# Healthcare Workers' Irrational Beliefs, Anxiety and Depression Levels During the Covid-19 Pandemic

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## Abstract

**Objectives:** The beliefs or irrational beliefs impact the way individuals react or adapt to a threatening situation like the COVID-19 pandemic. This study assesses the relationship between healthcare workers' irrational beliefs, depression, and anxiety levels during the COVID-19 pandemic. **Materials and Metods:** This study was designed as a quantitative study that used the Shortened General Attitude and Belief Scale (SGABS), Beck Depression Inventory (BDI), and Beck Anxiety Inventory (BAI) to 212 healthcare workers. The collected data was subjected to t-tests, ANOVA, correlation, and regression analyses. **Results:** The study found that male participants had significantly higher levels of Devaluation of Others / irrational beliefs, while females and unmarried individuals had significantly higher levels of anxiety. Additionally, there was a predictive effect of Irrational Beliefs / need for comfort and female gender factor on anxiety levels, and a predictive effect of Irrational Beliefs / need for comfort and age factor on depression levels. **Conclusion:** The results indicate the need to assess healthcare workers' irrational beliefs, depression, and anxiety levels and suggest that assessment can guide the development of potential interventions.

**Keywords:** Irrational beliefs, Depression, Anxiety, COVID-19, Health workers

# Covid-19 Pandemisi Sürecinde Sağlık Çalışanlarının Akılcı Olmayan İnançları, Kaygı ve Depresyon Düzeyleri

## Özet

**Amaç:** İnançlar veya mantıksız inançlar, bireylerin COVID-19 salgını gibi tehdit edici bir duruma tepki verme veya uyum sağlama şeklini etkilemektedir. Bu çalışma, COVID-19 salgını sırasında sağlık çalışanlarının mantıksız inançları, depresyon ve kaygı düzeyleri arasındaki ilişkiyi değerlendirmektedir. **Materyal ve Metot:** Bu çalışma, Kısaltılmış Genel Tutum ve İnanç Ölçeği, Beck Depresyon Envanteri ve Beck Anksiyete Envanteri kullanılarak 212 sağlık çalışanına uygulanan nicel bir çalışma olarak tasarlanmıştır. Toplanan veriler t-testi, ANOVA, korelasyon ve regresyon analizlerleri ile değerlendirilmiştir. **Bulgular:** Araştırma, erkek katılımcıların anlamlı derecede yüksek düzeyde başkalarını Değersizleştirme/irrasyonel inançlara sahip olduğunu, kadınların ve evli olmayan bireylerin ise anlamlı düzeyde daha yüksek kaygı düzeylerine sahip olduğunu ortaya koymuştur. Ayrıca Akılcı Olmayan İnançlar/rahatlık ihtiyacı ve kadın cinsiyet faktörünün kaygı düzeylerini, Akılcı Olmayan İnançlar/rahatlık ihtiyacı ve yaş faktörünün ise depresyon düzeylerini yordadığı bulunmuştur. **Sonuç:** Araştırma sonuçları sağlık çalışanlarının mantıksız inançlarının, depresyon ve kaygı düzeylerinin değerlendirilmesi gerektiğine işaret etmekte ve değerlendirmenin potansiyel müdahalelerin geliştirilmesine rehberlik edebileceğine işaret etmektedir.

**Anahtar kelimeler:** İrrasyonel inançlar, Depresyon, Anksiyete, COVID-19, Sağlık çalışanları

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## 1. Introduction

The adverse conditions created by the pandemic threaten individuals' bodily health, mental well-being, and sense of safety, disrupting the normal course of life and creating traumatic experiences (Masiero et al. 2020). Many studies have shown that the pandemic has led to stress, distress, depression, anxiety, and Post-Traumatic Stress Disorder (PTSD) (Kaya 2020; Masiero et al. 2020; Xiong et al. 2020).

It seems that professional healthcare workers are at a high level of risk during pandemics. In the beginning stages of the pandemic, it was reported that 22,073 healthcare workers had been infected with the disease all over the world (WHO 2021). Studies have found that besides the risk of infection and transmission, frontline healthcare workers face the demands of excessive workloads and rapid expansion of their responsibilities in their roles, lack of personal protective equipment, restricted access to testing kits, and worry about transmitting the disease to their families (Holmes et al. 2020). Unprecedented challenges have arisen in specific reactions to the COVID-19 pandemic, including shortages of essential testing equipment and ventilators necessary for the care of critically sick patients (Ayanian 2020). Furthermore, healthcare workers have experienced extraordinary moral or ethical dilemmas in their working lives during this period (Greenberg et al. 2020). As a result, workers experience intense stress and negative psychological effects.

Depression and anxiety are reportedly more prevalent among healthcare workers than other segments of the population (Naldan et al. 2019; Polat and Coşkun 2020; Liu et al. 2020). During this period, professional workers engaged in the care of COVID-19-infected patients are at high risk for developing psychological problems like anxiety, depression, and PTSD (Dutheil et al. 2021). Many studies have shown a meaningful correlation between the current pandemic and anxiety (Wang et al. 2020; Rossi 2020; Liu et al. 2020). In particular, 12 studies assessing anxiety levels among healthcare workers have revealed a prevalence rate of 23.2%. Furthermore, 10 studies evaluating depression levels found a prevalence rate of 22.8% (Simione and Gnagnarella 2020).

Depression is defined as a normal reaction marked by physical, mental, and emotional distress in response to various life events (Beck 1987; Brown and Harris 1978); anxiety is defined as physical, mental, and emotional responses to possible danger or uncertain situations (Leal et al. 2017; APA 2014). These stress responses can arise in situations involving actual threats or dangers, as well as in anticipation of as yet unrealized situations (Bannister 1968; Robichaud, Koerner, and Dugas 2019). Moreover, pre-existing irrational beliefs can further exacerbate individuals' reactions to traumatic situations.

It is known constant exposure to stressful events triggers anxiety. However, it is argued that anxiety arises not so much from the concrete situation itself but rather from the meaning the individual attributes to that situation (Beck 1985). According to Rational Emotive Behavior Therapy, irrational beliefs are the cause of emotional and behavioral issues (DiGiuseppe et al. 2014; Ellis and Dryden 1997). Irrational beliefs produce ineffective emotions and attitudes, although rational beliefs guide healthy ones (David et al. 2010). Irrational beliefs are rigid, unusual, unreasonable thoughts that involve various demands and musts, leading to emotional distress and significant functional impairments (O'Donohue 2009). Irrational beliefs express rigid beliefs that involve unrealistic, faulty inferences and generalizations, while rational beliefs express realistic, consistent, flexible beliefs that involve preferences (Dryden and Branch 2008). Rational beliefs are based on cognitive processes: decision-making, not catastrophizing, and accepting and tolerating disappointment. Irrational beliefs, on the other hand, consist of four interacting cognitive processes: neediness, catastrophizing, frustration intolerance, and devaluation of self or others (David et al. 2010).

Ellis (1994) indicates that rational and irrational beliefs influence how we perceive ourselves, others, and our environment and argues that the same experience can elicit different anxiety responses in different individuals. Ineffective emotions like anxiety and depression, according to Ellis, stem not from a precipitating event but from irrational interpretations and irrational beliefs. Rational Emotive Behavior therapists further posit that a person's irrational beliefs can distort their perspective (Ellis and Dryden,1997). Regardless of factual events, a person's thoughts and beliefs regarding their situation can contribute to the development of depressive and anxiety symptoms (Beck 1976; Ellis 1974). The literature reveals various studies supporting the relationship between irrational beliefs and mood disorders such as depressive disorders and anxiety disorders (MacInnes 2003; Malouf, Schutte, and McClelland 1992; Chan and Sun 2020; Terán et al. 2020; Turner et al. 2019; McDermut et al. 1997; Culhane and Watson 2003; Oltean et al. 2017; DiGiuseppe et al. 2017).

During the COVID-19 pandemic, professional healthcare workers were exposed to the consequences of a life-threatening disease and increased workloads, leading to higher levels of stress. Individuals with irrational beliefs may be more vulnerable to stress (Ellis 1994); when stressors are compounded by the adverse effects of irrational beliefs, the likelihood of improving psychological problems like depression and anxiety increases. In this context, clinical conditions such as anxiety and depressive symptoms are closely related to stress factors arising from external conditions, as well as the individual's internal evaluations, cognitive processes, and irrational beliefs about existing concrete situations (Chadwick et al. 1999).

The psychological effects caused by the pandemic can have long-lasting impacts and may reoccur more frequently in the future, and healthcare workers are among those with a high potential for being affected by future outbreaks. It seems that evidence-based research data is necessary to identify the outbreak's negative psychological effects and resulting psychiatric symptoms and to determine the potential contributing factors. In this context, identifying affected healthcare workers and promptly providing them with the necessary support is the responsibility of healthcare services.

This study investigates healthcare workers exposed to the COVID-19 pandemic to determine the effect of irrational beliefs on their depression and anxiety levels. The study would like to explain two questions:

1. Is there a significant relationship between the demographic characteristics of the participants (age, gender, marital status, etc.) and their irrational beliefs, depression, and anxiety levels?

2. Do the irrational beliefs of healthcare workers significantly predict their depression and anxiety levels?

## 2. Method

### 2.1. Participants and design

This study was designed using the convenience sampling method according to the correlational survey model. In this sample, data details are collected from the population in the fastest, and most economical way (Malhotra 2004). The study involved 212 male and female healthcare workers as participants. Data details were collected from 248 participants who met the exclusion and inclusion criteria for this study, and 36 questionnaire responses were excluded from the statistical analysis due to missing data. The inclusion criteria for the study were being 18 years of age or older, being a healthcare worker, and providing informed consent online. The exclusion criteria for the research were being under 18 years old, not being a professional healthcare worker, and not providing an informed consent form.

### 2.2. Measures

#### 2.2.1. Shortened General Attitude and Belief Scale (SGABS)

SGABS was developed by Lindner et al. (1999) and validated by Urfa and Urfa (2019) in Türkiye. The scale consists of 26 items measured on a five-point Likert scale and comprises seven subscales: Self-devaluation (4 items), De-valuation of others (3 items), Need for achievement (4 items), Need for approval (3 items), Need for comfort (4 items), Demand for justice (4 items), and Rationality (4 items). The Rationality subscale represents rational beliefs, while the other subscales represent irrational beliefs. High scores in each subscale indicate high belief levels—the reliability coefficients of the scale range from 0.79 to 0.84.

#### 2.2.2. The Beck Depression Inventory (BDI)

The BDI was developed by Beck et al. (1961) and validated by Hisli (1989) in Türkiye. It consists of 21 items measured on a four-point Likert scale that requires self-assessment and measures symptoms of depression. Scores on the scale range from a minimum of 0 to a maximum of 63. The Cronbach's alpha coefficient of the scale is 0.80. Scale scores between 5-9 indicate a normal mental state, scores between 10-18 indicate mild-moderate depression, scores between 19-29 indicate moderate to severe depression, and scores between 30-63 indicate severe depression. High scores on the scale indicate high levels of depression in individuals. The cutoff score for the scale is 17 (Savaşır and Şahin 1997). The internal consistency coefficient calculated for this study is 0.84.

#### 2.2.3. The Beck Anxiety Inventory (BAI)

The BAI was developed by Beck et al. (1988) and validated by Ulusoy et al. (1998) in Türkiye. The scale is a self-assessment scale used to measure the level and severity of anxiety and consists of 21 items measuring on a four-point Likert scale ranging from 0 to 3, where each item is scored as "not at all," "mildly," "moderately," or "severely." The total score on the scale ranges from 0 to 63, with high total scores indicating severe anxiety. Based on the BAI total score, anxiety symptoms are assessed; 0-7 points indicate minimal anxiety, 8-15 points indicate mild anxiety, 16-25 points indicate moderate anxiety, and 26-63 points indicate severe anxiety. For this study, the internal consistency coefficient for the scale is .93.

#### 2.2.4. Data Analysis

This study utilized different kinds of descriptive statistics like mean, standard deviation, skewness, and kurtosis values. The skewness values range from -0.10 to 1.56, and the kurtosis values range from 0.03 to -2.13. The data does not exhibit significant deviation from a normal distribution and thus falls within the limits of a normal distribution. Regarding multicollinearity among variables in this study, none of the correlation coefficients between variables exceeded 0.90. The presence of outliers in the collected data was evaluated using Mahalanobis distance (Tabachnick and Fidell, 2013). Upon examining the obtained data, it was observed that the distance values did not exceed the acceptable limits [$\chi 2(9) = 21.90$, $p > .001$]. When considering the values, it can be declared that the data is suitable for parametric analysis.

Independent samples t-test and one-way ANOVA were used to evaluate the mean differences between groups. Spearman and Pearson correlation coefficients, along with regression analysis, were used to assess the relationships between variables. IBM SPSS 25 software package was used to test the collected data in the study. Throughout the research .05 was determined to indicate statistical significance [$p < .05$].

#### 2.2.4. Procedure

Due to the physical isolation decision caused by the pandemic, data collection scales were transferred to the "Google Forms" platform, and the electronic link was disseminated to healthcare workers using social networking platforms. The sample of the study consisted of doctors, nurses, and midwives working in the field of family practice. Before the research began, the availability and technical functionality of the electronic research scales were tested and ensured to be problem-free. During the link sharing, participants were instructed to complete the scales only once. The data were collected between April and June 2021. The data collection tools consisted of a Demographic Information Form with 6 questions, a Shortened General Attitude and Belief Scale with 26 questions, the Beck Anxiety Inventory with 21 questions, and the Beck Depression Inventory with 21 questions, totaling 74 questions and 4 web pages. The administration of the scales was estimated to take an average of 15-18 minutes.

**Ethical standard:** This research and the method of collecting data from participants was approved by Istanbul Arel University of the Ethics Committee of the Department of Psychology at the University (Date 11.04.2022; Approval number 2022/07) and conformed with the 1964 Helsinki Declaration and its later modifications.

## 3. Results

The study sample consisted of 212 healthcare workers, ranging in age from 21 to 67 years of age (mean = 37.01, SD = 9.02). 85.4% of the participants were female, 72.2% were married, 49.1% had a university degree, 33.5% were doctors, 27.8% were midwives, and 38.7% were nurses.

41% of the participants have minimal anxiety, 25% have mild anxiety, 20.8% have moderate anxiety, and 13% have severe anxiety; 44.3% have mild-moderate depression, 17.5% have moderate-severe depression, and 1.4% have severe depression. See Table 1

**Table 1.** Levels of depression and anxiety

| Levels of Anxiety | N | % |
|---|---|---|
| Minimal Anxiety | 87 | 41 |
| Mild Anxiety | 53 | 25 |
| Moderate Anxiety | 44 | 20.8 |
| Severe Anxiety | 28 | 13.2 |
| Levels of Depression | | |
| Normal | 78 | 36.8 |
| Mild-Moderate Depression | 94 | 44.3 |
| Moderate-Severe Depression | 37 | 17.5 |
| Severe Depression | 3 | 1.4 |

t-Test Analysis indicated a significant difference by gender in the average scores of participants on the SGABS- Subscale of Devaluation of Others [t(209) = -2.00, p < .05] and BAI [t(209) = 2.58, p < .05]. Male participants showed higher average scores on the SGABS - Subscale of Devaluation of Others than female participants. However, female participants showed higher average scores on the BAI than male participants. No significant differences based on gender were found otherwise. See Table 2

ANOVA was used to compare professional participants' average scores on the SGABS, BAI, and BDI. There was no difference in participants' average scores by profession on the SGABS, BAI, and BDI.

Independent samples t-test was used to compare participants' average scores by marital status on the SGABS, Beck Anxiety Inventory, and BDI. Analysis indicates a statistically significant difference in the BAI scores among participants based on their marital status [t(200) = -2.32, p < .05]. The mean scores of single participants are higher than married participants. However, no significant differences were found in other measurements based on marital status. See Table 3

ANOVA was used to differentiate the mean scores on the SGABS, BAI, and BDI based on participants' education levels. There is no significant difference based on education in participants' average scores on the SGABS, Beck Anxiety Scale, and Beck Depression Scale.

Pearson correlation analysis evaluated the relationships between participants' average scores on the SGABS, Beck Anxiety Inventory, and Beck Depression Inventory.

The analysis identified a significant negative correlation between participants' age and their average scores on the Need for Achievement Subscale of the SGABS (r = -.14, p<.05), the Demand for Justice Subscale of the SGABS (r = -.23, p<.05), the Irrational Subfields total scores of the SGABS (r = -.18, p<.05), BDI (r = -.20, p<.05), and BAI (r = -.19, p<.05).

The analysis identified a significant positive correlation between participants' average scores on the BDI and their scores on the Need for Achievement Subscale of the SGABS (r = .18, p<.05), the Need for Comfort Subscale (r = .32, p<.05), and the Irrational Subfields total score of the SGABS (r = .23, p<.05).

The analysis identified a significant positive correlation between participants' average scores on the BAI and their scores on the Need for Achievement Subscale of the SGABS (r = .14, p<.05), the Need for Comfort Subscale (r = .29, p<.05), the Demand for Justice Subscale (r = .17, p<.05), and the Irrational Subfields total scores of the SGABS (r = .21, p<.05). See Table 4.

### 3.1. Regression Analyses

The study used Multiple Hierarchical Linear Regression Analysis to assess the predictive effect of general attitudes and beliefs on anxiety and depression levels. The results of the regression analysis evaluating the impact of health-

care workers' general attitudes and beliefs on their depression levels determined that the first block of the regression analysis included age and gender variables, and age had a significant predictive effect (ß=-.19, p<.01). However, it was determined that gender did not significantly contribute to the model (ß=.05, p>.05).

In the second block of the regression analysis, the sub-dimensions of general attitudes and beliefs were added to the model, and the model accounted for approximately 15% of the variance [F(9, 202) = 3.86, p = .00]. At this stage, only the average scores obtained from the Need for Comfort Subscale of the SGABS had a significant predictive effect on depression levels (ß=.33, p<.01); and the effect of age, which was determined in the previous stage, persisted (ß=-.15, p<.01).

Results of the regression analysis evaluating the effect of general attitudes and beliefs of healthcare workers on anxiety levels showed that the first block of the regression analysis included age and gender variables, and age (ß=-.16, p<.01) and gender (ß=.15, p<.01) had significant predictive effects.

In the second block of the regression analysis, the sub-dimensions of general attitudes and beliefs were added to the model, which accounted for approximately 14% of the variance [F (9, 202) = 3.66, p = .00]. At this stage, only the average scores obtained from the Need for Comfort Subscale of the SGABS had a significant predictive effect on anxiety levels (ß=.28, p<.01); and the effect of gender, which was determined to have an effect in the previous stage, persisted (ß=.15, p<.01). See Table 5

**Table 2.** Independent sample t-Test results for differences in general attitudes and beliefs, depression, and anxiety by gender

| | Cinsiyet | N | Ort. | S | T | sd | p |
|---|---|---|---|---|---|---|---|
| GABS Self-Devaluation Total score | Female | 181 | 5.66 | 2.32 | -0.72 | 209 | 0.47 |
| | Male | 30 | 5.99 | 2.39 | | | |
| GABS Self-Devaluation of others Total score | Female | 181 | 8.81 | 2.86 | -2.00 | 209 | **0.05** |
| | Male | 30 | 9.97 | 3.32 | | | |
| GABS Self-Need for achievement Total score | Female | 181 | 10.43 | 3.37 | -0.73 | 209 | 0.47 |
| | Male | 30 | 10.92 | 3.45 | | | |
| GABS Self- Need for approval Total score | Female | 181 | 6.28 | 2.49 | -1.16 | 209 | 0.25 |
| | Male | 30 | 6.85 | 2.45 | | | |
| GABS Self- Need for comfort Total score | Female | 181 | 12.31 | 3.44 | 0.80 | 209 | 0.43 |
| | Male | 30 | 11.78 | 3.29 | | | |
| GABS Self- Demand for justice Total score | Female | 181 | 15.12 | 3.71 | -0.21 | 209 | 0.83 |
| | Male | 30 | 15.27 | 3.80 | | | |
| GABS Rationality Total score | Female | 181 | 16.52 | 2.63 | 0.92 | 209 | 0.36 |
| | Male | 30 | 16.05 | 2.13 | | | |
| GABS Irrationality Total score | Female | 181 | 58.61 | 12.74 | -0.85 | 209 | 0.40 |
| | Male | 30 | 60.77 | 13.40 | | | |
| Beck Depression Inventory | Female | 181 | 12.70 | 7.93 | 1.35 | 209 | 0.18 |
| | Male | 30 | 10.63 | 6.48 | | | |
| Beck Anxiety Inventory | Female | **181** | **13.51** | **11.63** | **2.58** | **209** | **0.01** |
| | Male | **30** | **7.83** | **7.42** | | | |

**Table 3.** t-Test results of differention of general attitudes ant beliefs scale (GABS), depression, and anxiety levels based on marital status

| | Gender | N | Ort. | S | t | sd | p |
|---|---|---|---|---|---|---|---|
| GABS Self-Devaluation Total score | Married | 153 | 5.75 | 2.40 | 0.111 | 200 | 0.912 |
| | Single | 49 | 5.70 | 2.22 | | | |
| GABS Self-Devaluation of others Total score | Married | 153 | 9.04 | 3.02 | 0.967 | 200 | 0.335 |
| | Single | 49 | 8.57 | 2.72 | | | |
| GABS Self-Need for achievement Total score | Married | 153 | 10.58 | 3.39 | 0.112 | 200 | 0.911 |
| | Single | 49 | 10.51 | 3.53 | | | |
| GABS Self- Need for approval Total score | Married | 153 | 6.37 | 2.56 | -0.090 | 200 | 0.929 |
| | Single | 49 | 6.40 | 2.42 | | | |
| GABS Self- Need for comfort Total score | Married | 153 | 12.05 | 3.36 | -0.866 | 200 | 0.387 |
| | Single | 49 | 12.54 | 3.67 | | | |
| GABS Self- Demand for justice Total score | Married | 153 | 14.95 | 3.86 | -1.191 | 200 | 0.235 |
| | Single | 49 | 15.68 | 3.36 | | | |
| GABS Rationality Total score | Married | 153 | 16.42 | 2.65 | -0.065 | 200 | 0.948 |
| | Single | 49 | 16.45 | 2.48 | | | |
| GABS Irrationality Total score | Married | 153 | 58.73 | 13.03 | -0.319 | 200 | 0.750 |
| | Single | 49 | 59.41 | 13.14 | | | |
| Beck Depression Inventory | Married | 153 | 12.12 | 7.46 | -1.057 | 200 | 0.292 |
| | Single | 49 | 13.49 | 9.03 | | | |
| Beck Anxiety Inventory | Married | **153** | **11.47** | **9.77** | **-2.316** | **200** | **0.022** |
| | Single | **49** | **15.57** | **13.53** | | | |

**Table 4.** Results of Pearson Correlation Analysis for General Attitudes and Beliefs, Depression, and Anxiety

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Age | - | | | | | | | | | | |
| 2. Monthly Income (in Turkish Lira) | **.249**** | - | | | | | | | | | |
| 3. GABS Self-Devaluation Total score | -.05 | -.05 | - | | | | | | | | |
| 4. GABS Self-Devaluation of others Total score | -.11 | .01 | **.280**** | - | | | | | | | |
| 5. GABS Self-Need for achievement Total score | **-.142*** | -.05 | **.403**** | **.292**** | - | | | | | | |
| 6. GABS Self- Need for approval Total score | -.04 | .09 | **.452**** | **.254**** | **.467**** | - | | | | | |
| 7. GABS Self- Need for comfort Total score | -.12 | -.02 | **.287**** | **.292**** | **.473**** | **.352**** | - | | | | |
| 8. GABS Self- Demand for justice Total score | **-.226**** | -.08 | **.242**** | **.510**** | **.569**** | **.312**** | **.478**** | - | | | |
| 9. GABS Rationality Total score | -.01 | -.05 | **-.287**** | -.06 | -.13 | -.08 | -.12 | -.06 | - | | |
| 10. GABS Irrationality Total score | **-.176*** | -.03 | **.585**** | **.631**** | **.786**** | **.641**** | **.716**** | **.787**** | **-.168*** | - | |
| 11. Beck Depression Inventory | **-.199**** | .08 | .11 | .11 | **.176*** | .06 | **.322**** | .13 | .01 | **.227**** | - |
| 12. Beck Anxiety Inventory | **-.188**** | -.04 | .05 | .13 | **.137*** | .02 | **.294**** | **.172*** | .00 | **.208**** | **.558**** |

*p<.05, **p<.01

**Table 5.** Predictive Effect of General Attitudes and Beliefs on Depression and Anxiety Levels 1:The female gender was taken as the reference variable

| | | Predicted Variables | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Depression | | | | | Anxiety | | | | |
| Model | Predictor Variables | B | SH | B | t | p | B | SH | β | t | *p* |
| 1 | Constant | 17.47 | 2.75 | | 6.35 | 0.00 | 16.24 | 3.97 | | 4.10 | 0.00 |
| | **Gender** | 1.20 | 1.50 | 0.05 | 0.80 | 0.42 | **4.75** | **2.16** | **0.15** | **2.19** | **0.03** |
| | **Age** | **-0.16** | **0.06** | **-0.19** | **-2.78** | **0.01** | **-0.21** | **0.09** | **-0.16** | **-2.41** | **0.02** |
| 2 | Constant | 6.17 | 5.45 | | 1.13 | 0.26 | 1.74 | 7.95 | | 0.22 | 0.83 |
| | **Gender[1]** | 0.97 | 1.48 | 0.04 | 0.65 | 0.51 | **4.64** | **2.16** | **0.15** | **2.15** | **0.03** |
| | **Age** | **-0.14** | **0.06** | **-0.16** | **-2.39** | **0.02** | -0.16 | 0.09 | -0.12 | -1.83 | 0.07 |
| | GABS Self-Devaluation Total score | 0.17 | 0.26 | 0.05 | 0.63 | 0.53 | -0.10 | 0.39 | -0.02 | -0.26 | 0.79 |
| | GABS Self-Devaluation of others Total score | 0.14 | 0.21 | 0.05 | 0.68 | 0.50 | 0.31 | 0.30 | 0.08 | 1.04 | 0.30 |
| | GABS Self-Need for achievement Total score | 0.18 | 0.20 | 0.08 | 0.91 | 0.37 | 0.11 | 0.30 | 0.03 | 0.36 | 0.72 |
| | GABS Self- Need for approval Total score | -0.28 | 0.24 | -0.09 | -1.13 | 0.26 | -0.38 | 0.36 | -0.08 | -1.06 | 0.29 |
| | **GABS Self- Need for comfort Total score** | **0.74** | **0.18** | **0.33** | **4.13** | **0.00** | **0.91** | **0.26** | **0.28** | **3.49** | **0.00** |
| | GABS Self- Demand for justice Total score | -0.24 | 0.19 | -0.12 | -1.26 | 0.21 | -0.03 | 0.28 | -0.01 | -0.12 | 0.90 |
| | GABS Rationality Total score | 0.17 | 0.21 | 0.06 | 0.83 | 0.41 | 0.07 | 0.30 | 0.02 | 0.24 | 0.81 |
| | $R^2$ | 0.15 | | | | | 0.14 | | | | |
| | F | 3.86, p = .00 | | | | | 3.66, p = .00 | | | | |

## 4. Discussion

The study consisted of 212 professional healthcare workers, ranging in age from 21 to 67 years (Mean = 37.01, SD = 9.02). 85.4% of the participants were female, 72.2% were married, 49.1% were university graduates, 33.5% were doctors, 27.8% were midwives, and 38.7% were nurses.

The research examining demographic characteristics, irrational beliefs, anxiety, and depression levels revealed no significant differences related to the occupation (doctor, midwife, nurse) and education level among the participants. However, it was discovered that male participants had significantly higher levels of the irrational beliefs' subscale "devaluation of others," while female and unmarried participants had significantly higher levels of anxiety. Regression analysis indicated that the irrational beliefs subscale "the need for comfort" was a significant predictor of anxiety and depression. Additionally, it was found that age was a predictor of depression, and gender (female) was a predictor of anxiety.

Male employees had significantly higher scores on the irrational belief's subscale "devaluation of others" compared to female employees. In the literature, studies investigating the relationship between irrational beliefs and gender have reported different results. Some studies have found that there are no gender differences in irrational beliefs (Civitci 2006; Özer and Akgün 2015; Bilge and Arslan 2000: Macsinga and Dobrita 2010), while others have indicated that irrational beliefs vary by gender (Khaledian et al. 2013). Another group of researchers has presented findings related to men having irrational beliefs such as contempt/avoidance (Amutio and Smith 2008) and inflexibility/ rigidity (Koopmans et al. 1994). The findings of this study are consistent with related published in the literature.

An internal sense of inadequacy and weakness and feelings of lack of self-esteem are common to irrational beliefs. Detrimental irrational beliefs have been associated with negative general evaluations of oneself, others, and life circumstances and involve dichotomous evaluations of oneself, others, or life as good/bad or valuable/worthless, black / white (Szentagotai and Jones 2010). The extent to which male healthcare workers devalued others stemmed from the COVID-19 pandemic's increased demands and work environment hazards. Ellis points out that negative judgments (e.g., if someone treats me disrespectfully, it shows how truly bad they are) are irrational beliefs (Ellis

2001). Belittling and devaluing others are defense mechanisms compensating for inner feelings of worthlessness; they repair damage to self-esteem by projecting negative emotions onto others (Masterson 1993). Considering that both men and women go through gender-based (and therefore different) socialization processes, it can be argued that the genders may differ in their irrational and rational beliefs. Given the challenging impact of the pandemic conditions, it may be that males are implementing dysfunctional defense mechanisms, devaluing others to protect themselves and striving to feel more positive about themselves.

This study found that female participants scored higher on the Beck Anxiety Scale than male participants. Similarly, in their research with 1210 healthcare workers Wang et al. (2020) determined that anxiety levels were higher in women. In the study carried out with nurses caring for infected patients, Cebeci and Durmaz (2021) discovered that female nurses had higher levels of anxiety compared to male nurses. Many studies have reported that anxiety levels are higher in women (Polat and Coşkun 2020; Spoorthy et al. 2020; Arpacıoğlu et al. 2021). Findings from research conducted during the pandemic indicate that more women than men perceive H1N1 virus to be contagious and deadly, leading to higher levels of anxiety (Çırakoğlu 2011). The study findings are consistent with the related literature.

In this study, the higher levels of anxiety found among female employees can be associated with increased responsibilities both at home and in the workplace during the COVID-19 period. Women not only fulfill their professional responsibilities towards patients but also strive to meet the expectations of motherhood and spousal roles, a dual burden that can lead to greater challenges for women regarding their physical and mental well-being.

Anxiety is known to be a normal response arising in the case of uncertainty, threat, and exceptional life events. It is healthy to have concerns about COVID-19 (Leahy 2020). Exposure to any form of threat or danger naturally produces fear, heightened arousal, sensitivity to cues of threat and danger, mobilization in reaction to perceived threat, and activation or stimulation of the nervous system. Typically, once the perceived danger subsides, the parasympathetic system reestablishes balance and restores homeostatic balance (Carlson 2014). As a form of mental energy necessary for survival, anxiety can be accepted to motivate individuals to take precautions (including wearing protective masks against the virus, maintaining distance, and practicing other hygiene measures). However, anxiety has become a significant factor that continually feeds fear and hopelessness given the chronic nature of the pandemic, and the constant perception of threat and danger by female workers may generally increase anxiety levels. Though there was no significant difference in this study, the higher scores of female healthcare workers on the Need for Comfort Subscale Total score may indicate that the increased physical and mental burdens imposed by the pandemic have affected women more resulting in their greater need for absolute comfort. These individuals may believe in the accuracy of their thoughts without questioning them. Individuals' irrational beliefs can intensify their perception of the current situation, leading to increased anxiety levels.

In this study, unmarried participants scored significantly higher on the BAI than married participants. This differs from findings published in the literature on this topic, which are mixed; some studies have reported higher anxiety scores among married participants (Cao et al. 2020; Li et al. 2020), while other studies have reported higher anxiety scores among unmarried participants (Hao et al. 2020; Polat and Coşkun 2020; Lei et al. 2020). The higher anxiety in unmarried participants may indicate decreased perceived family support during the pandemic, which increases psychological symptoms. Healthcare workers who lack adequate social support risk improving mental health difficulties (Song et al. 2020). Consistent with this, healthcare workers who feel less loneliness during the pandemic are more optimistic and cope more effectively with stress (Xiao et al. 2020).

In this study the need for comfort emerged as a predictor of high anxiety levels, suggesting an association with various difficulties experienced during the pandemic. Extraordinary life experiences and psychological problems can be associated with a higher prevalence of irrational beliefs and a lower prevalence of rational beliefs. Research has found that psychological stress and distress are directly correlated to life problems and irrational beliefs (Balkis and Duru 2022; Jackson and Finney 2002; Och Dag et al. 2020; Terán et al. 2020; Turner et al. 2019) and inversely correlated to rational beliefs, (Duru and Balkis 2022; Oltean and David 2017). The literature shows significant relationships between irrational beliefs and anxiety (Buscmann et al. 2018; Dudău et al. 2015; Chan and Sun 2020; Hart and Hittner 1991; Turner et al. 2019; Warren and Dowden 2012). Additionally, it has been determined that rational beliefs work a protective role against the predictive effect of comfort needs, depression, and anxiety on emotional states (Balkis and Duru 2019). Therefore, the findings of this study are consistent with the findings of similar studies conducted in the literature.

Ellis (2003a) suggests that absolutist demands (e.g., "I must have comfortable living conditions") contribute to emotional distress and argues (2003b) that an increase in comfort needs or intolerance of discomfort contributes to the development of psychological distress. The inability to tolerate discomfort stems from irrational beliefs and is related to anxiety symptoms (Ellis 2003a, b), suggesting that life problems may be predictors of psychological distress, consistent with REBT's assumption (Rational Emotive Behavior Therapy) that irrational beliefs mediate between extraordinary life experiences and psychological issues (Duru and Balkis 2022; David et al. 2010). However, it has been shown that individuals exposed to extraordinary life experience lesser anxiety levels whenever they realistically perceive the current situation (Balkis and Duru 2019).

Unlike individuals who had the opportunity to stay in quarantine and work from home during the pandemic and who were well-positioned to protect their families from the COVID-19 virus, healthcare workers continued their duties actively. It is believed that healthcare workers are worried about infecting their families with the virus, occasioning stress and discomfort. İt is found that individuals who were able to take protective measures (such as maintaining distance and practicing hygiene) and engage in social isolation had lower levels of anxiety (Wang et al. 2020). However, this suggests that exposure to the life events brought about by the pandemic may lead individuals to catastrophize, experience frustration, and perceive themselves as incapable of coping with the situation. These results support the state that irrational beliefs can support and facilitate psychological problems. Ellis (2003) suggests that the need for comfort, expressed as "my conditions should be easy or at least not too difficult, and everything will be terrible if I don't get what I really want quickly and without much difficulty," makes individuals vulnerable to distress.

Irrational beliefs consist of frustration intolerance (referring to perfectionistic demands for comfort and satisfaction) (Szentagotai and Jones 2010). At the same time, the need for comfort relates to the inability to tolerate tension, irritability, and distress. Healthcare workers' insistence on having more comfortable working conditions, and their inability to cope when these demands are blocked, can lead to frustration, anxiety, and anger (Ellis 2012). These results confirm the explanations of Rational Emotive Behavior Therapy that rational beliefs enhance individuals' resilience in distressful situations (Caserta et al. 2010).

Our study found that gender, specifically being female, is a predictor of anxiety. Female participants had higher average scores on the Beck Anxiety Inventory than male participants. Some studies have revealed that women demonstrate higher scores of irrational beliefs like self-blame and self-criticism (Zwemer and Defenbacher 1984), catastrophizing and exaggeration of tasks (Amutio and Smith, 2008), need for achievement (Calvete and Cardeñoso 2005), need for approval (Calvete and Cardeñoso 2005; Koopmans et al. 1994), dependency on other people (Zwemer and Defenbacher 1984), and worry and affective dysregulation (Koopmans et al. 1994). That gender predicts anxiety is supported by the literature. Given their way of self-critical thinking (Luyten et al. 2007), self-analysis or negative self-evaluations (Heilbron et al. 2008), and negative perceptions of themselves compared to men (Calvete and Cardeñoso 2005), it appears that women are more prone to anxiety, a predilection compounded by the increased duties of female healthcare workers at home and in healthcare facilities during the pandemic. As the expectations of women as employees expanded during the pandemic, so did the expectations of motherhood and partnership. The resulting increased workload and heightened risk contributed to the escalation of irrational beliefs among female workers, which in turn exacerbated anxiety even more.

Another finding of this study is that the need for comfort is a predictor of depression. This is born out in the literature: others have documented a positive relationship between irrational beliefs, the need for comfort, and depression and anxiety (Buschmann et al. 2018; Chan and Sun, 2021). Intolerance of discomfort reflects an inability to adapt and tolerate unpleasant situations (Kassinove 1986). Meanwhile, a low frustration intolerance level makes negative and uncomfortable life events bearable and endurable (Hyland et al. 2014). The need for comfort can also be characterized by the belief that "life should often be comfortable and enjoyable, and I struggle to accept various difficulties in life" (Bernard 1998). When comfort is unrealistically and irrationally demanded, it can lead to a state known as "discomfort anxiety" where individuals perceive discomforting events as worse than they are (Ellis and Dryden 1987). According to Beck, depression arises from negative inferences individuals make about their experience due to faulty information processing. Additionally, as depression increases, there is a tendency to perceive negative thoughts as being more objective than they are in reality (Beck 1987). In the long run, the COVID-19 pandemic, along with the intense workload and the risk of contracting the virus, likely greatly increased fear, and anxiety among healthcare workers. As a result, they may feel psychologically worse and experience an increase in depressive feelings. Heightened levels of depression and anxiety can trigger irrational beliefs in individuals, leading to dysfunctional behaviors and rigid evaluations of themselves and the world around them. This can give rise to various cognitive distortions (Beck

et al. 1979).

Ellis (2003) has pointed out that individuals who experience loss in close relationships, work, and economic situations often face intense struggles. Individuals without emotional support and economic resources may experience discomfort anxiety and low frustration tolerance, which can push them to the edge of psychological issues. For example, during the pandemic, individuals who lack adequate social, economic, and psychological resources to maintain their well-being may struggle to tolerate discouragement and may suffer anxiety. High levels of discomfort and anxiety can contribute to feelings of despair and trigger depressive emotions, such that negative life events become associated with mounting irrational beliefs, which can promote the development of depression symptoms. This research finding seems parallel with the theoretical framework that emphasizes the contribution of irrational beliefs to the contribution of emotional distress (David et al. 2010).

Another finding of this study also indicated age to be a predictor of depression. The literature includes various studies demonstrating a significant correlation between age and depression. Research conducted with healthcare professionals has shown that as age increases, acute distress and depressive disorders increase (Song et al. 2020; Sun et al. 2020; Yang et al. 2020). Numerous studies have also identified being younger and having less professional experience as risk factors for mental symptoms (Elbay et al. 2020; Liang et al. 2020).

In this study, age as a predictor of depression can be discussed in the context of increasing health problems and susceptibility to various chronic diseases. Research indicates that chronic diseases typically beginning in middle age contribute to severe examples of the COVID-19 pandemic (Chen et al. 2020). Those at a greater likelihood of COVID because of age are more likely to experience fear and anxiety in response to this uncertain and dangerous situation. Furthermore, being at high risk for COVID-19, a disease for which a complete treatment has not yet been established, can trigger feelings of hopelessness and low morale. Healthcare professionals, who are considered part of the high-risk group due to their age (mean = 37.01, SD = 9.02), have continued their duties throughout the pandemic at high risk of contracting the virus. People at risk for severe forms of infection may experience higher levels of fear (Ouattara et al. 2021). Therefore, having a greater internal inclination towards anxiety or rigid beliefs expands the risk of concerns about the pandemic or perceiving oneself as especially vulnerable to the virus. The risks brought about by the pandemic can lead to stress, avoidance behaviors, and futile preventive efforts, all of which can result in pessimism and depression (Qui et al. 2020; Wang et al. 2020). As a result, the findings of this study appear to be consistent with the literature findings.

### 4.1. Limitations

There are limitations to this study. The cross-sectional research design of the study and lack of longitudinal follow-up limit observation of the long-term effects of the pandemic. Mandatory isolation measures during the pandemic limited data collection to a single center; reaching a limited number of healthcare workers prevented the inclusion of all healthcare workers. The data were collected online from a sample of healthcare professionals working in the field of family practice, with no possibility of comparing it with samples from other units. There is a requirement for larger sample sizes, studies with control groups, and multicenter observational studies.

## 5. Conclusion

This study investigated the relationships between family physicians, nurses, and midwives' irrational beliefs, their levels of anxiety, and depressive symptoms during the COVID-19 epidemic. The study found that male participants had significantly higher scores in the irrational beliefs - the devaluation of others subscale, while females and unmarried individuals had significantly greater anxiety. Additionally, there was a predictive effect of irrational beliefs – the need for comfort on anxiety for females, and a predictive effect of irrational beliefs – the need for comfort and age on depression.

These findings suggest that professional healthcare workers have been prone to excessive workloads, unsafe environments, and high levels of distress during the pandemic with inadequate opportunities for rest. It is expected that they, who have been at the forefront of the extraordinary working conditions during the pandemic, actively and effectively continue to combat the disease and maintain a healthy process even after the COVID-19 pandemic. Concerning the results of this study, male and female healthcare workers experience different problems, indicating there are gender-specific needs to consider. That unmarried workers have higher levels of anxiety symptoms suggests

family and social support play a significant role in the mental well-being of healthcare workers and may be protective in coping with the pandemic. Social support is important, particularly for healthcare workers living alone. Older healthcare workers may have concerns about being vulnerable to the pandemic; the perception of being at higher risk may contribute to greater psychological distress. Therefore, it is crucial to provide adequate pre-employment training, information on disease transmission and prevention, and clear protocols with transparent rules for healthcare workers on the frontlines, based on the risks they face. This can increase professional confidence, alleviate stress, and reduce mental health problems.

In crises, fear and irrational beliefs can lead individuals to engage in excessive rumination and catastrophization, with an exaggerated perception of the severity of their situation. Irrational thinking in healthcare workers has been triggered by pandemic working conditions, making them more prone to anxiety and depression. This can contribute to perceiving the current pandemic conditions as even more terrifying. REBT states that rational beliefs protect individuals against stressful situations by preventing dysfunctional behavior and emotions. It can be declared that rational beliefs have the potential power to increase resilience in stressful situations. Arguably, as irrational beliefs increase, depression and anxiety symptoms levels also increase; similarly, as depression and anxiety symptoms levels also increase, irrational beliefs increase. It appears important for healthcare workers to gain awareness of their irrational beliefs, develop rational skills to address them and strengthen psychological resilience to protect themselves. Developing intervention programs to reduce irrational beliefs and improve rational beliefs will help prevent healthcare professionals from developing mood and anxiety problems and help their psychological resilience.

**Ethical standard:** This research and the method of collecting data from participants was approved by Istanbul Arel University of the Ethics Committee of the Department of Psychology at the University (Date 11.04.2022; Approval number 2022/07) and conformed with the 1964 Helsinki Declaration and its later modifications.

## References

American Psychiatric Association (2013). *Diagnostic and Statistical Manual of Mental Disorders* (5th edn).10.1176/appi.books.9780890425596 Google Scholar

Amutio, A., & Smith, J. C. (2008). Stress and irrational beliefs in college students. *Ansiedad y Estrés*, 14(2–3), 211–220.

Arpacıoğlu, S., Baltalı, Z., & Ünübol, B. (2021). Burnout, fear of Covid, depression, occupational satisfaction levels and related factors in healthcare professionals in the COVID-19 pandemic. *Çukurova Medical Journal*, 88 – 100, 2021.

Ayanian, J. Z. (2020). Mental Health Needs of Health Care Workers Providing Frontline COVID-19 Care. *JAMA Health Forum*, 1(4), e200397.

Balkıs, M., & Duru, E. (2019). The protective role of rational beliefs on the relationship between irrational beliefs, emotional states of stress, depression and anxiety. *Journal of Rational-Emotive & Cognitive-Behavior Therapy,* 37(1), 96-112. https://doi.org/10.1007/s10942-018-0305-7.

Balkıs, M., & Duru, E. (2023). Negative Life Events Associated with COVID-19 and Psychological Distress: The Role of Irrational and Rational Beliefs. *J Rat-Emo Cognitive-Behav Ther* 41,144–161. https://doi.org/10.1007/s10942-022-00457-z.

Bannister, D. (1968). The Psychology of Anxiety. By Eugene E. Levitt, Bobbs-Merrill. 1967. Pp. 223. Price $6. *The British Journal of Psychiatry,* 114(508), 370-370. https://doi.org/10.1192/bjp.114.508.370.

Beck, A. T. (1976). *Cognitive Therapy and the Emotional Disorders.* New York: International Universities Press.

Beck, A. T. (1985). Theoretical perspectives on clinical anxiety. In A. H. Tuma & J. D. Maser (Eds.), *Anxiety and the Anxiety Disorders* (pp. 183–196). Lawrence Erlbaum Associates, Inc.

Beck, A. T. (1987). Cognitive models of depression. *Journal of Cognitive Psychotherapy,* 1, 5-37.

Beck, A. T., Epstein, N., Brown, G., & Steer, R. A. (1988). An inventory for measuring clinical anxiety: Psychometric properties. *Journal of Consulting and Clinical Psychology,* 56(6), 893–897. https://doi.org/10.1037/0022-006X.56.6.893.

Beck, A. T., Rush, A., Shaw, B., & Emery, G. (1979). *Cognitive Therapy of Depression*. New York: The Guilford Press.

Beck, A.T., Ward, C. H., Mendelson, M., Mock, J., & Erbaugh, J. (1961) An inventory for measuring depression. *Archives of General Psychiatry,* 4, 561-571.

Bernard, M.E. (1998). Validation of the General Attitude and Belief Scale. *Journal of Rational Emotive & Cognitive-Behavior Therapy,* 16,183–196. https://doi.org/10.1023/A:1024911014579.

Bilge, F., & Arslan, A. (2000). Problem solving skills of university students whose irrational thoughts are different. *Turkish Psychological Counseling and Guidance Journal,* 2 (13), 7-18.

Brown, G. W., & Harris, T. (1978). Social origins of depression: a reply. *Psychological Medicine,* 8(4), 577–588. https://doi.org/10.1017/s0033291700018791.

Buschmann, T., Horn, R. A., Blankenship, V. R., Garcia, Y. E., & Bohan, K. B. (2018). The relationship between automatic thoughts and irrational beliefs predicting anxiety and depression. *Journal of Rational-Emotive & Cognitive-Behavior Therapy,* 36(2), 137-162. https://doi.org/10.1007/s10942-017-0278-y.

Calvete, E., & Cardeñoso, O. (2005). Gender differences in cognitive vulnerability to depression and behavior problems in adolescents. *Journal of Abnormal Child Psychology,* 33(2), 179–192. https://doi.org/10.1007/s10802-005-1826-y.

Cao, W., Fang, Z., Hou, G., Han, M., Xu, X., Dong, J., & Zheng, J. (2020). The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry Researc*h, 287, 112934. https://doi.org/10.1016/j.psychres.2020.112934.

Carlson, N. R. (2014). *Foundations of Behavioral Neuroscience.* (Ed. Muzaffer Şahin), İstanbul: Nobel Yayınevi.

Caserta, D. A., Dowd, E. T., David, D., & Ellis, A. (2010). Rational and irrational beliefs in primary prevention and mental health. In D. David, S. J. Lynn, & A. Ellis (Eds.), *Rational and irrational beliefs: Research, theory, and clinical practice.* (pp. 173–194). Oxford University Press.

Cebeci, S.P., & Durmaz, H. (2021). Determination of Depression, Anxiety and Stress Levels among Nurses Caring for Corona Virus Patients. *Journal of Ankara Health Sciences*, 10(1), 46-56. https://doi.org/10.46971/ausbid.876837.

Chadwick, P., Trower, P., & Dagnan, D. (1999). Measuring Negative Person Evaluations: The Evaluative Beliefs Scale. *Cognitive Therapy and Research,* 23,549–559. https://doi.org/10.1023/A:1018776522497.

Chan, H. W. Q., & Sun, C. F. R. (2020). Irrational beliefs, depression, anxiety, and stress among university students in Hong Kong. *Journal of American College Health* : J of ACH, 69(8), 827–841. https://doi.org/10.1080/07448481.2019.1710516.

Chen, Y., Zhou, H., Zhou, Y., & Zhou, F. (2020). Prevalence of self-reported depression and anxiety among pediatric medical staff members during the COVID-19 outbreak in Guiyang, China. *Psychiatry Research*, 288, 113005. https://doi.org/10.1016/j.psychres.2020.113005.

Çırakoğlu, O. (2011). The Investigation of Swine Infl uenza (H1N1) Pandemic Related Perceptions in terms of Anxiety and Avoidance Variables. *Turkish Journal of Psychology*, 26(67), 49-64.

Çivitci, A. (2006). Irrational beliefs in adolescents: An investigation according to socio-demographic variables. *Pamukkale University Journal of Education,* 8(19), 9-19.

Culhane, S. E., & Watson, P. J. (2003). Alexithymia, irrational beliefs, and the rational-emotive explanation of emotional disturbance. *Journal of Rational-Emotive & Cognitive-Behavior Therapy,* 21(1), 57–72. https://doi.org/10.1023/A:1024133218634.

David, D., Lynn, S. J., & Ellis, A. (2010). *The role of rational and irrational beliefs in human functioning and disturbances: Implications for research, theory, and clinical practice.* Oxford University Press.

DiGiuseppe, R., Leaf, R., Gorman, B., & Robin, M. W. (2017). The development of a measure of irrational/rational beliefs. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, https://doi.org/10.1007/s10942-017-0273-3.

DiGiuseppe, R.A., Doyle, K.A., Dryden, W., & Backx W. (2014). *A practitioner's guide to rational emotive behavior therapy. Oxfor*d University Press.

Dryden, W., & Branch, R. (2008). *Fundamentals of rational emotive behaviour therapy: A training handbook.* John Wiley & Sons.

Dudău, D.P., Sfeatcu, I. R., Sfeatcu, C., & Dumitrache, M. A. (2015). Professional stress in relation to anxiety, depression and irrational beliefs among dental and psychotherapy students. *Procedia-Social and Behavioral Sciences*, 187, 158-162.

Duru, E., & Balkıs, M. (2022). COVID-19 Related Negative Life Events and Psychological Distress: The Role of Emotion and Cognitive Emotion Regulation Strategies. *Journal of Rational-Emotive and Cognitive-Behavior Therapy: RET*, 1–23. Advance online publication. https://doi.org/10.1007/s10942-022-00488-6.

Dutheil, F., Mondillon, L., & Navel, V. (2021). PTSD as the second tsunami of the SARS-Cov-2 pandemic. *Psychological Medicine,* 51(10), 1773–1774. https://doi.org/10.1017/S0033291720001336.

Elbay, R. Y., Kurtulmuş, A., Arpacıoğlu, S., & Karadere, E. (2020). Depression, anxiety, stress levels of physicians and associated factors in Covid-19 pandemics. *Psychiatry Researc*h, 290, 113130. https://doi.org/10.1016/j.psychres.2020.113130.

Ellis, A. & Dryden, W. (1987). *The Practice of Rational Emotive Therapy.* New York: Springer Publishing Company.

Ellis, A. (1974). Psychotherapy: Theory, research and practice. *Institute for Advanced Study in Rational Psychotherapy,* 11(3), 194-198.

Ellis, A. (1994). *Reason and emotion in psychotherapy, revised*. NY: Kensington.

Ellis, A. (2001). Overcoming Destructive Beliefs, Feelings, and Behaviors, Prometheus Books, New York.

Ellis, A. (2003a). Diferentiating preferential from exaggerated and musturbatory beliefs in rational emotive behavior therapy. In W. Dryden (Ed.), *Rational emotive behavior therapy: Theoretical developments.* (pp. 22–34). New York: Brunner Routledge.

Ellis, A. (2003b). Discomfort anxiety: A new cognitive-behavioral construct (Part 1). *Journal of Rational-Emotive & Cognitive-Behavior Therapy,* 21(3-4), 183–191. https://doi.org/10.1023/A:1025881810501.

Ellis, A., & Dryden, W. (1997). *The practice of rational emotive behavior therapy* (2nd ed.). Springer Publishing Co.

Greenberg, N., Docherty, M., Gnanapragasam, S., & Wessely, S. (2020). Managing mental health challenges faced by healthcare workers during covid-19 pandemic. *BMJ.* https://doi.org/10.1136/bmj.m1211.

Hao, F., Tan, W., Jiang, L., Zhang, L., Zhao, X., Zou, Y., Hu, Y., Luo, X., Jiang, X., McIntyre, R.

S., Tran, B., Sun, J., Zhang, Z., Ho, R., Ho, C., & Tam, W. (2020). Do psychiatric patients experience more psychiatric symptoms during COVID-19 pandemic and lockdown? A case-control study with service and research implications for immunopsychiatry. *Brain, Behavior, and Immunity,* 87, 100–106. https://doi.org/10.1016/j.bbi.2020.04.069.

Hart, K. E., & Hittner, J. B. (1991). Irrational beliefs, perceived availability of social support, and anxiety. *Journal of Clinical Psychology,* 47(4), 582–587. https://doi.org/10.1002/1097-4679(199107)47:4<582:aid-jclp2270470418>3.0.co;2-z

Heilbron, N., Prinstein, M. J., & Hilt, L. M. (2008). A lab-based examination of adolescent girls' expressed negative cognitions in response to an in vivo social stressor: Links to depressive symptoms. *International Journal of Cognitive Therapy,* 1(4), 298–312. https://doi.org/10.1521/ijct.2008.1.4.298.

Hisli, N. (1989). Reliability and validity of Beck Depression Inventory among university students. *Journal of Turkish Psychology,* 7, 3–13.

Holmes, E. A., O'Connor, R. C., Perry, V. H., Tracey, I., Wessely, S., Arseneault, L., Ballard, C., Christensen, H., Cohen Silver, R., Everall, I., Ford, T., John, A., Kabir, T., King, K., Madan, I., Michie, S., Przybylski, A. K., Shafran, R., Sweeney, A., Worthman, C. M., ... Bullmore, E. (2020). Multidisciplinary research priorities for the COVID-19 pandemic: a call for action for mental health science. *The Lancet Psychiatry,* 7(6), 547–560. https://doi.org/10.1016/S2215-0366(20)30168-1.

Hyland, P., Shevlin, M., Adamson, G., & Boduszek, D. (2014). The moderating role of rational beliefs in the relationship between irrational beliefs and posttraumatic stress symptomology. *Behavioural and Cognitive Psychotherapy*, 42(3), 312–326. https://doi.org/10.1017/S1352465813000064.

Jackson, P.B., & Finney, M. (2002). Negative life events and psychological distress among young adults. *Social Psychology Quarterly,* 65(2), 186–201. https://doi.org/10.2307/3090100.

Kassinove, H. (1986). Self-reported affect and core irrational thinking: A preliminary analysis. *Journal of Rational-Emotive Therapy,* 4(2), 119–130. https://doi.org/10.1007/BF01074170.

Kaya, B. (2020). Effects of pandemic on mental health. *Turkish Journal of Clinicay Psychiatry,* 23(2),123-124. https://doi.org/10.5505/kpd.2020.64325.

Khaledian, M., Saghafi, F., Moradi, S., & Khairkhah, Z. (2013). Investigating the Relationship of Irrational Beliefs with Anxiety and Their Effect in Two Different Academic Systems in Iran (Under graduate Collage students of Payam Nour University and Islamic Azad University). *Journal of International Research Journal of Applied and Basic Sciences,* 4(5), 1185-1191

Koopmans, P.C., Sanderman, R., Timmerman, I., & Emmelkamp, P.M.G. (1994). The Irrational Beliefs Inventory (IBI): Development and psychometric evaluation. *European Journal of Psychological Assessment*, 10(1), 15-27.

Leahy, R.L. (2020). Coronavirus Anxiety: How to handle fear while pursuing safety. Retrieved May,4,2023 from https://www.psychologytoday.com/us/blog/anxietyfiles/202003/coronavirus-anxiety.

Leal, P.C., Goes, T.C., da Silva, L.C.F., & Teixeira-Silva, F. (2017). Trait vs State anxiety in different threatening situations. Trends in *Psychiatry and Psychotherapy*, 39(3), 147–157. https://doi.org/10.1590/2237-6089-2016-0044.

Lei, L., Huang, X., Zhang, S., Yang, J., Yang, L., & Xu, M. (2020). Comparison of Prevalence and Associated Factors of Anxiety and Depression Among People Affected by versus People Unaffected by Quarantine During the COVID-19 Epidemic in Southwestern China. Medical science monitor: *International Medical Journal of Experimental and Clinical Research,* 26, e924609. https://doi.org/10.12659/MSM.924609.

Li, Z., Ge, J., Yang, M., Feng, J., Qiao, M., Jiang, R., Bi, J., Zhan, G., Xu, X., Wang, L., Zhou, Q., Zhou, C., Pan, Y., Liu, S., Zhang, H., Yang, J., Zhu, B., Hu, Y., Hashimoto, K., Jia, Y., Yang, C. (2020). Vicarious traumatization in the general public, members, and non-members of medical teams aiding in COVID-19 control. Brain, *Behavior, and Immunity,* 88,916–919. https://doi.org/10.1016/j.bbi.2020.03.007.

Liang, Y., Chen, M., Zheng, X., & Liu, J. (2020). Screening for Chinese medical staff mental health by SDS and SAS during the outbreak of COVID-19. *Journal of Psychosomatic Research*, 133, 110102. https://doi.org/10.1016/j.jpsychores.2020.110102.

Lindner, H., Kirkby, R., Wertheim, E., & Birch, P. (1999). A brief assessment of irrational thinking: The shortened General Attitude and Belief Scale. *Cognitive Therapy and Research*, 23(6), 651–663. https://doi.org/10.1023/A:1018741009293.

Liu, J., Zhang, S., Wu, Z., Shang, Y., Dong, X., Li, G., Zhang, L., Chen, Y., Ye, X., Du, H., Liu, Y., Wang, T., Huang, S., Chen, L., Wen, Z., Qu, J., & Chen, D. (2020). Clinical outcomes of COVID-19 in Wuhan, China: a large cohort study. *Annals of Intensive Care*, 10(1), 99. https://doi.org/10.1186/s13613-020-00706-3.

Luyten, P., Sabbe, B., Blatt, S. J., Meganck, S., Jansen, B., De Grave, C., Maes, F., & Corveleyn, J. (2007). Dependency and self-criticism: relationship with major depressive disorder, severity of depression, and clinical presentation. *Depression and Anxiety,* 24(8), 586–596. https://doi.org/10.1002/da.20272.

MacInnes, D. (2003). Evaluating an assessment scale of irrational beliefs for people with mental health problems. *Nurse Researcher,* 10(4), 53–67. https://doi.org/10.7748/nr2003.07.10.4.53.c5907.

Macsinga, I., & Dobrita, O. (2010). More educated, less irrational: Gender and educational differences in perfectionism and irrationality. *Romanian Journal of Applied Psychology*, 12(2), 79-85.

Malhotra, N. K., Kim, S. S., & Agarwal, J. (2004). Internet Users' Information Privacy Concerns (IUIPC): The Construct, the Scale, and a Causal Model. *Information Systems Research,* 15(4), 336–355. https://doi.org/10.1287/isre.1040.0032.

Masiero, M., Mazzocco, K., Harnois, C., Cropley, M., & Pravettoni, G. (2020). From Individual To Social Trauma: Sources Of Everyday Trauma In Italy, The US And UK During The Covid-19 Pandemic. Journal of trauma & dissociation : *The Official Journal of the International Society for the Study of Dissociation (*ISSD), 21(5), 513–519. https://doi.org/10.1080/15299732.2020.1787296.

Masterson, J. F. (1993). *The emerging self: A developmental, self and object relations approach to the treatment of closet narcissistic disorder of the self.* New York: Brunner/Mazel.

McDermut, J. F., Haaga, D. A. F., & Bilek, L. A. (1997). Cognitive bias and irrational beliefs in major depression and dysphoria. *Cognitive Therapy and Research,* 21(4), 459–476. https://doi.org/10.1023/A:1021936427625.

Naldan, M. E., Karayağmurlu, A., Yayık, M., & Arı, M. A. (2019). Burnout, Job Satisfaction, Depression on the Healthcare Professionals Working in the Operation Room. / *Selcuk Medıcal Journal,* 35(3), 152-8. https://doi.org/10.30733/std.2019.01117.

O'Donohue, W., Fisher, J. & Hayes, S. (2009). *Cognitive Behavior Threapy: Appliying Emricially Supported Tecniques in Your Practise.* New Jersey: John Wiiley&Sons.

Och Dag, Y. N., Mehlig, K., Rosengren, A., Lissner, L., & Rosvall, M. (2020). Negative emotional states and negative life events: Consequences for cardiovascular health in a general population. *Journal of Psychosomatic Research*, 129, 109888. https://doi.org/10.1016/j.jpsychores.2019.109888.

Oltean, H. R., Hyland, P., Vallières, F., & David, D. O. (2017). An empirical assessment of REBT models of psychopathology and psychological health in the prediction of anxiety and depression symptoms. *Behavioural and Cognitive Psychotherapy.* https://doi.org/10.1017/S1352465817000133.

Ouattara, E., Bruandet, A., Borde, A., Lenne, X., Binder-Foucard, F., Le-Bourhis-Zaimi, M., Muller, J., Tran ba loc, P., Séguret, F., Tezenas du Montcel, S., & Gilleron, V. (2021). Risk factors of mortality among patients hospitalised with COVID-19 in a critical care or hospital care unit: Analysis of the French national medicoadministrative database. *BMJ Open Respiratory Research,* 8(1), e001002. https://doi.org/10.1136/bmjresp-2021-001002.

Özer, E. A., & Akgün, E. Ö. (2015). The effects of irrational beliefs on academic motivation and academic self-efficacy of candidate teachers of computer and instructional technologies education department. *Procedia - Social and Behavioral Sciences,* 197, 1287 – 1292.

Polat, Ö. P., & Coşkun, F. (2020). Determining the Relationship Between Personal Protective Equipment Uses of Medical Healthcare Workers and Depression, Anxiety and Stress Levels in the COVID-19 Pandemic. *Medical Journal of Western Black Sea*, 4(2), 51-58. https://doi.org /10.29058/mjwbs.2020.2.3.

Robichaud, M., Koerner, N., & Dugas, M. J. (2019). Cognitive behavioral treatment for generalized anxiety disorder: *From Science to Practice* (2nd ed.). Routledge/Taylor & Francis Group. https://doi.org/10.4324/9781315709741.

Rossi, R., Socci, V., Pacitti, F., Di Lorenzo, G., Di Marco, A., Siracusano, A., & Rossi, A. (2020). Mental Health Outcomes Among Frontline and Second-Line Health Care Workers During the Coronavirus Disease 2019 (COVID-19) Pandemic in Italy. *JAMA Network Open*, 3(5), e2010185. https://doi.org/10.1001/jamanetworkopen. 2020.10185.

Savaşır, I. & Şahin, N. H. (1997). *Bilişsel-davranışçı terapilerde değerlendirme: Sık kullanılan ölçekler.* Ankara: Türk Psikologlar Derneği Yayınları.

Simione, L., & Gnagnarella, C. (2020). Differences Between Health Workers and General Population in Risk Perception, Behaviors, and Psychological Distress Related to COVID-19 Spread in Italy. *Frontiers in Psychology*, 11, 2166. https://doi.org/10.3389/fpsyg.2020.02166.

Song, X., Fu, W., Liu, X., Luo, Z., Wang, R., Zhou, N., Yan, S., & Lv, C. (2020). Mental health status of medical staff in emergency departments during the Coronavirus disease 2019 epidemic in China. *Brain, Behavior, and Immunity*, 88, 60–65. https://doi.org/10.1016/j.bbi.2020.06.002.

Spoorthy, M. S., Pratapa, S. K., & Mahant, S. (2020). Mental health problems faced by healthcare workers due to the Covıd-19 pandemic–A review. *Asian Journal of Psychiatry,* 51, 102119. https://doi.org/10.1016/j.ajp.2020.102119.

Sun, N., Wei, L., Shi, S., Jiao, D., Song, R., Ma, L., Wang, H., Wang, C., Wang, Z., You, Y., Liu, S., & Wang, H. (2020). A qualitative study on the psychological experience of caregivers of COVID-19 patients. *American Journal of Infection Contro*l, 48(6), 592–598. https://doi.org/10.1016/j.ajic.2020.03.018.

Szentagotai, A., & Jones, J. (2010). The behavioral consequences of irrational beliefs. In D. David, S. J. Lynn, & A. Ellis (Eds.), *Rational and irrational beliefs: Research, theory and clinical practice* (pp. 75–197). New York: Oxford University Press.

Tabachnick, B. G., & Fidell, L. S. (2013). *Using Multivariate Statistics* (6th ed.). Boston, MA: Pearson.

Terán, V. G., Velásquez, E. E., & Fuentes, M. A. (2020). Irrational thinking and psychological distress: A cross-racial/ethnic examination. *Personality and Individual Differences*, 164,110102. doi:10.1016/j.paid.2020.110102.

Tian, F., Li, H., Tian, S., Yang, J., Shao, J., & Tian, C. (2020). Psychological symptoms of ordinary Chinese citizens based on SCL-90 during the level I emergency response to COVID-19. *Psychiatry Research*, 288, 112992. https://doi.org/10.1016/j.psychres.2020.112992.

Turner, M. J., Carrington, S., & Miller, A. (2019). Psychological distress across sport participationgroups: The mediating efects of secondary irrational beliefs on the relationship between primary irrational beliefs and symptoms of anxiety, anger, and depression. *Journal of Clinical Sport Psychology,* 13(1), 17–40. https://doi.org/10.1123/jcsp.2017-0014.

Ulusoy, M., Şahin, N., & Erkman, H. (1998). Turkish version of the beck anxiety inventor, psychometric properties. *Journal of Cognitive Psychotherapy: An International Quarterly*, 12(2), 28-35.

Urfa, O., & Urfa, D. T. (2019). The Adaptatıon Of Shortened General Attıtude And Belıef Scale Into Turkısh. *International Journal of Turkish Education Sciences*, 7(12), 53-61.

Wang, C., & Zhao, H. (2020). The Impact of COVID-19 on Anxiety in Chinese University Students. *Frontiers in Psychology,* 11. doi:10.3389/fpsyg.2020.01168.

Warren, J. M., & Dowden, A. R. (2012). Elementary School Teachers' Beliefs and Emotions: Implications for School Counselors and Counselor Educators. *Journal of School Counseling*, 10, 1-32.

World Health Organization (2021) WHO coronavirus (COVID-19) dashboard. Retrieved from https:// covid.19.who.int.

Xiao, H., Zhang, Y., Kong, D., Li, S., & Yang, N. (2020). The Effects of Social Support on Sleep Quality of Medical Staff Treating Patients with Coronavirus Disease 2019 (COVID-19) in January and February 2020 in China. Medical science monitor : *International Medical Journal of Experimental and Clinical Research,* 26, e923549. https://doi.org/10.12659/MSM.923549.

Xiong, J., Lipsitz, O., Nasri, F., Lui, L. M. W., Gill, H., Phan, L., Chen-Li, D., Iacobucci, M., Ho, R., Majeed, A., & McIntyre, R. S. (2020). Impact of COVID-19 pandemic on mental health in the general population: A systematic review. *Journal of Affective Disorders,* 277, 55–64. https://doi.org/10.1016/j.jad.2020.08.001.

Yang, S., Kwak, S. G., Ko, E. J., & Chang, M. C. (2020). The Mental Health Burden of the COVID-19 Pandemic on Physical Therapists. *International Journal of Environmental Research and Public Health,* 17(10), 3723. https://doi.org/10.3390/ijerph17103723.

Zwemer, W. A., & Deffenbacher, J. L. (1984). Irrational beliefs, anger, and anxiety. *Journal of Counseling Psychology,* 31(3), 391–393. https://doi.org/10.1037/0022-0167.31.3.391.