azerbaijan.

This study revealed a significant gender difference in the prevalence of generalized anxiety, with women exhibiting a higher rate (46.6%) compared to men (32.4%). This aligns with prevailing research, which consistently indicates that women are more susceptible to developing anxiety disorders than men.^{33,34} The variance in anxiety prevalence between genders has been linked to a blend of biological, psychological, and social factors.³⁵ Hormonal changes, societal expectations, and variations in coping mechanisms may all contribute to the heightened vulnerability of women to anxiety disorders.^{6,10}

The East Azerbaijan study has highlighted a notable regional difference in the prevalence of generalized anxiety, with Tabriz (43.2%) showing significantly higher rates compared to other cities in the province (36.8%). Such regional disparities in mental health are not uncommon and can be influenced by various factors. An elevated prevalence of anxiety disorders in urban areas, as observed in Tabriz, has been evidenced in several studies.³⁶⁻³⁸ Urbanization tends to increase stress levels, diminish social connectedness, and restrict access to natural environments such as green spaces, all of which can contribute to a higher likelihood of experiencing anxiety.³⁹ A study conducted in rural areas of Henan, China, found that the presence of abundant green spaces was significantly associated with a decreased risk of anxiety.⁴⁰ Lower rates of GAD in rural areas can be attributed to strong social support, a more relaxed lifestyle, regular exposure to nature, lower population density, and occupational factors such as physical labor and a sense of purpose.^{41,42}

Conclusion

The results of the present study indicate that being urban, being female, and being within the 45-55 age group affect the prevalence of anxiety disorders. Given the high prevalence of anxiety, especially among women and residents of Tabriz, mental health programs should be tailored to address these specific groups. These interventions could include community-based programs, counseling services, and awareness campaigns. Future research should investigate the underlying causes of these disparities and develop effective strategies to address them.

Ethics statement

The present study was approved by the Ethics Committee of Tabriz University of Medical Sciences (Identifier: IR.TBZMED.REC.1400.1001) and was registered on August 28, 2023.

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Conflict of interests declaration

The authors declare no conflict of interests.

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Data availability statement

The data are available for consideration if needed.

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Consent for publication

Not applicable.

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