

# Evaluation of health anxiety in adults admitting to primary healthcare institutions

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## ABSTRACT

**OBJECTIVE:** Health anxiety is defined as the negative over-interpretation of the usual physical sensations, although the person does not have any physical illness. The study aims to evaluate the health anxiety levels of individuals over the age of 18 who admit to primary healthcare institutions in Eskisehir and the factors that may be associated with it.

**METHODS:** This is a cross-sectional study. The study was conducted in adults who admitted to primary healthcare institutions in Eskisehir. The study group consists of 1200 individuals. For the purpose of collecting data, a questionnaire including the questions regarding the factors related to health anxiety and the Health Anxiety Scale were used. In the analysis of the data, a logarithm of The Short Health Anxiety Inventory (SHAI) scores was performed to determine the factors affecting the inventory score and hierarchical multiple linear regression analysis was used.

**RESULTS:** The total scores from The SHAI ranged from 1 to 47, with an mean of 16.4±8.7 and a median score of 15. Of 41.9% of study group scored above mean score. Female gender, deterioration of family income, presence of chronic disease, worsening of general health status, symptoms of mental and behavioral disorders, high number of admissions to health institutions, and hospitalization history were found to be factors affecting the level of health anxiety.

**CONCLUSION:** Health anxiety was found to be an important problem among those who admitted to primary healthcare institutions in Eskisehir. Providing education to individuals in risky groups in terms of health anxiety, and these groups should be closely monitoring in terms of health anxiety and providing psychosocial support when necessary will prevent excessive use of health services in the long-term.

*Keywords: Health anxiety; mental health; primary healthcare.*

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Health anxiety which is a subtitle of anxiety disorders is defined as the negative over-interpretation of the usual physical sensations, although there is no physical illness in the person. The basis of health anxiety lies in believing that a person has a serious illness and/or thinking that his current illness will cause bad results [1–5].

In addition, mild health anxiety that can be seen in every segment of the society is not considered a pathological disorder and causes the person to turn to appropriate healthcare and avoid dangerous situations to protect his health and take measures. However, the severe form with a higher level leads to the thought that it

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will create serious diseases, somatization, and all kinds of hypochondriac pursuits especially in patients with panic disorder [4, 6].

The main psychiatric disorder with health anxiety is hypochondriasis and it is thought that these two conditions have a successive continuity. While hypochondriasis is a clinical expression that corresponds to disease classifications such as ICD or DSM, health anxiety with similar symptoms is interpreted as a more socially used expression in daily life [2, 7, 8]. According to DSM V, health anxiety is classified among somatic symptom disorders and illness anxiety disorders [3]. In a review, the frequency of health anxiety is reported to range between 2.1 and 13.1% [2].

Health anxiety has an important role in the development of anxiety disorders in general, shaping the clinical situation and emerging complications. Furthermore, it is stated that it is associated with other psychiatric disorders such as social phobia and obsessive-compulsive disorder. There is also a high level of somatic symptoms and anxiety in the etiology of major depressive disorder [3, 5, 9]. From this point of view, it is seen that health anxiety is not an isolated illness and has an important place in understanding and monitoring other psychiatric disorders [5, 6, 9].

The increase in the frequency of admitting to health services in individuals with health anxiety is important for the health economy and the effectiveness of health services. Excessive and unnecessary admissions of these individuals to health institutions lead to unnecessary laboratory tests, unnecessary use of resources, and unnecessary health expenditures. Besides, this causes loss of workforce in health and insufficient time for real cases. When evaluated from all these aspects, health anxiety becomes a costly disorder from a social point of view [10–13].

Considering all these, studies on health anxiety provide the determination of the individual's perceptions and behaviors related to his health and offers a different perspective on the approach to other diseases that the individual is associated with. The study aims to evaluate the health anxiety levels of individuals over the age of 18 who admit to primary healthcare institutions in Eskisehir and the factors that may be associated with it. Results of this study will be a guide in terms of preventing unnecessary health-care admissions in the long-term and maintaining efficiency in the health economy and health-care services.

### Highlight key points

- Health anxiety is associated with high number of admissions to health institutions.
- Health anxiety is higher in people with mental and behavioral disorders.
- As the general health status worsens, the level of health anxiety increases.

## MATERIALS AND METHODS

### Study Design and Participants

The study is a cross-sectional study conducted in adults admitting to primary healthcare institutions in Eskisehir which is among the developed cities in Türkiye and has a population of 887,475 [14].

There is an education and research area that is affiliated with Eskisehir Osmangazi University, where community-based research is conducted. Each of six Family Health Centers in the study area was accepted as one cluster and the study was done in three clusters (Sivrihisar, Beylikova, Alpu) determined by random sampling. In the study, the sample size for each cluster was calculated as 392 by taking 95% confidence level, 5% margin of error, health anxiety frequency 15%, and design effect 2. The study group consisted of 1200 people over the age of 18 who admitted to family health centers and agreed to participate in the study. Those who did not agree to participate in the study, those under 18 years of age, and those who could not be contacted due to cognitive impairment were not included in the study.

### Measures and Procedures

By the purpose of the study, a questionnaire form was prepared using the literature [1, 6, 12, 15–24]. The questionnaire form consisted of two parts. The first part was including questions about the sociodemographic characteristics of individuals (age, gender, marital status, education level, family income, and child-bearing status) and some factors that may be associated with health anxiety (presence of chronic disease with a physician diagnosis, presence of health insurance, mental and behavioral disorder symptoms, general health status, number of admissions to any health institution in the last p year, and hospitalization in the past 1 year). The second part was composed of The Short Health Anxiety Inventory (SHAI).

The SHAI was developed in 2002 by Salkovskis et al. [25]. The Turkish validity and reliability study of the inventory was conducted in 2013 by Aydemir et al. [5]. The inventory consists of 4-point Likert-scale (never=0 and always=3) 18 questions. The score that can be obtained from the inventory varies between 0 and 54 and it is accepted that the level of health anxiety increases as the score increases. In the Turkish validity and reliability study, the Cronbach's alpha coefficient showing the internal consistency of the scale was given as 0.918 [5].

During the study, individuals who admitted to primary healthcare institutions were informed about the subject and purpose of the study. Verbal consent was obtained from those who agreed to participate in the study. The previously prepared questionnaire forms were filled out by the researchers through the face-to-face interview method. This process took approximately 20–25 min.

In the study, the family income of individuals was evaluated as "high, medium, and low" according to their perceptions. General health status was evaluated as "good, medium, and bad" by questioning how people define their health status. Those who declared that they had been diagnosed with chronic disease by a physician before were accepted as "they have a physician-diagnosed chronic disease." Likewise, the person's state of having a mental and behavioral disorder (psychiatric illness) and experiencing symptoms of mental and behavioral disorders was also evaluated according to the person's response to the relevant questions.

### Statistical Analysis

The data obtained were evaluated in SPSS (Version 15.0) statistical package program on the computer. In the presentation of study data, qualitative data were presented with frequency and percentage values, quantitative data were presented with mean, median, and distribution values. The suitability of the health anxiety score, which is the dependent variable of the study, to normal distribution was examined with the Shapiro–Wilk test and in the graphs. In the analysis of the data, Mann–Whitney U and Kruskal–Wallis tests, and a hierarchical multiple linear regression analysis were applied by taking the logarithm of the SHAI scores to determine the factors affecting the inventory score. In multiple linear regression analysis, sociodemographic characteristics that were found to be related to health anxiety (age, gender, marital status, education level, childbearing status, and family income) were taken in model 1. Factors found to be significant in model

1 and the person's health status (presence of chronic disease, general health status, and mental and behavioral disorder symptoms) were analyzed in model 2. Factors that were found to be significant in model 2 and the features related to the use of health services (the number of admissions to any health institution in the past 1 year and the history of hospitalization in the past 1 year) were also analyzed in model 3. Although it is not significant in model 1 as it is an important confounding factor, the age variable was included in both model 2 and model 3. The statistical significance value was accepted as  $p \leq 0.05$ .

### Ethical Approval

The study was approved by Eskisehir Osmangazi University Non-Interventional Clinical Research Ethics Committee (Judgement's reference number: 80558721/G-278, date: October 04, 2017). Verbal consent was obtained from all participants before collecting data.

## RESULTS

### Descriptive and Univariate Analysis

The ages of 1200 people participating in the study ranged from 18 to 88, with a mean of  $41.3 \pm 15.2$ . Of 51.6% the participants were male. The total scores received from the SHAI ranged from 1 to 47, with a mean of  $16.4 \pm 8.7$  and a median of 15. Of 41.9% the study group scored above mean score.

The scores obtained from SHAI were higher in women, in aged 65 and over, in those with a primary or lower education level, in those with low family income, and with childbearing. Health anxiety scores were highest in those who divorced/widow, then in married people, and the lowest was in single people. The distribution of the scores from the SHAI in the study group according to some sociodemographic characteristics is given in Table 1.

The scores from SHAI were higher in patients with chronic diseases, in those having hospitalization in the past 1 year and those with symptoms of mental and behavioral disorders. Besides, as the general health status worsened and the number of admissions to health institutions increased in the past 1 year, the scores obtained from SHAI increased. The distribution of the scores of the study group from the SHAI according to health-related factors that may be related to health anxiety is given in Table 2.

Circulatory system diseases ( $n=175$ , 34.2%) were the most common among the chronic diseases diagnosed by physicians in the study group. Endocrine diseases

**TABLE 1.** Distribution of the scores from the short health anxiety inventory according to sociodemographic characteristics

Sociodemographic characteristics (n=1200)	%	The short health anxiety inventory score	
		Mean±SD	Median (min-max)
<b>Age<sup>a</sup></b>			
18–24	14.3	15±8	14 (1–43)
25–44	45.3	16±8	14 (1–47)
45–64	32.2	17±9	16 (1–43)
≥65	8.2	20±11	21 (1–43)
<b>Gender<sup>a</sup></b>			
Male	51.6	15±8	13 (1–47)
Female	48.4	18±9	17 (1–44)
<b>Education level<sup>a</sup></b>			
University and above	31.4	15±7	14 (1–41)
High school	21.7	15±8	14 (1–47)
Primary and below	46.9	18±9	17 (1–44)
<b>Marital status<sup>a</sup></b>			
Married	66.9	16±9	15 (1–44)
Single	24.7	15±8	14 (1–47)
Divorced/widow	8.4	21±10	19 (4–43)
<b>Childbearing<sup>a</sup></b>			
No	30.7	15±8	14 (1–47)
Yes	69.3	17±9	16 (1–44)
<b>Family income<sup>a</sup></b>			
Low	19.5	20±10	19 (1–43)
Medium	73.5	15±8	14 (1–47)
High	7.0	15±9	13 (2–39)

a: P value for Mann–Whitney U and Kruskal–Wallis test  $\leq 0.001$ ; SD: Standard deviation.

es (n=126, 28.0%), respiratory system diseases (n=51, 11.3%), digestive system diseases (n=39, 8.7%), nervous system and sensory organs diseases (n=30, 6.7%), and mental and behavioral disorders (n=29, 6.4%) followed circulatory system diseases, respectively. It was seen that those with mental and behavioral disorders got the highest score from SHAI (mean±SD=28.0±8.0, median=28.0). The score of those with mental and behavioral disorders was higher than those with endocrine (21.0, p=0.018), digestive system (20.0, p=0.013), and circulatory system disease (19.0, p=0.001). The median and extreme values of the scores obtained from The SHAI in the study group are given in Figure 1.

**TABLE 2.** Distribution of the scores from the short health anxiety inventory by health-related factors

Factors related to health anxiety (n=1200)	%	The short health anxiety inventory score	
		Mean±SD	Median (min-max)
<b>Presence of chronic disease<sup>a</sup></b>			
No	71.8	15±8	14 (1–47)
Yes	28.2	21±10	19 (2–44)
<b>General health status<sup>a</sup></b>			
Good	60.1	14±7	13 (1–43)
Medium	34.5	19±9	18 (1–47)
Bad	5.4	29±10	29 (4–44)
<b>Mental and behavioral sign of disorder<sup>a</sup></b>			
Not experienced	79.6	15±8	14 (1–47)
Experienced	20.4	23±10	22 (4–44)
<b>Health insurance</b>			
Yes	92.3	16±9	15 (1–47)
No	7.7	18±10	17 (1–43)
<b>Number of admissions to any health institution in the last 1 year<sup>a</sup></b>			
1	27.4	13±8	13 (1–47)
2–3	36.6	15±7	14 (1–41)
4 and above	36.0	20±10	18 (1–44)
<b>Hospitalization history in the last 1 year<sup>a</sup></b>			
No	88.7	16±8	14 (1–47)
Yes	11.3	22±10	22 (3–44)

a: P value for Mann–Whitney U and Kruskal–Wallis test  $\leq 0.001$ ; SD: Standard deviation.

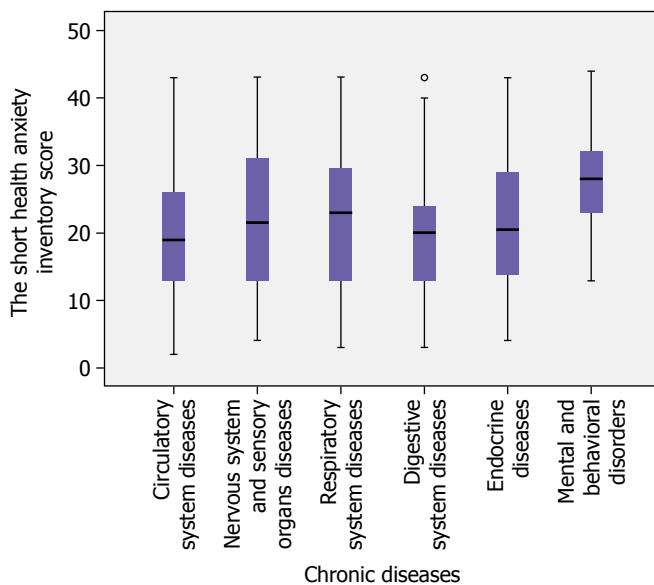
### Multivariate Analysis

Multivariate linear regression analysis was performed to determine the factors related to health anxiety. Factors affecting health anxiety were found in multivariate linear regression analysis as gender, family income, chronic disease, general health status, presence of mental and behavioral disorder symptoms, the number of admissions to any health institution in the past 1 year, and a history of hospitalization in the past 1 year (F: 44.204, p $\leq 0.001$ , R<sup>2</sup>: 0.229). Multiple hierarchical linear regression results according to the sociodemographic, health status and health-care use characteristics of the health anxiety score are given in Table 3.

**TABLE 3.** Multiple linear regression results of health anxiety score by associated factors

Features	Model 1B (95% CI)	Model 2B (95% CI)	Model 3B (95% CI)
Age	0.016 (-0.007–0.038)	-0.016 (-0.036–0.005)	-0.015 (-0.034–0.004)
Gender	0.117 (0.088–0.147) <sup>c</sup>	0.093 (0.065–0.120) <sup>c</sup>	0.085 (0.057–0.113) <sup>c</sup>
Marital status	0.036 (0.010–0.062) <sup>b</sup>	0.008 (-0.013–0.030)	
Childbearing	0.031 (-0.013–0.075)		
Education level	0.023 (0.003–0.042) <sup>a</sup>	0.011 (-0.007–0.029)	
Family income	0.064 (0.032–0.095) <sup>c</sup>	0.031 (0.001–0.061) <sup>a</sup>	0.035 (0.007–0.064) <sup>a</sup>
Presence of chronic disease		0.063 (0.026–0.100) <sup>c</sup>	0.040 (0.003–0.078) <sup>a</sup>
General health status		0.101 (0.074–0.128) <sup>c</sup>	0.088 (0.061–0.115) <sup>c</sup>
Mental and behavioral sign of disorder		0.127 (0.091–0.163) <sup>c</sup>	0.116 (0.081–0.152) <sup>c</sup>
Frequency of admission to any health institution in the last 1 year			0.040 (0.021–0.059) <sup>c</sup>
Hospitalization history in the last 1 year			0.066 (0.020–0.111) <sup>b</sup>
	R <sup>2</sup> : 0.095 F: 20.953 <sup>c</sup>	R <sup>2</sup> : 0.212 F: 40.029 <sup>c</sup>	R <sup>2</sup> : 0.229 F: 44.204 <sup>c</sup>

CI: Confidence interval; a: P≤0.05; b: P≤0.01; c: P≤0.001 (for multiple linear regression analysis).



**FIGURE 1.** Median and extreme values of the scores taken from the short health anxiety scale according to chronic diseases diagnosed by physicians in the study group.

## DISCUSSION

The level of health anxiety was found to be high in the study. It was found that health anxiety increased in women, those with low socioeconomic status, those with chronic diseases, poor general health status, and signs of mental and behavioral disorders. The striking findings of the study are the increase in health anxiety

as the application to health institutions and hospitalizations increase.

In the study, the total scores from SHAI ranged from 1 to 47, with a mean of  $16.4 \pm 8.7$  and a median score of 15. In studies conducted among university students, the score obtained from the inventory was reported to vary between 10.8 and 34.3 [26–28]. It was reported that the mean score of  $17.3 \pm 8.5$  in patients admitted to the smoking cessation clinic,  $17.3 \pm 8.4$  in the hospitalized patients, and  $9.6 \pm 5.9$  in the individuals over 65 years of age [21, 24, 29]. Daar et al. [30] reported the score of mothers with children with acute illness as  $17.0 \pm 6.0$ , and the scores of mothers with children without illness as  $9.0 \pm 5.0$ . Rode et al. [31] reported that those with chronic pain scored  $16.3 \pm 7.8$  and those without scored  $8.5 \pm 4.4$ . The results may have been different from each other since the studies were conducted in different societies and individuals with different health conditions and different sociodemographic and cultural characteristics. In addition, the mean score in this study was found to be close to the mean scores in the studies conducted with the patient and their relatives, as expected.

In the study, the median score obtained from SHAI was found to be higher in the age group of “65 and over” compared to other age groups. However, age was not detected as an independent variable in the multivariate analysis which included other variables effective on health anxiety. In the literature, although publications are re-

porting that the elderly have high health anxiety [16, 32], it has been reported that health anxiety may be higher in young age groups such as the 36–45 age group, which is the start time of chronic diseases [17–19, 28]. In some studies, it has been reported that there is no relationship between age and health anxiety [15, 20–22, 24, 30].

The study found that female gender is a risk factor for health anxiety. While similar results were reported in some studies [18, 23, 28, 29], some reported that health anxiety did not differ according to gender [12, 15–17, 19–22, 24, 33]. Women are more prone to suffering from hypochondriasis and other somatoform disorders than men [34]. According to the Survey of Mental Health Profile of Türkiye, the most common mental disorders in our country are anxiety disorders and depression. These diseases are 2 times more common in women than in men. The level of health anxiety may be higher in women in the study because women are more prone to types of anxiety, show more interest in their body and health problems, and investigate and think about them more [35].

In the study, it was determined that low family income is a risk factor for health anxiety. In the literature, studies are reporting that health anxiety is higher in those with low monthly income and poor socioeconomic status [16, 29, 33]. On the other hand, there are studies reporting that health anxiety does not differ according to income levels [12, 21]. Those with low socioeconomic conditions will face more stressful life events. Low income is a factor that affects the social status, self-confidence, the physical, and mental health of the individual, and makes it difficult to access and use of health services [36].

In the study, the presence of chronic disease was found to be a risk factor for health anxiety. In studies conducted in various groups, it was reported that the level of health anxiety of those with chronic disease was higher than those without chronic disease [12, 29, 31, 37]. Ucar et al. [32] reported that the level of health anxiety of patients with fibromyalgia was higher than that of healthy individuals and that the level of health anxiety increased with increasing disease duration and number of tender points. On the other hand, it was reported that there was no difference between the health anxiety scores according to the presence of chronic disease [24, 26]. The study also found that worsening of the general health status is a risk factor for health anxiety. Health anxiety typically occurs as a result of serious health problems, chronic diseases and symptoms, significant losses, stress, negative life experiences, exposure to popular media, and other health-related stimuli [34]. It is also possible that the

perceived state of health in individuals exposed to these factors will worsen. It is reported that the perception of health deteriorates in patients with chronic diseases [38].

In the study, it was found that having symptoms of mental and behavioral disorders is a risk factor for health anxiety. Health anxiety often accompanies other mental disorders, shares the same symptoms, and has common risk factors [16, 21, 30, 34]. There is also a two-way relationship between depression and health anxiety. Health concerns can lead to depression, and depression can lead to health anxiety or an increase in existing health anxiety [10, 11, 16]. In the study conducted by Karapicak et al. [19], it was reported that the health anxiety was found to be highest in hypochondriac patients, followed by panic disorder, somatization disorder, and healthy individuals. Considering these associations, it is expected that individuals with mental and behavioral disorders have higher levels of health anxiety.

In the study, it was found that an increase in the number of admissions to health institutions and the history of hospitalization are risk factors for health anxiety. In many studies, it was reported that individuals with health anxiety had a higher number of admissions to the doctor and the use of health services [12, 17, 21]. Lee et al. [16] reported that health anxiety in individuals increased with increasing use of health-care services. Furthermore Bleichhardt et al. [39] reported that there is a positive correlation between health care utilization and health anxiety. However, Esen et al. [24] reported that there was no relationship between the number of visiting the doctor and health anxiety. Again, contrary to the results found in the study, in a study by Ozdelikara et al. [26], it was reported that health anxiety was higher in those who were not hospitalized. Safety-giving behaviors such as frequent hospital admission are common in individuals with health anxiety [11, 21]. These individuals frequently admit to the hospital to concretize their illness state, even they do not find the opinion of a doctor sufficient and get examined by multiple doctors [10, 17]. They relieve themselves and reduce their anxiety for a while, as they admit to the hospital and no disease occurs. They feel more safe with the admissions to the doctors [11, 21]. On the other hand, it is possible to increase the level of iatrogenic health-related anxiety in individuals who go to the hospital more often because of their chronic diseases, and who face more with health-care personnel [21]. Negative thoughts and fears about their health may increase in individuals who go to the hospital and receive inpatient treatment due to various diseases, who undergo invasive intervention or operation, and who encoun-

ter the hospital environment and health personnel more. For these reasons, the health anxiety level may have been found to be higher in individuals with a high number of hospital admissions and hospitalizations.

### Strengths and Limitations

The study is important because of emphasis the relationship between health anxiety and the number of admissions to health institutions. It can create the groundwork for interventions and further studies to reduce unnecessary health institutions admissions and health expenditures. The limitation of the study is the lack of cause and effect relationship due to being cross-sectional.

### Conclusion

Health anxiety was found to be an important problem among those who applied to primary healthcare institutions in Eskisehir. Risk groups for health anxiety were determined in the study. Female gender, deterioration of family income, presence of chronic disease, worsening of general health status, symptoms of mental and behavioral disorders, a high number of admissions to health institutions, and hospitalization history were determined as factors associated with the level of health anxiety. Among individuals with chronic diseases, the level of health anxiety was found highest in those with mental and behavioral disorders.

It would be beneficial to follow-up individuals in risky groups in terms of health anxiety by health professionals. These follow-ups can be planned to be more frequent in later ages. It may be beneficial to educate the public on health anxiety by giving priority to neighborhoods with low socioeconomic status. Psychosocial support can be provided to individuals with chronic diseases and hospitalizations. The number of admissions to health institutions of individuals with mental and behavioral disorders and chronic diseases should be examined and should be evaluated in terms of health anxiety. Individuals with these characteristics should be screened for health anxiety. It is important to prevent overuse of health-care services that can be caused by health anxiety. If individuals with health anxiety are identified and intervened, unnecessary hospital admissions are prevented and treatment costs are reduced in the long-term. Awareness of health-care professionals about risky individuals applying to health institutions should be increased and health-care professionals should inform these people. It was concluded that it would be appropriate to plan further studies to develop health service delivery models for patients with health anxiety.

**Ethics Committee Approval:** The Eskisehir University Non-Interventional Clinical Research Ethics Committee granted approval for this study (date: 04.10.2017, number: 80558721/G-278).

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