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ORIGINAL ARTICLE / ÖZGÜN MAKALE

PHARMACIST-LED ASSESSMENT OF ANXIETY LEVELS AND ASSOCIATED FACTORS: A PROSPECTIVE OBSERVATIONAL SURVEY

ECZACI TARAFINDAN YÖNETİLEN ANKSİYETE DÜZEYLERİNİN VE İLİŞKİLİ FAKTÖRLERİN DEĞERLENDİRİLMESİ: PROSPEKTİF GÖZLEMSEL BİR ÇALIŞMA

Muhammed Yunus BEKTAY[1]*, Beyza TÜTÜNCÜ[1]*, Damla SOYSAL[1], Muhammed ATAK[2], Fikret Vehbi İZZETTİN[1]

[1]Bezmialem Vakif University, Faculty of Pharmacy, Department of Clinical Pharmacy, 34093, Istanbul, Turkiye

[2]Istanbul University, Istanbul Medical Faculty, Department of Public Health, 34093, Istanbul, Turkiye

ABSTRACT

Objective: *Mental illnesses constitute a significant contributor to the overall burden of illness, affecting a substantial number of individuals worldwide. The aim of the study is to to measure anxiety levels, along with a questionnaire to assess the pharmacist possible role in anxiety.*
Material and Method: *A prospective study with onlineonline questionnaire held between November 2020 and February 2021. The questionnaire was sent to the general public. The questionnaire consists of 2 sections, demographics and anxiety levels. Anxiety levels were determined by the Generalized Anxiety Disorder (GAD-7) scale. Assessment of internal consistency, reliability, binary logistic regression and correlation analysis, group comparisons were conducted utilizing the Mann-Whitney U-test.*
Result and Discussion: *A total of 398 responses were gathered. The majority of the participant were female (256, 64.3%) and the mean number of age was 29.7±10.7. The mean GAD-7 score was 6.31±4.21. The interclass correlation coffecient of the questionnaire was 0.671 (95% CI: 0.503-0.794, F: 4.55, p<0.001) and the Cronbach's alpha test was found as 0.854. Feeling anxious or stressed lately (OR: 2.358, %95 CI:1.321-4.210,p<0.005) and the level of education (OR:5.618, %95 CI 1.332-23.698 p<0.05) were statistically significant factors for anxiety. The importance of involving pharmacists in anxiety disorder screenings were pointed out by this study. Pharmacists'*

* **Corresponding Author / Sorumlu Yazar:** Muhammed Yunus Bektay
e-mail / e-posta: yunusbektay@gmail.com, **Phone / Tel.:** +902125232288

Co-first Authors / Başlıca Yazarlar: Muhammed Yunus Bektay, Beyza Tütüncü

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screenings effectively identify anxiety, and aids referrals to appropriate healthcare providers.
Keywords: *Anxiety, clinical pharmacy, mental health sceerining, patient monitoring, pharmaceutical care*

ÖZ

Amaç: *Ruh ve sinir hastalıkları, dünya çapında önemli sayıda bireyi etkileyerek genel hastalık yüküne önemli bir katkıda bulunan hastalık gruplarındadır. Çalışmanın amacı, bireylerin anksiyete düzeylerini ölçmek ve eczacının rolünü araştırmaktır.*
Gereç ve Yöntem: *Kasım 2020 ile Şubat 2021 arasında prospektif bir çevrimiçi anket düzenlenmiştir. Anket, demografik bilgiler ve anksiyete düzeyleri olmak üzere 2 bölümden oluşmaktadır. Anksiyete düzeyleri Yaygın Anksiyete Bozukluğu (YAB-7) ölçeği ile belirlenmiştir. İç tutarlılık, güvenilirlik, ikili lojistik regresyon ve korelasyon analizleri ve grup karşılaştırmaları Mann-Whitney U-testiyle anksiyeteyle düzeyleri ve ilişkili faktörler belirlenmiştir.*
Sonuç ve Tartışma: *Toplam 398 yanıt toplanmıştır. Yaş ortalamasının 29,7±10,7 olduğu katılımcı profilinin çoğunu kadınlar oluşturmuştur (256, %64,3). Ortalama YAB-7 puanı 6.31±4.21 olarak belirlenmiştir. Anketin iç tutarlılığı 0.671 (%95 GA: 0.503-0.794, F: 4.55, p<0.001) ve Cronbach alfa testi 0.854 idi. Son zamanlarda endişeli veya stresli hissetme (OR: 2.358, %95 GA:1.321-4.210, p<0.005) ve eğitim düzeyi (OR:5.618, %95 GA 1.332-23.698, p<0.05) istatistiksel olarak anlamlı faktörler olarak belirlenmiştir. Bu çalışma, eczacıların anksiyete bozukluğu taramalarına dahil edilmesinin önemine işaret etmektedir. Eczacıların taramaları anksiyeteyi etkili bir şekilde tanımlamakta ve uygun sağlık hizmeti sağlayıcılarına yönlendirmeye yardımcı olmaktadır.*
Anahtar Kelimeler: *Anksiyete, farmasötik bakım, hasta izlemi, klinik eczacılık, ruh sağlığı taraması*

INTRODUCTION

Anxiety disorders refer to a set of mental disorders characterized by the presence of anxiety and fear, with anxiety being a feeling of apprehension about future events and fear being a response to current events. These emotions may manifest as physical symptoms like rapid heartbeat and tremors. Chronic and excessive anxiety and worry about a variety of everyday situations or events that persist for a minimum of six months is categorized as generalized anxiety disorder (GAD) [1].

Mental disorders are a major cause of disease burden, with a global prevalence of 970 million people in 2019, or 12.6% of the world's population. They account for 13% of disability-adjusted life years and cause more burden than cardiovascular and circulatory disorders. Consequently, mental disorders impose an enormous economic burden, with depression and anxiety disorders alone costing the global economy $1 trillion annually [2,3].

Anxiety is a typical response to stress that can have beneficial effects in certain circumstances. It serves as a warning mechanism against potential threats and can help individuals remain vigilant and attentive. Anxiety disorders are distinct from normal feelings of irritability or anxiety and are characterized by excessive and irrational fear or anxiety. These disorders are among the most prevalent of mental health conditions and impact roughly 30% of adults at some point in their lives. Anxiety disorders may prompt individuals to avoid situations that trigger or exacerbate their symptoms, which can negatively impact performance in business, school, and personal relationships. However, effective treatments are available for anxiety disorders, and the majority of individuals who receive treatment are able to achieve a normal and productive life [3,4].

Clinicians encounter numerous challenges when treating patients with anxiety disorders on a daily basis. To address these obstacles, collaborative medical teams are needed, with pharmacists playing a significant role. Within such teams, pharmacists assume a major responsibility in enhancing patient compliance, optimizing dosage schedules, promptly identifying the onset of the illness, averting drug-drug interactions, and mitigating side effects [5].

Pharmacists have a unique opportunity to enhance the outcomes of patients suffering from mental illnesses in community pharmacies. According to the International Pharmacy Federation Report, pharmacists have been shown to improve the care and well-being of individuals with mental health issues through various means, such as education, prompt diagnosis, triage, collaboration, and healthcare

services [6].

Community Health Management refers to a targeted intervention process aimed at identifying patients and optimizing their well-being, while minimizing negative outcomes and reducing healthcare costs [5,6]. Various healthcare professionals, including clinical pharmacists, participate in community health management in different capacities. With the involvement of clinical pharmacists, drug management is conducted accurately to prevent uncontrolled treatment of diseases. Clinical pharmacists may refer patients to their primary healthcare providers for disease management, and they can provide drug management to patients until chronic disease control is achieved pharmacists can play a pivotal role in providing an effective community health approach by providing patient education and optimizing patient health outcomes. Studies have revealed that integrating pharmacists into primary healthcare institutions has led to improvements in the utilization of evidence-based treatments and patient outcomes for many chronic diseases [7].

The clinical pharmacist plays a crucial role in providing mental health diagnoses and training related to psychotropic drugs for both patients and staff. Besides mental health problems, clinical pharmacists also manage metabolic disorders such as hypertension, hyperlipidemia, and diabetes by making appropriate referrals for dietary interventions and further treatment. For outpatient care, clinical pharmacists participate in interdisciplinary team meetings comprising of psychiatrists, nurses, clinical psychologists, and social workers. They provide expertise in pharmacotherapy to optimize patient care and help evaluate patients who require complex drug therapies. Clinical pharmacists have significant responsibilities in ensuring the continuity of care in mental health services for inpatient or outpatient psychiatric unit patients, including the appropriate dosage of long-acting injectable antipsychotics [8].

Pharmacists can perform mental health assessments for patients, assess drug suitability and side effects, review drug treatment and monitoring. Clinical pharmacists should take part of the treamment of mental health disorders in outpatient settings. Clinical pharmacists should not be limited to contributing to the patients with diagnoses. CP can participate in patient assessments, based on mental health symptoms, and refer patients to psychiatrists or therapy accordingly [8].

In our study, we utilized the Generalized Anxiety Disorder-7 (GAD-7) to measure anxiety levels, along with a questionnaire to assess the individual's knowledge of anxiety.

MATERIAL AND METHOD

Study Design and Sample Size

From November 2020 to February 2021, a descriptive, observational study was conducted in Turkey. Participants were restricted by age (18-65 years old has been included) only and chosen based on their willingness to participate in the study. The study was approved by the Bezmialem Vakif University local Ethics Committee with a decision number of 18/345. The exponential non-discriminative snowball sampling method was used to select participants. The study is reported according to the CROSS (A Consensus-Based Checklist for Reporting of Survey Studies) standards [9].

$$\boldsymbol{n = \frac{Z^2\, p(1-p)}{d2}}$$

The formula presented above is used to calculate the sample size. In the formula, n represents the sample size. A p-value of 0.5 is used for the proportion. The margin of error for sampling is set to 0.05, and Z represents the standard normal value at a 95% confidence interval, which is equal to 1.96. Using these values and considering similar studies in the literature, the sample size determined to be 345. Considering a non-response rate, the total sample size is set to 398 [10, 11].

Questionnarie, Survey Distribution and Data Collection

To evaluate individuals' anxiety levels, a web based online questionnaire was developed using Google Forms. The survey was disseminated via various methods, including email, direct messages, and social media platforms, along with information about the study. To increase participation, participants were encouraged to share the survey link with their social circles. The survey consisted of three sections, including demographics, the GAD-7 scale, and an anxiety knowledge assessment test, with a total of 21

items. Participants electronically signed a written informative and approval form, and each response was cross-checked to ensure it was only provided once. A hyperlink of consent form has been embedded to an online survey for participant for personal use.

The Generalized Anxiety Disorder-7 (GAD-7) is a brief, self-reported questionnaire used to assess generalized anxiety disorder, which was developed based on DSM-IV criteria by Spitzer et al. It consists of seven items that are rated on a four-point Likert scale (0=never, 1=several days, 2=more than half the days, 3=nearly every day) and is completed using a paper-pencil format to evaluate symptoms experienced over the previous two weeks [4]. A total score of 5, 10, and 15 on the GAD-7 correspond to mild, moderate, and severe anxiety, respectively, with a cut-off score of 10 or higher indicating possible GAD. The sensitivity and specificity of the GAD-7 are 89% and 82%, respectively, when a cut-off score of 10 is used. The original article for the GAD-7 established cut-off scores of 0-4 for mild anxiety, 5-9 for moderate anxiety, 10-14 for high anxiety, and 15-21 for severe anxiety. The Turkish version of the GAD-7 has demonstrated high validity and reliability, and good psychometric properties in clinical settings, comparable to the original version. Therefore, the GAD-7 can be used as a screening tool for generalized anxiety disorder. The Turkish adaptation and validation of GAD-7 scale was conducted by Konkan et al [12]. A permission has been obtained by the the corresponding author of the GAD-7. Seven items rated on a scale ranging from 0 (never) to 4 (always). The scores indicated greater scores represent greater anxiety level. The threshold was 10, which indicated a critical level of anxiety which requires medical support and attention.

The dependent variable was the presence of anxiety, which was assessed using GAD-7 scores (GAD-7 scores higher than 10 were considered as presence of anxiety). The study incorporated various independent variables to assess their potential impact on the research outcome. These variables encompassed employment status, gender, marital status, level of education, presence of chronic illnesses and medications, as well as the Feeling anxious or stressed lately for any reason.

A team of experts consisting of four professionals was consulted to provide feedback on the survey's language design and the questions were revised based on their recommendations. Additionally, the questionnaire was pre-tested with two members (a clinical pharmacist and a public health specialist physician) who possess expertise in behavior change education. The pre-testing involved retrospective cognitive interviews with a focus on assessing the content, format, and wording of the survey. Pilot research was conducted with a group of fifteen individuals who did not participate in the initial evaluation, and feedback obtained was used to improve the survey's clarity and understandability. A group of twenty participants, who were not included in the original study data set, were asked to complete the questionnaire within a period of two weeks. The survey took approximately 15-20 minutes to complete. To assess the test-retest reliability of the questionnaire, the Spearman correlation coefficient, Wilcoxon test, and intraclass correlation coefficient (ICC) were evaluated using a sample of 20 participants. The results indicated that the questionnaire exhibited a statistically insignificant correlation of 0.619 ($p>0.05$) and an ICC of 0.671 (95% CI: 0.503-0.794, F: 4.55, $p<0.001$). The reliability of the GAD-7 scale was evaluated using Cronbach's alpha test, which yielded a value of 0.854 for the survey tool used in this study.

Statistical Analysis

For continuous variables, descriptive statistics such as mean, median, standard deviation, and interquartile range (IQR) were reported, while categorical variables were presented as frequency and percentage. The Kolmogorov-Smirnov, Shapiro-Wilk tests Q-Q plots, histogram and density analysis, skewness and kurtosis values was used to test for normality of continuous variables. To assess differences between groups, independent t-tests or Mann-Whitney U tests were performed, while chi-square tests were used to investigate the relationship between categorical variables. Univariate logistic regression analysis was conducted with a significance level of $p < 0.20$ to determine significant variables, which were then included in binary logistic regression analysis. Estimated risk values and confidence intervals were reported. The study aimed to identify variables that predict factors related to anxiety, and the Nagelkerke R square and Hosmer and Lemeshow tests were used to assess the explanatory power and fit of the model, respectively. Missing data were excluded from analysis, and Statistical Package for Social Science (SPSS) version 26® and Jamovi version 1.6 software were used

for statistical analysis. Univariate and multivariate logistic regression analyses were performed to identify factors associated with anxiety disorder. Statistical significance was defined as $p < 0.05$.

RESULT AND DISCUSSION

Sociodemographic Characteristics of Study Participants

This study involved 398 participants, with an average age of 29.7±10.7. The majority of participants (293, 73.6%) were under the age of 35. The mean GAD-7 score of participants were 6.31±4.21. Participants with GAD-7 scores above 10 were found to be younger (27.60±10.7). A large proportion of participants (330, 82.9%) were not experiencing anxiety (GAD-7 score below 10), which would require medical attention or professional support. The sample was primarily female (256, 64.3%), and the majority were single (256, 64.8%) and had a graduate or higher education level (334, 83.9%). Demographic characteristics of the sample are presented in Table 1. Most of the participants were employed (368, 92.5%) and did not have any chronic conditions (338, 85.4%).

Table 1. Sociodemographic characteristics of participants

Parameter	Total N (%)	GAD-7⩾10 N (%)	GAD-7<10 N (%)	p
	398 (%100)	68 (%17.1)	330 (%82.9)	NA
Age, Mean ±SD	**29.7±10.7**	**27.60±10.7**	**30.1±10.7**	*=0.035#*
18-24 years	203 (51.0)	45 (11.3)	158 (39.7)	*=0.033**
25-34 years	90 (22.6)	11 (2.8)	79 (19.8)	
35-44 years	48 (12.1)	4 (1.0)	44 (11.1)	
45-54 years	42 (10.6)	4 (1.0)	38 (9.5)	
54-65 years	15 (3.8)	4 (1.0)	11 (2.8)	
Gender				>0.001*
Male	142 (35.7)	20 (5.0)	122 (30.7)	
Female	256 (64.3)	48 (12.1)	208 (52.3)	
Marital Status				>0.001*
Married	140 (35.2)	17 (4.3)	123 (30.9)	
Single	258 (64.8)	51 (12.8)	207 (52.0)	
Level of Education				>0.001*
Primary School	10 (2.5)	1 (0.3)	9 (2.3)	
Secondary School	10 (2.5)	2 (0.5)	8 (2.0)	
High School	44 (11.1)	6 (1.5)	38 (9.5)	
Graduate	285 (71.6)	49 (12.3)	236 (59.3)	
Postgraduate	49 (12.3)	10 (2.5)	39 (9.8)	
Employment Status				>0.001*
Employed	368 (92.5)	66 (16.6)	302 (75.9)	
Unemployed	30 (7.5)	2 (0.5)	28 (7.0)	
Cormobidity				>0.001*
Yes	58 (14.6)	7 (1.8)	51 (12.8)	
No	338 (85.4)	61 (15.4)	278 (70.0)	
Feeling anxious or stressed lately for any reason				=0.003*
Yes	221 (55.5)	49 (12.3)	172 (43.2)	
No	177 (44.5)	19(4.8)	158 (39.7)	
GAD-7 Score	**6.31±4.21**	**13.4±2.91**	**4.85±2.65**	>0.001#

GAD-7: General Anxiety Disorder 7 Scale. * Chi Square test, # Mann Whitney U test

This study aimed to evaluate the prevalence and factors that are associated with anxiety levels among Turkish people. In the year 2019, the global count of individuals grappling with an anxiety disorder stood at 301 million, encompassing approximately 58 million children and adolescents [13]. Extensive community surveys carried out within the Eastern Mediterranean Region (EMR) indicate a range of psychological distress rates spanning from 15.6% to 35.5%, with the figures tending to be higher in nations contending with intricate emergency scenarios [14,15]. Moreover, the occurrence of mental disorders over a span of twelve months spans from 11.0% to 40.1%, as reported in these surveys. A German study the 5.9% of the total sample had GAD-7 scre 10 or higher. [16]. Our study results showed a prevalence 17.1% of the participants has GAD-7 score considered as anxiety disorder in Turkish people and it is more frequent in young adults (51.0%) although this prevalence rate is greater than the EMR [14, 15]. Recollection intervals, healthcare services, reimbursement strategies, the economic status, social and cultural variables might all contribute to the difference among the countries.

Among the participants, 60 (15.07%) individuals reported having a chronic disease, Specifically, 11 participants reported having hypertension, 6 reported having type 2 diabetes, and 4 reported having hypothyroidism. Notably, hypertension was the most frequently reported chronic disease among the participants. It was observed that among the participants, a total of 88 individuals had a history of drug usage. Specifically, 29% of the 88 individuals reported using antidepressant drugs, 19% reported using antihypertensive drugs, 15% reported using antidiabetic drugs, 9% reported using analgesic drugs, 9% reported using thyroid drugs, and 19% reported using other drugs.

The percentage of individuals exhibiting symptoms indicative of generalized anxiety disorder, with a cumulative score higher than the 10 points on the GAD-7scale, accounts for 17% of the total participants. Among this subset, 57% were identified as female, while 43% were identified as male. The findings underscore a higher prevalence of generalized anxiety disorder in the female demographic. Notably, the Turkey Mental Health Profile Survey of 2006 revealed a 12-month prevalence rate of 0.7% for GAD [17]. Correspondingly, an investigation conducted by Carter et al., involving 7,124 individuals revealed a 12-month GAD prevalence rate that was twice as high among women (2%) in comparison to men (1%) [14]. The collective evidence from these investigations, as well as our own study, signifies a heightened anxiety disposition among women.

In their investigation, Wittchen observed a greater prevalence of GAD among individuals who were divorced, widowed, or separated. Similarly, in a study undertaken by Özcan et al. in 2006, a notably elevated occurrence of GAD was identified in married individuals when contrasted with their single counterparts [18]. Within our own study, the potential for GAD diagnosis was evident in 20% of single participants, 12% of married participants, and 20% of those who were divorced or widowed. Notably, the anxiety levels of single and divorced or widowed participants surpassed those of married participants. However, it is important to acknowledge the non-uniform distribution of single, married, divorced, and widowed participants within our sample.

As reported by Wittchen, the prevalence of GAD demonstrates an increase with advancing age, with the highest incidence observed among individuals aged 45 years and older. This study reinforces the notion that GAD tends to emerge in the late twenties and is most frequently encountered during middle age. The mean age associated with GAD was approximately 32 years [19,20]. Another investigation examining age distribution found that mean anxiety scores exhibited a slight increment from the youngest age group to the 55-59 range, followed by a decline until the 65-69 category, and then a subsequent rise [16]. Within the scope of our own study, it was revealed that 22% of participants aged 18-24, 13% of those aged 25-34, 8% of individuals aged 35-44, 10% of those aged 45-54, and 24% of those aged 55-65 exhibited elevated levels of generalized anxiety disorder. Particularly noteworthy were the age cohorts of 18-24 and 55-65, displaying the highest levels of anxiety.

In the research conducted by Wittchen et al., the absence of employment or the role of a homemaker was identified as a risk factor for GAD. Their findings indicated a direct correlation between the prevalence of GAD and a lower income level, although no significant association was observed with educational attainment [19, 20]. Similarly, Özcan et al. observed that two-thirds of GAD-diagnosed individuals in their study were homemakers. Nonetheless, their study indicated that GAD was unrelated to income level, yet more prevalent among individuals with lower educational backgrounds [20]. Another study also provided support for the notion that GAD is more frequently encountered among

individuals with limited educational attainment. Notably, these investigations suggest a higher prevalence of GAD among those with lower educational levels, which is differs from international studies. In our study, it is noteworthy that individuals with secondary school, university, master's, and doctorate degrees exhibited elevated anxiety levels.

Feeling Anxious or Stressed Lately for Any Reason

Participants were asked whether they had been experiencing feelings of anxiety or stress recently, to which 221 (55.5%) participants answered "yes" and 177 (44.5%) participants answered "no". Of those who answered "yes", 56% reported experiencing a stressful situation. A follow-up question was posed to these participants, asking them to elaborate on the cause of their stress. A total of 92 participants provided an explanation, with Coronavirus disease 2019 (COVID-19) being the most frequently cited stressor (22%), followed by exam stress (19%), work stress (18%), family problems (17%), pandemic (13%), earthquake (3%), and other causes (9%). According to our findings a negative correlation has been observed between level of education and feeling stressed lately for any reason. Also the gender difference was statistically significantly correlated with feel of stressed lately due to any reason (r: -0.115, $p<0.05$).

Reasons for Anxiety and Stress

Participants who reported family problems as the cause of their stress mentioned a range of issues, including the separation of their parents, the entry of a new person into their father's life, the father's transient ischemic attacks, the death of a family member, a family traffic accident, divorce, home-related problems, and family incompatibility. Respondents who identified Covid-19 as the cause of their stress cited factors such as Covid-19 infection, being afraid of contracting the virus, quarantine, noncompliance with Covid-19 rules, and general anxiety about Covid-19. Participants who identified work stress as the cause of their stress mentioned problems such as not receiving their salaries on time, having difficulties in their workplace and sharing work, work intensity, new responsibilities, workplace conditions, unemployment, working in a pandemic hospital, and health personnel having stressful experiences. Exam-related stress was reported by participants who expressed concerns about the invigilation process, exam difficulty, time constraints, and fears of failure. Finally, other stressors mentioned included health problems, financial concerns, engagement pressure, restrictions on international travel, traffic congestion, adjusting to a new city or environment, and obsessions. The most common stressors illustrated in figure 1.

The reason for self-medication and not consulting a physician was found mostly because participants had an experience with the drug they used (94%). Meanwhile, the minority (6%) stated that the reason for self-medication was due to their lack of time. Most common reason for analgesic use was headache (46.3%) which is followed by a stomachache (13.8%), toothache (6.4%) and menstrual pain (5.8%). The distribution of causes of stress is illustrated in Figure 1.

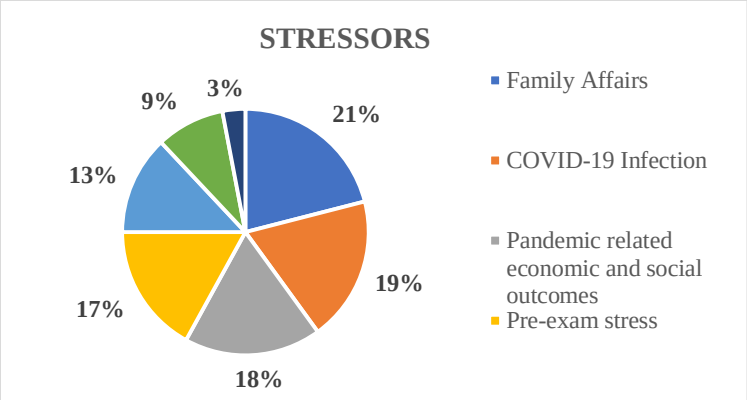

Figure 1. Most common stated stressors (n=398)

Generalized Anxiety Levels of The Participants

A survey on generalized anxiety disorders (GAD-7) was administered to the participants, wherein they were requested to mark the frequency with which they experienced certain conditions. The conditions that were desired to be marked included feelings of anger, anxiety, worry, inability to control or stop concerns, worrying about various topics, inability to relax, restlessness, feeling angry or restless, and fear of something terrible happening. Participants were required to mark their frequency of experiencing these conditions as never, more than half of the days, or every day. These scores were collected for each participant, and their level of anxiety was determined accordingly.

A total of 146 (36.68%) participants scored between 0-4 points, indicating either no anxiety or a low level of anxiety. Another 184 (46.23) participants scored between 5-9 points, indicating a moderate level of anxiety. Out of 398, 47 (11.81%) participants scored between 10-14 points, indicating a high level of anxiety. Lastly, 21 (5.28%) participants scored be-tween 15-21 points, indicating a severe level of anxiety. The majority of the participants have a moderate level of anxiety, and the mean and standard deviation of the GAD-7 score is 6.31±4.21. A statistically significant correlation has been established between the anxiety level and feeling stressed lately due to any reason (r: 0.151, $p<0.005$) and level of education (r: 0.106, $p=0.035$).

The survey was conducted with the aim of investigating the knowledge and attitudes of the participants towards anxiety as a medical condition. A total of 398 respondents participated in the survey, of whom 361 (90.73%) answered “yes” to the question of whether anxiety is a disease, while 39 (9.27%) responded “no”. It is noteworthy that 90% of the participants gave correct answers, indicating a relatively high level of awareness regarding anxiety as a medical condition. However, around 9% of the participants gave incorrect answers, suggesting that there is still room for improvement in terms of public education and awareness-raising campaigns.

Furthermore, the survey results showed that 372 people acknowledged the need for medical treatment under the supervision of a doctor, representing a response rate of 93.46%. In contrast, 28 respondents stated that there is no need for treatment for anxiety, accounting for 6.54% of the participants. It is worth noting that the vast majority of respondents acknowledged the importance of seeking medical treatment for anxiety, as it is a condition that requires professional care and monitoring.

Regarding medication for anxiety treatment, the survey results revealed that 299 participants believe that anxiety drugs should be taken regularly every day, while 101 individuals believed that anxiety drugs should only be taken when they feel bad. However, it should be emphasized that taking anxiety medication regularly is essential for its effectiveness in the treatment of anxiety. Therefore, the proportion of correct answers is 75.12%, while the rate of incorrect answers is 24.88%. Moreover, the survey investigated the possible causes of anxiety and found that 366 (91.95%) respondents attributed anxiety to stress, 193 (48.49%) to genetic/familial factors, 44 (11.05%) to old age, 54 (13.58%) to obesity, and 91 (22.86%) were unsure of the cause. The majority of participants associated anxiety with stress, suggesting that stress management techniques could be useful in the treatment of anxiety.

Additionally, the survey explored the various diseases caused by anxiety and found that 372(93.46%) respondents associated anxiety with sleep problems, 275(69.09%) with heart diseases, 149(37.43%) with diabetes, 144 (36.18%) with thyroid, and 98(24.62%) with paralysis/brain hemorrhage. These results highlight the importance of proper anxiety treatment to prevent the development of other medical conditions. Furthermore, the survey findings revealed that participants believed in the importance of adopting auxiliary approaches to anxiety treatment, such as avoiding stress factors, relieving stress, eating healthy, not smoking, regular exercise, and managing stress. Around half of the respondents (52%) believed that all options could help in the treatment of anxiety.

Finally, the survey explored the sources of information about anxiety available to the participants. The results showed that 92% of the respondents considered medical doctors as a source of information, while 57% identified pharmacists as an important resource. Other sources of information cited by the participants included the internet (23%), the environment (8.75%), newspapers (8.75%), television (8.5%), and magazines/brochures (14.25%). These results highlight the crucial role of healthcare professionals in educating the public about anxiety and its treatment options.

Factors Associated with Anxiety Disorder

In this study, the effects of various factors on anxiety were examined using binomial logistic regression model. Specifically, the study investigated the influence of employment status, gender, marital status, level of education, presence of chronic illnesses and medications, as well as the Feeling anxious or stressed lately for any reason on anxiety levels of individuals. Of the predictor variables examined, only two were found to be statistically significant: Feeling anxious or stressed lately for any reason and level of education. Individuals who felt anxious or stressed lately had 2.358 times higher odds of exhibiting anxiety disorder with GAD-7 scores higher than 10 (OR: 2.358, %95 CI: 1.321-4.210, p<0.005). Additionally, level of education was found to be associated with an increased likelihood of having anxiety disorder. Individuals with a secondary school education were more prone to exhibit anxiety in comparison to those with post-graduate education (OR: 5.618, %95 CI: 1.332-23.698 p<0.05). These findings underline to consider anxious feelings and educational level in the early detection of general anxiety disorder (Table 2).

Table 2. Binary logistic regression analysis of factors related with presence of general anxiety disorder

Variables	**Presence of General Anxiety Disorder (GAD-7 score≥10)**					
	Univariate Analysis			**Multivariate Analysis**		
	OR	**95% CI for Odds Ratio**	***p***	**OR**	**95% CI for Odds Ratio**	***p***
Marital Status						
Single	0.561	0.310 -1.010	0.054	0.688	0.361-1.310	0.256
Married	*Reference*					
Gender						
Female	0.710	0.403-1.250	0.197	0.826	0.450-1.520	0.538
Male	*Reference*					
Employment Status						
Employed	3.06	0.711-13.200	0.115	2.701	0.591-1.350	0.200
Unemployed	*Reference*					
Feeling anxious or stressed lately for any reason						
Yes	2.370	1.340-4.20	0.003	2.358	1.321-4.210	0.004
No	*Reference*					
Comorbidity						
Present	0.626	0.271-1.44	0.268			
Not Present	*Reference*					
Level of Education		-				
Primary School	1.932	0.474-7.870	0.358	1.922	0.483-7.638	0.354
Secondary School	5.599	1.322-23.712	0.019	5.618	1.332-23.698	0.019
High School	2.243	0.972-5.175	0.058	2.224	0.970-5.098	0.059
Graduate	1.615	0.843-3.093	0.148	1.640	0.867-3.105	0.129
Postgraduate	*Reference*					
Age	1.004	0.976-1.032	0.789			

The logistic regression model yielded a statistically significant result, with a $\chi 2(5) = 16.534$ and $p < 0.05$. The model accurately classified 64.8% of the cases. Sensitivity was found to be 39.9%,

specificity was 76.9%, positive predictive value was 61.78% and negative predictive value was 58.4%. The model reliability was assessed using an omnibus ANOVA test for model coefficients ($p<0.05$) and Hosmer and Lemeshow Test ($p=0.644$).

Of the predictor variables examined, only two were found to be statistically significant: Feeling anxious or stressed lately for any reason and level of education. Individuals who felt anxious or stressed lately had 2.358 times higher odds of exhibiting anxiety disorder with GAD-7 scores higher than 10 (OR: 2.358, %95 CI: 1.321-4.210, $p<0.005$). Additionally, level of education was found to be associated with an increased likelihood of having anxiety disorder. Individuals with a secondary school education were more prone to exhibit anxiety in comparison to those with post-graduate education (OR: 5.618, %95 CI: 1.332-23.698 $p<0.05$). These findings underlines to consider anxious feelings and educational level in the early detection of general anxiety disorder.

The primary interventions for individuals suffering from anxiety encompass the administration of antidepressants such as selective serotonin reuptake inhibitors (SSRIs) or serotonin and norepinephrine reuptake inhibitors (SNRIs), as well as cognitive behavioral therapies [20]. These therapeutic approaches have been integrated into collaborative care models, yet many of their components are adaptable to clinical environments. Commencing anxiety treatment with readily accessible, cost-effective, and safe interventions is a logical approach. Among these are physical exercise and mindfulness-based stress reduction techniques, which can be accessed through applications or web-based programs. Moreover, patients should be guided toward authoritative sources of information regarding their condition and its management [20]. Consequently, apart from pharmacological interventions, supplementary treatment modalities play a pivotal role in addressing anxiety. The quality of information available on the internet, along with numerous websites, was not adequate enough. While reliable sources of high-quality information may enhance patients' understanding of their condition, it is plausible that certain online resources, particularly unvetted ones, might exacerbate anxiety.

Pharmacists can enhance patient-centered care to promote positive outcomes in an underserved population by improving communication between healthcare professionals, coordinating the treatment of patients, improving access to and safety of medications, and optimizing medication regimens [8,21-23]. On the other hand, in the study completed by Samorinha et al, pharmacists may encounter barriers in providing mental health services [24]. It was stated that the most important of these barriers are emotional discomfort with the patient's current situation and lack of practice. Samorinha et al. reported that pharmacists who provided a higher number of mental health counselling were younger pharmacists and pharmacists who had participated in continuing professional education in the last two years. Considering the studies in the literature and the results obtained in our study, it is obvious that pharmacists have an important role in anxiety disorders within the health team and in early diagnosis and diagnosis.

Nevertheless, this study is subject to certain limitations despite its inclusion of participants from various regions of the country. One limitation is the relatively small sample size, which should be considered interpreting the findings. Furthermore, the generalizability of the results may be constrained due to the overrepresentation of highly educated, employed women in our sample. This bias may have arisen from the accessibility of online surveys, potentially excluding individuals with lower educational backgrounds who have limited internet usage. Therefore, future investigations should aim to explore the behaviors and perspectives of individuals with recurring feelings of anxiety and those with lower levels of education to obtain a more comprehensive understanding, as our findings may not accurately reflect their experiences. It is also important to note that the study was conducted during the fall-winter seasons and did not account for potential variations in anxiety or stress behaviors across different seasons. Additionally, the data collected relied on self-reported responses, which may be subject to personal biases or reluctance to report inaccurate opinions. However, efforts were made to assure participants of confidentiality, which may have mitigated this potential effect. Furthermore, the study focused on the three months leading up to the interviews, which may have introduced recall bias and influenced participants' perceptions. Moreover, it is worth noting that the study was conducted during a period of stringent COVID-19 containment measures, which could have significantly influenced anxiety levels due to the unique challenges posed by the pandemic compared to normal circumstances. Therefore, caution should be exercised when generalizing the findings of this study to anxiety levels in non-

pandemic periods.

Our research findings highlight the prevalence of the GAD among society and the involvement of pharmacist in conducting GAD screenings, which can effectively identify individuals with anxiety. Thus, could enable timely referrals to appropriate healthcare providers. This proactive approach facilitates early diagnosis and treatment of anxiety disorders, ultimately leading to enhanced management of psychiatric conditions, improved treatment outcomes, and an overall better quality of life for individuals affected by these disorders.

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AUTHOR CONTRIBUTIONS

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CONFLICT OF INTEREST

The authors declare that there is no real, potential, or perceived conflict of interest for this article.

ETHICS COMMITTEE APPROVAL

The study has been approved by the Bezmialem Vakif University, local Ethics Committee with the decision number of 18/345. An electronically signed informed consent was obtained from all individual participants included in the study. All procedures performed in the study were in accordance with the ethical standards of the University of Siena and with the 1964 Helsinki declaration and its later amendments. An electronically signed informed consent was obtained from all individual participants included in the study.

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