Personality Characteristics, Anxiety Sensitivity, Anxiety, and Depression Levels on Patients Diagnosed with Psychogenic Pruritus

ABSTRACT

Background: This study aimed to investigate the personality traits, anxiety sensitivity (AS), anxiety, and depression levels in patients diagnosed with psychogenic pruritus (PP). Certain personality traits may come to the fore in psychosomatic disorders; these traits are thought to make the person vulnerable to psychosomatic diseases. This study aimed to investigate the personality traits, anxiety sensitivity (AS), anxiety, and depression levels in patients diagnosed with psychogenic pruritus (PP).

Methods: Thirty-seven patients diagnosed with PP (patient group) and 21 healthy controls were included in the study. Sociodemographic Data Form, Beck Depression Inventory (BDI), Beck Anxiety Inventory (BAI), Anxiety Sensitivity Index-3 (ASI-3), and Eysenck Personality Questionnaire (EPQ) were administered to all participants.

Results: Patients’ EPQ scores for the extraversion, neuroticism, psychoticism, and lie subdimensions and EPQ-total scores were significantly higher than those of the control group ($P<.001$; $P<.001$; $P=.008$; $P<.001$, respectively). The total score of ASI-3 scale and the scores of all subdimensions (physical, cognitive, and social) were significantly higher in patients than in controls ($P<.001$). The BAI ($26.8 \pm 9.3$) and BDI ($24.2 \pm 8.6$) total scores of the patients were significantly higher than those of the control group ($P<.001$).

Conclusions: According to EPQ, patients diagnosed with PP are extroverted, but also cold, distrustful, and aloof; show impulsive behavior; are anxious, depressed, and nervous; overly emotional; and prone to lying. Patients suffer more from anxiety, depressive symptoms, and AS in physical, cognitive, and social subdimensions than healthy people. Our findings highlight the importance of psychiatric assessment in PP patients. In this context, we believe that PP deserves to be studied in a broad spectrum with its cognitive, behavioral, and social aspects.

Keywords: Anxiety, anxiety sensitivity, personality, pruritus, psychogenic itch

Introduction

Psychogenic pruritus (PP) is pruritus without physical or dermatological cause that is aggravated by psychogenic factors and has recurrent and chronic features. It has been evaluated in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) under the title Somatic Symptom Disorders. According to the Koo and Lee Classification, a dermatological classification, PP is a primary psychiatric disorder of a group of diseases with skin symptoms. It was determined that 62% of patients presenting to the dermatology outpatient clinic with pruritus were receiving pharmacotherapy or psychotherapy for psychiatric disorders, including psychosomatic diseases. Psychogenic pruritus can occur with many psychiatric disorders, and this comorbidity is reported to be 70%. The psychiatric disorders most commonly associated with PP are depressive disorders, anxiety disorders, and somatoform disorders. Anxiety is known to exacerbate and/or trigger pruritus. Both anxiety and depression can trigger PP in sufferers; this may be the somatized version of overt or repressed depression.

Aslı Kazgan Kılıçaslan
Sevler Yıldız
Osman Kurt
Murad Atmaca

1Department of Psychiatry, University of Bozok, Faculty of Medicine, Yozgat, Turkey
2Department of Psychiatry, University of Binali Yıldırım, Faculty of Medicine, Erzincan, Turkey
3Department of Public Health, University of Fırat, Faculty of Medicine, Elazığ, Turkey
4Department of Psychiatry, University of Fırat, Faculty of Medicine, Elazığ, Turkey

Corresponding author: Aslı Kazgan Kılıçaslan
dr.kazgan@hotmail.com

Received: September 20, 2021
Accepted: March 15, 2022

Cite this article as: Kazgan Kılıçaslan A, Yıldız S, Kurt O, Atmaca M. Personality characteristics, anxiety sensitivity, anxiety, and depression levels on patients diagnosed with psychogenic pruritus. Alpha Psychiatry. 2022;23(5):243-252.
and/or conflict. The French Psychodermatology Group, pointing to the possibility of an inner conflict in the person, has adopted the term “functional pruritus” for PP as it can be seen as a way of getting rid of the problems. To make a more accurate diagnosis for patients and get a better response from the treatment, Misery drew attention to the neurosensory infrastructure and considered it appropriate to define itch as “pruriplastic pruritus,” just like nociplastic pain, which is seen despite the absence of evidence of disease or lesion.

Although the comorbidity of depressive and anxiety disorders in PP is well known, to our knowledge there is no information on personality organizations. Most studies have been conducted on patients with “chronic pruritus” without forming subgroups. In these data, it is mentioned that people with chronic pruritus are more easily affected by psychosocial stressors and generally have introverted personalities.

Verhoeven et al proposed a biopsychosocial model for chronic pruritus that incorporates personality. Certain personality traits may come to the fore in psychosomatic disorders; moreover, these traits are thought to make the person vulnerable to psychosomatic diseases. De Gucht and Fischler, in their study of individuals with psychosomatic disorders, found that neurotic personality traits can lead to difficulties in coping with anxiety and depressive symptoms and are crucial for somatization and somatic syndromes. In addition, borderline and histrionic disorders in Cluster B Personality Disorders and obsessive-compulsive personality disorders in Cluster C Personality Disorders have been shown to be associated with psychodermatological diseases. Personality includes temperament in terms of genetics and character in terms of social and cultural aspects. Some temperament and character traits have already been studied in some psychodermatological diseases such as psoriasis and atopic dermatitis.

Anxiety sensitivity (AS) is the fear of anxiety symptoms and consequences of anxiety. According to the fear-expectancy model, AS forms the basis for escape from fear. It is already inherited in the structure of the person and has continuity. It can cause the persistence and reinforcement of existing anxiety symptoms. Anxiety sensitivity is a factor that can increase susceptibility to clinical illness and alter the course of these illnesses. The skin, through which a person can express his or her inner world externally, can be used as an external projection of anxiety or an emotional and cognitive state. Anxiety symptoms can be localized on the skin.

Given all this information, we aimed to examine anxiety and depression levels on PP, we do not have enough information about personality traits and AS. We wanted to know what personality traits PP patients with chronic pruritus exhibit and whether these traits differ from those of the healthy population. Therefore, we believe that our study results will shed light on the assessment of PP patients with a multidisciplinary approach and contribute to the relevant literature.

Methods

The present study was planned as a case–control study. Ethical approval number 2021/04-51 (February 26, 2021 date) was obtained from the Firat University Ethics Committee for non-interventional research. The study was conducted in accordance with the principles of the Declaration of Helsinki in the Psychiatry Clinic of the University of Firat Medicine Faculty Hospital after approval by the Ethics Committee.

According to the power analysis performed, it was determined that 42 subjects, including at least 21 patients and 21 controls, should be reached with a confidence interval of 95% and power of 80%.

Thirty-seven patients referred to the psychiatric clinic by the dermatology clinic and diagnosed with PP by a psychiatrist according to DSM-5 were included as the patient group. The patients consisted of people who were examined by a dermatologist, whose organic pruritus could not previously be attributed to a diagnosis, who did not benefit from dermatological treatments given for at least 6 months, and who were finally referred to a psychiatrist.

Twenty-one healthy subjects composed of volunteers from the hospital staff and relatives of the patients who had not previously received psychiatric treatment and did not suffer from the organic disease were designated as the control group.

After explaining the purpose and function of the study in detail to all participants, written informed consent was obtained from the patients. After obtaining consent, all participants were administered the Sociodemographic Data Form, the Anxiety Sensitivity Index-3 (ASI-3), the Beck Anxiety Inventory (BAI), the Beck Depression Inventory (BDI), and the Eysenck Personality Questionnaire (EPQ) by the psychiatrist. Completion of the questionnaires took an average of 30-40 minutes.

The inclusion criteria for the study were as follows: age between 18 and 65 years, diagnosis PP, no other dermatological and/or systemic disease that could explain the pruritus (e.g., hypothyroidism, hepatitis C), no significant physical pathology or neurological disease that could influence the distribution of the patient’s existing psychiatric symptoms, no alcohol or drug use disorder in the last 6 months, and no mental disability and signing of written informed consent.

The control group included those aged 18-65 years, providing a written informed consent form, without a diagnosis of any dermatological or psychiatric disorder, without any neurological or other organic disorders that would adversely affect filling out the questionnaires, and without mental retardation.

Scales Used in the Study

Sociodemographic Data and Clinical Data Form: A sociodemographic and clinical questionnaire was used, which was designed by us according to the clinical experience and the information obtained

**MAIN POINTS**

- It was observed that psychogenic pruritus (PP) patients have severe anxiety and moderate depressive symptoms.
- PP patients have been found to have high levels of extraversion, neuroticism, psychoticism, and lying personality traits.
- The total score of Anxiety Sensitivity Index-3 scale and the scores of all subdimensions (physical, cognitive, and social) were higher in the PP group than in the control group.
from the scanned sources and considering the study's objectives. It was a semi-structured form that included sociodemographic information such as age, gender, marital status, educational level, occupation, place of residence, and economic status.

**Beck Depression Inventory (BDI):** The 21-item self-report scale was developed by Beck in 1961 to measure the level of depressive symptoms in adults. The cutoff point of the scale was set at 17. The items are scored from 0 to 3 points. The total score ranges from 0 to 63. A score between 0 and 9 indicates no depressive symptoms; a score between 10 and 16 indicates mild depressive symptoms, between 17 and 24 indicates moderate depressive symptoms, and 25 and above indicates severe depressive symptoms. Hisli conducted Turkish reliability and validity study of the scale in 1989. The internal consistency coefficients (Chronbach $\alpha$) are measured 0.84 for the BDI.

**Beck Anxiety Inventory (BAI):** It is a self-report scale developed by Beck et al to assess the frequency of anxiety symptoms in individuals. It is a 21-point Likert scale with scores ranging from 0 to 3. Scores of 8-15 indicate mild anxiety, 16-25 moderate anxiety, and 26-63 severe anxiety. Its validity and reliability study was conducted by Ulusoy et al. The internal consistency coefficients (Chronbach $\alpha$) are measured 0.88 for the Beck Anxiety Scale.

**Anxiety Sensitivity Index-3 (ASI-3):** It was developed by Taylor et al to measure AS. The scale consists of 18 items with physical, social, and cognitive subdimensions and six items in each subdimension. It is a five-point Likert scale; "0" means very little, "4" means a lot. Its Turkish validity and reliability study was conducted by Mantar et al. The cutoff point for the Turkish ASI-3 has not been determined, and it has been recommended to be used in comparative studies. The internal consistency coefficients (Chronbach $\alpha$) are measured 0.91 for the ASI-3 scale.

**Eysenck Personality Questionnaire (EPQ):** It is a revised version of the Eysenck Personality Questionnaire. The scale consists of 24 items, including six items in each of the four dimensions: extraversion, neuroticism, psychoticism, and lie. The extraversion dimension assesses sociability and impulsivity, the neuroticism dimension assesses emotional stability and over-reactivity, and the psychoticism dimension assesses antisocial behavior and a cold personality structure. The lie subscale is a control scale that can be used to check the validity of the entire test. The score that can be obtained for each personality trait varies from 0 to 6. The internal consistency coefficient ranged from 0.70 to 0.77 for neuroticism, from 0.74 to 0.84 for extraversion, from 0.33 to 0.52 for psychoticism, and from 0.59 to 0.65 for lie subscale. A Turkish validity and reliability study was also conducted. The internal consistency coefficients (Chronbach $\alpha$) are measured 0.72 for the neuroticism, 0.80 for the extraversion, 0.48 for the psychoticism, and 0.58 for the lie subscale.

**Statistical Analysis**
Statistical analyses were performed using the SPSS 22 package program (IBM Corp. Released 2013. IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp.). Descriptive data were reported in the study as n% values for categorical data and as mean (SD = standard deviation), median, interquartile range (25-75 percentile values) for continuous data. Chi-square analysis (Pearson Chi-square) was undertaken to compare categorical variables between groups. Conformity of continuous variables to normal distribution was tested using Shapiro-Wilk test. Student t-test was applied to compare normally distributed variables between two groups, and Mann–Whitney U-test was applied to compare non-normally distributed variables between two groups. Pearson correlation test was used for the normally distributed variables, and Spearman correlation test was used for the non-normally distributed variables. Receiver operating characteristic (ROC) curves were drawn to measure the diagnostic value of the EPQ. The point with the highest sum of sensitivity and selectivity values was determined as the best cutoff point. We used Youden J index to determine cutoff value in ROC analysis. The statistical significance level in the analyses was accepted as $P < .05$.

**Results**
A total of 58 participants, 37 patients and 21 control subjects, were enrolled in the study. The mean age of the patient group was 40.0 (12.4) years and that of the control group was 40.4 (8.9) years, with no statistically significant difference between them ($P = .909$). While 43.2% of the patient group were female and 56.8% were male, 61.9% of the control group were female and 38.1% were male, with no significant difference between the groups ($P = .172$). The educational level of the patient group with secondary education or below (54.1%) was significantly higher than that of the control group (23.8%) ($P = .025$). The percentage of patients who lived in a village/town (48.6%) was significantly higher than that of the control group (0%) ($P < .001$). The economic status of the patient group was significantly lower than that of the control group ($P < .001$). The rate of having an additional psychiatric disorder was significantly higher in the patient group (43.2%) than in the control group (0%) ($P < .001$) (Table 1).

There was no significant difference between groups in marital status ($P = .104$), working status ($P = .587$), previous psychiatric treatment ($P = .155$), smoking ($P = .637$), and alcohol consumption ($P = .657$) (Table 1).

Complaints occurred daily in 43.2% of the patient group, weekly in 35.2%, and monthly in 21.6%. The mean duration of the disease was 13.2 (7.8) months (Table 1).

All scale scores and subdimensions of the patient group were significantly higher than the control group scores ($P < .05$) (Table 2, Figure 1).

The correlation analysis performed in the patient group is shown in Table 3 and Figure 2. Accordingly;

- A significant positive correlation was found between age and EPQ-psychoticism, EPQ-lie, EPQ-total, ASI-3-social, and ASI-3-total.
- A significant positive correlation was found between the duration of complaints and EPQ-neuroticism.
- A positive and significant correlation was found between EPQ-exterverted and EPQ-total, ASI-3-physical, ASI-3-total, and BAI.
- A positive and significant correlation was found between EPQ-neuroticism and ASI-3-physical, ASI-3-cognitive, and BAI.
- There was a significant positive correlation between EPQ-psychoticism and EPQ-total, ASI-3-social, ASI-3-total, and BDI.
- There was a significant positive correlation between EPQ-lie and EPQ-total, ASI-3-social, and ASI-3-total.
There was a positive and significant correlation between EPQ-total and ASI-3-physical, ASI-3-social, ASI-3-total, BDI, and BAI.

There was a positive and significant correlation between ASI-3-physical and ASI-3-cognitive, ASI-3-social, ASI-3-total, BDI, and BAI.

A positive and significant correlation was found between ASI-3-cognitive and ASI-3-total, BDI, and BAI.

A positive and significant correlation was found between ASI-3-social and ASI-3-total, BDI, and BAI.

A significant positive correlation was found between ASI-3-total and BDI and BAI.

A significant positive correlation was found between BDI and BAI (Table 3, Figure 2).

The results of the ROC analysis on the EPQ-extrovert scores by PP revealed the cutoff point to be 2. At this cutoff point, we calculated the sensitivity to be 81.1%, and the specificity to be 66.7%. The area under the curve (AUC) in the drawn ROC was found to be 0.749 (P < .001) (Table 4, Figure 3).

The results of the ROC analysis on the EPQ-neuroticism scores by PP revealed the cutoff point to be 3. At this cutoff point, we calculated the sensitivity to be 91.9%, the specificity to be 90.5%. The AUC in the drawn ROC was found to be 0.978 (P < .001) (Table 4, Figure 3).

The results of the ROC analysis on the EPQ-psychotism scores by PP revealed the cutoff point to be 3. At this cutoff point, we calculated the sensitivity to be 64.9%, the specificity to be 100%. The AUC in the drawn ROC was found to be 0.880 (P < .001) (Table 4, Figure 3).
The results of the ROC analysis on the EPQ-lie scores by PP revealed the cutoff point to be 2. At this cutoff point, we calculated the sensitivity to be 59.5%, the specificity to be 90.5%. The AUC in the drawn ROC was found to be 0.708 (P = .002) (Table 4, Figure 3).

The results of the ROC analysis on the EPQ-total scores by PP revealed the cutoff point to be 10. At this cutoff point, we calculated the sensitivity to be 86.5%, the specificity to be 90.5%. The AUC in the drawn ROC was found to be 0.961 (P < .001) (Table 4, Figure 3).

Discussion

Previous studies have reported that personality is a risk factor for the development of psychodermatological diseases. Therefore, it is crucial to study personality as a potential factor in psychodermatological diseases. According to the EPQ, high scores on the extraversion dimension belong to people who dislike loneliness, do not avoid contact with others, but also have high impulsivity. These individuals may have difficulty controlling their emotions and generally exhibit unreliable personality traits. Neuroticism refers to emotional stability and over-reactivity. People with high neuroticism scores are considered anxious, depressed, nervous, exhibit exaggerated emotional reactions, and have low self-confidence. Psychoticism, on the other hand, rates antisocial behavior and a cold personality structure. These individuals exhibit personality traits such as cold, aloof, aggressive, distrustful, unemotional, odd, and incapable of empathy, guilt, and callousness toward others. The lie subdimension refers to the deceptions that individuals may commit in order to create a good impression.

In our study, scores on the extraversion, neuroticism, psychoticism, and lie subdimensions of the EPQ, as well as total EPQ scores, were significantly higher in patients than in healthy controls. Based on this result, it was observed that patients diagnosed with PP were extroverted but at the same time cold, distrustful, aloof, exhibit impulsive behaviors, and prone to lying, according to Eysenck’s theory.

In the present study, the patients scored the highest on the neuroticism subdimension. Psouni et al examined personality traits in mood disorders such as depression and anxiety and in healthy individuals and found that the strongest predictor of pruritus was the personality trait neuroticism. In another study, neuroticism was associated with pruritus intensity in patients with psoriasis and atopic dermatitis. In a study of healthy individuals, pruritus was visually triggered, and a positive correlation was found between the personality factor neuroticism and increased pruritus. In a study of psychosomatic diseases, personality traits were examined in individuals with tinnitus, and a strong correlation was found between anxiety, depression level, and neuroticism and tinnitus severity. In a study conducted with patients with atopic dermatitis, a different
Table 3. Correlations of the Patient Group

|                        | Age | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  |
|------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Duration of complaints (1) | r   | .069|     |     |     |     |     |     |     |     |     |     |
|                         | P   | .687|     |     |     |     |     |     |     |     |     |     |
| EPQ-extrovert (2)       | r   | .216| -.210|     |     |     |     |     |     |     |     |     |
|                         | P   | .199| .213|     |     |     |     |     |     |     |     |     |
| EPQ-neuroticism (3)     | r   | .030| .458| -.162|     |     |     |     |     |     |     |     |
|                         | P   | .861| .004| .339|     |     |     |     |     |     |     |     |
| EPQ-psychotism (4)      | r   | .443| .265| .223| .259|     |     |     |     |     |     |     |
|                         | P   | .006| .113| .186| .121|     |     |     |     |     |     |     |
| EPQ-lie (5)             | r   | .561| -.027| .263| -.072| .308|     |     |     |     |     |     |
|                         | P   | <.001| .872| .116| .672| .064|     |     |     |     |     |     |
| EPQ-total (6)           | r   | .561| .146| .540| .219| .739| .762|     |     |     |     |     |
|                         | P   | <.001| .389| .001| .192| <.001| <.001|     |     |     |     |     |
| ASI-3-physical (7)      | r   | .119| .158| .328| .333| .299| .266| .515|     |     |     |     |
|                         | P   | .485| .350| .048| .044| .072| .112| .001|     |     |     |     |
| ASI-3-cognitive (8)     | r   | -.012| .219| .187| .493| .227| -.102| .229| .536|     |     |     |
|                         | P   | .944| .192| .267| .002| .176| .548| .173| .001|     |     |     |
| ASI-3-social (9)        | r   | .428| -.001| .284| -.120| .412| .449| .536| .389| .055|     |     |
|                         | P   | .008| .994| .088| .481| .011| .005| .001| .017| .745|     |     |
| ASI-3-total (10)        | r   | .375| .021| .386| .247| .389| .428| .631| .819| .655| .584|     |
|                         | P   | .022| .904| .018| .140| .017| .008| <.001| <.001| <.001| <.001| <.001|
| BDI (11)                | r   | .204| .166| -.049| .241| .363| .269| .356| .427| .339| .500| .511|
|                         | P   | .226| .326| .775| .151| .027| .107| .031| .008| .040| .002| .001|
| BAI                     | r   | .097| .004| .412| .418| .288| .136| .449| .602| .464| .338| .653|
|                         | P   | .568| .980| .011| .010| .084| .421| .005| <.001| .004| .040| <.001|

The significance of bold P value is P < 0.05

ASI, Anxiety Sensitivity Index; BAI, Beck Anxiety Inventory; BDI, Beck Depression Inventory; EPQ, Eysenck Personality Questionnaire.
personality inventory was used, and it was concluded that patients whose personalities were characterized by lack of empathy, hostile attitudes, and low compliance and who cared more about what other people thought about them had more pruritus action. In this regard, some of our findings partially overlap with the literature. In neuroimaging studies, the cooperation between the limbic system and the prefrontal cortex in itch stimuli suggested that itch management may have common aspects with the management of emotional and cognitive activities. Even it was stated that people with neurotic personality traits may have increased itching due to mirror neurons activated when we imitate others’ behaviors. Eysenck also stated that these characteristic personality traits were independent dimensions in his inventory. Surprisingly, patients in our study scored high on all subscales. This suggests that PP, whose diagnosis is difficult for both dermatologists and psychiatrists, may have a different background than other psychodermatological diseases. The assessment of PP in terms of personality traits may have been neglected. We believe that PP deserves to be assessed on a broader spectrum, with the exception of “neuroticism,” which has been the focus of previous studies. At the same time, we consider that these results are due to the structure of the sample and the possibility that patients answered the questions biased.

Our study determined that the total score of ASI-3 scale and the scores of all subdimensions (physical, cognitive, and social) were higher in the patient group than in the control group. In our study, it is an expected result that the AS characteristics of the patient group

| Table 4. The Results the Receiver Operating Characteristic Analysis |
|-------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                   | EPQ-extrovert   | EPQ-neuroticism | EPQ-psychotism  | EPQ-lie         | EPQ-total       |
| Cutoff point      | 2               | 3               | 3               | 2               | 10              |
| Sensitivity       | 81.1%           | 91.9%           | 64.9%           | 59.5%           | 86.5%           |
| Specificity       | 66.7%           | 90.5%           | 100%            | 90.5%           | 90.5%           |
| Positive predictive value | 81.1% | 94.5% | 100% | 91.7% | 94.1% |
| Negative predictive value | 66.7% | 86.4% | 61.8% | 55.9% | 79.2% |
| AUC (area under the curve) (SE) | 0.749 (0.68) | 0.978 (0.015) | 0.880 (0.044) | 0.708 (0.067) | 0.961 (0.022) |
| AUC 95% confidence interval | 0.618-0.854 | 0.900-0.999 | 0.767-0.950 | 0.574-0.820 | 0.874-0.994 |
| AUC $P$ value     | <.001           | <.001           | <.001           | .002            | <.001           |

EPQ, Eysenck Personality Questionnaire.
were higher than those of the healthy control group. The act of pruritus, which is often used as an avoidance tool to reduce anxiety, may also be effective in interpreting anxiety symptoms.

The ASI-3 physical symptoms subdimension assesses anxiety as fear of bodily symptoms, the cognitive symptoms subdimension assesses anxiety as fear of loss of cognitive control, and the social symptoms subdimension assesses anxiety as fear of other people noticing the anxiety symptoms. Patients’ greater focus on physical sensations such as pruritus may have resulted in their physical AS being rated as high.

The fact that the social AS of the patients was significantly higher than that of the control group tells us that PP patients are sensitive to negative evaluation. Patients may be concerned about the physical manifestations of pruritus and adversely affected by possible physiological changes in the skin.

Cognitive AS is usually a structural predisposition, that is, an individual’s cognitively distorted or exaggerated perception of anxiety symptoms. Distorted cognitive appraisal plays a role in high-level anxiety. Itchy skin disease, like other chronic diseases, is associated with anxiety-related negative cognitions. It has been shown that approximately 40% of patients with chronic skin diseases are highly anxious in their cognitive state. For example, the irrational belief that scars and scratches caused by chronic itching in PP worsen body image can be explained by the high cognitive AS of PP patients.

Although AS is an individual vulnerability factor with a continuous pattern, studies have shown that it can be reduced by psychotherapy and/or pharmacotherapy. The results of our study show that AS is high in patients diagnosed with PP and is an important variable. We believe that AS should be considered in the diagnostic evaluation and treatment response of these patients.

A positive correlation was found in the current study between patients’ psychoticism subscale scores and their social AS, total ASI, and BDI scores. As a result of this analysis, we can say that people who have difficulty controlling their behavior have more severe depressive symptoms, more AS, and experience social AS more.

Also, in our study, a positive and significant relationship was revealed between patients’ neuroticism subscale scores and their BAI, physical ASI, and cognitive ASI scores. It can be inferred that patients with increasing emotional inconsistency and tendency to irrational behavior are more distressed by the physical anxiety symptoms and tend to interpret the anxiety symptoms as distorted. According to the results of our study, it can be said that AS influences EPQ traits.
A positive and significant relationship was observed in our study between age and the scores of EPQ-psychoticism, EPQ-lie, EPQ-total, social AS, and total AS. People have been shown to act colder and more detached with age, become more insensitive to others, be more prone to lying, and experience social AS more. These findings partially overlap with the findings of an older study. According to this study, people behave in a more controlled manner as they age, but they also tend to lie more. It is suggested that the differences between the results are due to differences in the sample groups.

Duration of PP diagnosis and scores on subdimensions of neuroticism were positively correlated. The longer patients suffer from pruritus, the more their emotional fluctuations increase, and they feel more restless, depressed, and anxious.

Pruritus has personality traits that are assessed and determined with different personality inventories in different dermatological diseases. It is mentioned that there is strong evidence that personality traits influence mood and that Eysenck Personality Inventory may be a good predictor of mood disorders. “Neuroticism” in which patients scored the highest predicts negative affect, depressed and anxious mood in our study. The association between pruritus and psychiatric disorders such as depression and anxiety is also well established. Other pruriginous diseases (e.g., atopic dermatitis, chronic inflammatory dermatoses, psoriasis) have been found to have significantly higher levels of depression and anxiety, which have been associated with the severity of pruritus. Depressive mood may lead to an increase in pruritus, and an increase in anxiety may also lead to an increase in pruritus. Dieris-Hirsch et al. also found in their study of patients with idiopathic generalized pruritus that the depression scores of the patients were higher than those of the control group. In our study, the patients diagnosed with PP had moderate depressive symptoms with a mean BDI score of 24. The mean BAI score of the patients was 26, and they had severe anxiety symptoms. It is well established that anxiety and depressive symptoms can trigger and even exacerbate dermatological diseases. Our results are consistent with the findings in the literature that anxiety and depressive symptoms exacerbate dermatological disease symptoms.

It is mentioned that AS is a predictive factor for anxiety disorders. However, studies have shown that AS is associated not only with anxiety disorders but also with other psychiatric disorders such as depressive disorders. In our study, 43.2% of patients had an additional psychiatric disorder. The patients had both AS and anxiety and depressive symptoms to a higher extent than the control group.

Limitations of the Study
The major limitation is the case-control nature of the study. The parameters studied were assessed using self-report scales. In addition, our results are statistical estimates based on the assumption that personality traits are relatively stable, as shown previously.

Finally, PP is a chronic disorder that is difficult to diagnose and may affect the quality of life. Patients with PP spend months or years seeking treatment by applying to different clinics. Overall, these patients should also be considered from a psychosocial perspective. We also think that the dermatology-psychiatry collaboration within consultation-liaison will be rather helpful in dealing with PP. Consultation-liaison psychiatry practices may reduce the time loss of patients until they receive appropriate treatment and enable them to access the treatment faster.

It was observed that PP patients have severe anxiety and moderate depressive symptoms. It is critical to uncover the psychiatric disorders that may accompany these patients. Another critical point is that patients diagnosed with PP have been found to have high levels of extraversion, neuroticism, psychotism, and lying personality traits. However, further longitudinal studies are needed to clarify the causal relationship between PP and personality traits. Anxiety sensitivity has been found to be higher in patients diagnosed with PP than in healthy controls. Anxiety sensitivity may increase susceptibility to pruritus and affect the prognosis of PP patients. It should be kept in mind that AS is a concept that influences the diagnosis and treatment process in these patients. Our findings highlight the importance of psychiatric evaluations in PP patients and make collaboration with dermatologists important. We believe that PP deserves to be assessed in a broad spectrum with its cognitive, behavioral, and social aspects.

References
1. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders. 5th ed (DSM-5). Washington, DC: American Psychiatric Association; 2013.
2. Koo JY, Lee CS. General approach to evaluating psychodermatological disorders. In: Psychocutaneous Medicine. CRC Press; Boca Raton; 2003: 17-28.
3. Schneider G, Driesch G, Heuft G, Evers S, Lugar TA, Ständner S. Psychosomatic factors and psychiatric comorbidity in patients with chronic itch. Clin Exp Dermatol. 2006;31(6):762-767. [CrossRef]
4. Altunay IK, Köşlü A. Psikojenik pruritus. Turk J Dermatol. 2008;2:116-120.
5. Misery L. Functional itch disorder or psychogenic pruritus. Dermatology. 2008;3(1):49-53. [CrossRef]
6. Misery L. Pruriplastic itch—A novel pathogenic concept in chronic pruritus. Front Med. 2020;7:615118.
7. Kini S, Chen KH, Chen SC. Personality traits and styles may affect the reporting of chronic pruritus: a cross-sectional study. Itch. 2018;3(4):e20. [CrossRef]
8. Verhoeven EWM, De Klerk S, Kraaimaat FW, Van De Kerkhof PC, De Jong EM, Evers AW. Biopsychosocial mechanisms of chronic itch in...
patients with skin diseases: a review. Acta Derm Venereol. 2008;88(3):211-218. [CrossRef]
9. De Gucht V, Fischer B. Somatization: a critical review of conceptual and methodological issues. Psychosomatics. 2002;43(1):1-9. [CrossRef]
10. Gupta MA, Gupta AK. Medically unexplained cutaneous sensory symptoms may represent somatoform dissociation: an empirical study. J Psychosom Res. 2006;60(2):131-136. [CrossRef]
11. Kim TS, Pae CU, Jeong JT, Kim SD, Chung KL, Lee C. Temperament and character dimensions in patients with atopic dermatitis. J Dermatol. 2006;33(1):10-15. [CrossRef]
12. Ak M, Haciomeroglu B, Turan Y, et al. Temperament and character properties of male psoriasis patients. J Health Psychol. 2012;17(5):774-781. [CrossRef]
13. Mantar A, Yemez B, Alkin T. Anxiety sensitivity and its importance in psychiatric disorders. Turk Psikiyatri Derg. 2011;22(3):187-193.
14. Tey HL, Wallengren J, Yosipovitch G. Psychosomatic factors in pruritus. Clin Dermatol. 2013;31(1):31-40. [CrossRef]
15. Yalçın M. Evaluation of Childhood Trauma and Temperament and Characteristics in Dermatoses Caused by Self-Injury Due to Psychogenic Itching [Dissertation]. Istanbul: Istanbul University; 2013.
16. Beck AT, Ward CH, Mendelson M, Mock J, Erbaugh J. Beck Depression Inventory (BDI). Arch Gen Psychiatry. 1961;4:561-571. [CrossRef]
17. Hisi N. A reliability and validity study of Beck Depression Inventory in a university student sample. J Psychol. 1989;7:3-13.
18. Beck AT, Epstein N, Brown G, Steer RA. An inventory for measuring clinical psychopathic properties. J Consult Clin Psychol. 1988;56(6):893-897. [CrossRef]
19. Ulusoy M, Sahin NH, Erkmen H. Turkish version of the Beck Anxiety Inventory: psychometric Properties. J Cogn Psychother Int Q. 1998;12:163-172.
20. Taylor S, Zvolensky MJ, Cox BJ, et al. Robust dimensions of anxiety sensitivity: development and initial validation of the Anxiety Sensitivity Index-3. Psychol Assess. 2007;19(2):176-188. [CrossRef]
21. Mantar A, Yemez B, Alkin T. Anksiyete duyarlılık Indeksi-3 Türkçe geçerlilik çalışması. Türk Psikiyatri Derg. 2010;21.
22. Francis LJ, Brown LB, Philipchalk R. The development of an abbreviated form of the revised Eysenck Personality Questionnaire (EPPS-A): its use among students in England, Canada, the USA and Australia. Pers Individ Dif. 1992;13(4):443-449. [CrossRef]
23. Karanci AN, Dirik G, Yorulmaz O. Reliability and validity studies of Turkish translation of Eysenck Personality Questionnaire revised-Ambiviation. Turk Psikiyatri Derg. 2007;18(3):254-261.
24. Willemsen R, Roseeuw D, Vanderlinden J. Alexithymia and dermatology: the state of the art. Int J Dermatol. 2008;47(9):903-910. [CrossRef]
25. Kiliç A, Güleç MY, Gül U, Güleç H. Temperament and character profile of patients with psoriasis. J Eur Acad Dermatol Venereol. 2008;22(5):537-542. [CrossRef]
26. Remröd C, Sjöström K, Svensson Å. Pruritus in psoriasis: a study of personality traits, depression and anxiety. Acta Derm Venereol. 2015;95(4):439-443. [CrossRef]
27. Bahmer JA, Kuhl J, Bahmer FA. How do personality systems interact in patients With psoriasis, atopic dermatitis and urticaria? Acta Derm Venereol. 2007;87(4):317-324. [CrossRef]
28. Eysenck HJ, Eysenck SB. Manual of the Eysenck Personality Questionnaire (Adult and Junior). Hodder and Stoughton, London; 1975.
29. Psouni EE. On psychological factors affecting reports of itch perception. In: Yosipovitch G, Greaves M, Fleischer A, McGlone F, eds. Itch: Basic Mechanisms and Therapy. New York, NY: Marcel Dekker; 2004:200-222.
30. Verhoeven EWM, Kraaimaat FW, Duller P, van der Kerkhof PCM, Evers AWM. Cognitive, behavioral and physiological reactivity to itching: analogies to chronic pain. Int J Behav Med. 2006;13:237-243.
31. Holle H, Warne K, Seth AK, Critchley HD, Ward J. Neural basis of contagious itch and why some people are more prone to it. Proc Natl Acad Sci U S A. 2012;109(48):19816-19821. [CrossRef]
32. Strumila R, Lengvenytë A, Vainutienë V, Lesinskas E. The role of questioning environment, personality traits, depressive and anxiety symptoms in tinnitus severity perception. Psychiatr Q. 2017;88(4):865-877. [CrossRef]
33. Schut C, Bosbach S, Gieler U, Kupfer J. Personality traits, depression and itch in patients with atopic dermatitis in an experimental setting: a regression analysis. Acta Derm Venereol. 2014;94(1):20-25. [CrossRef]
34. Yosipovitch G, Mochizuki H. Neuroimaging of itch as a tool of assessment of chronic itch and its management. Handb Exp Pharmacol. 2015;226:57-70. [CrossRef]
35. Lee HG, Stull C, Yosipovitch G. Psychiatric disorders and pruritus. Clin Dermatol. 2017;35(3):273-280. [CrossRef]
36. Fortune DG, Richards HL, Corrin A, Taylor RJ, Griffiths CE, Main CJ. Attentional bias for psoriasis-specific and psychosocial threat in patients with psoriasis. J Behav Med. 2003;26(3):211-224. [CrossRef]
37. Jorm AF, Christensen H, Henderson AS, Jacomb PA, Korten AE, Rodgers B. Using the BIS/BAS scales to measure behavioral inhibition and behavioral activation: factor structure, validity and norms in a large community sample. Pers Individ Dif. 1999;26:49-58.
38. Smilie LD, Bhairo Y, Gray J, et al. Personality and the bipolar spectrum: normative and classification data for the Eysenck Personality Questionnaire-revised. Compr Psychiatry. 2009;50(1):48-53. [CrossRef]
39. Chrostowska-Plak D, Reich A, Szepietowski JC. Relation-ship between itch and psychological status of patients with atopic dermatitis. J Eur Acad Dermatol Venereol. 2013;27(2):e239-e242. [CrossRef]
40. Conrad R, Geiser F, Haidl G, Hutmacher M, Liedtke R, Wermtor F. Relationship between anger and pruritus perception in patients with chronic idiopathic urticaria and psoriasis. J Eur Acad Dermatol Venereol. 2008;22(9):1062-1069. [CrossRef]
41. Dieris-Hirche J, Gieler U, Kupper JP, Milch WE. Suicidal ideation, anxiety and depression in adult patients with atopic dermatitis. Hautarzt. 2009;60(8):641-646. [CrossRef]
42. Gustavsson JP, Weinryb RM, Göransson S, Pedersen NL, Åsberg M. Stabil性和 predictive ability of personality traits across 9 years. Pers Individ Dif. 1997;22(6):783-791. [CrossRef]