# AN INVESTIGATION OF CHILDHOOD TRAUMA IN PATIENTS WITH PANIC DISORDER

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## ABSTRACT

**Objective:** *It is widely known that childhood traumatic experiences are mostly associated with psychiatric disorders. In this study, the relationship between childhood traumatic experiences and panic disorder (PD) development was examined with regards to all types of traumas including sexual abuse, physical abuse, emotional abuse, emotional neglect, and physical neglect.*

**Material and Method:** *The sample for this study consisted of 59 outpatients and 61 healthy individuals serving as the control group. These individuals in the experimental group were selected from outpatients who had been diagnosed with PD based on American Psychatric Association Diagnostic and Statistical Manual of Mental Disorders (DSM-5) criteria and who did not have any other psychiatric disorder. The Childhood Trauma Questionnaire (CTQ-28) was filled by the individuals themselves and the socio-demographic form by the researcher on behalf of them.*

**Results:** *The main finding is that the individuals in the experimental group were found to have significantly high scores in comparison to those in the control group with respect to the total CTQ score (p=0.006) and specifically, the emotional neglect (p=0.004) and the emotional abuse sub-scores (p=0.009).*

**Conclusion:** *The results revealed that the type and quality of trauma experienced during the childhood period can be a predictor for the psychiatric disorder subtype that can occur in the future years.*

**Keywords:** *Childhood trauma, emotional abuse, emotional neglect, panic disorder.* **Nobel Med 2018; 14(1): 39-48**

**PANİK BOZUKLUK HASTALARINDA ÇOCUKLUK ÇAĞI TRAVMALARININ İNCELENMESİ**

## ÖZET

**Amaç:** Çocukluk çağı travmatik yaşantılarının; psikiyatrik bozukluklarının çoğu ile ilişkili olduğu bilinmektedir. Bu çalışmada, çocukluk çağı travmatik yaşantılarının panik bozukluk (PB) gelişimiyle ilişkisinin; çocukluk çağında maruz kalınan travmanın; fiziksel veya duygusal istismar, fiziksel veya duygusal ihmal ve cinsel istismar gibi alt tipleri ile değerlendirilerek incelenmesi amaçlanmıştır.

**Materyal ve Metot:** Çalışmanın örneklemini PB tanısı almış 59 poliklinik hastasından oluşan PB grubu ve 61 sağlıklı bireyden oluşan kontrol grubunun dahil olduğu 120 kişi oluşturmuştur. PB grubundaki bireyler, klinik görüşme sonrası Amerikan Psikiyatri Birliği Mental Hastalıkların Tanı ve Sınıflaması Rehberi (DSM-5) tanı kriterlerine göre PB tanısı almış ve ek herhangi bir ruhsal bozukluğu bulunmayan poliklinik hastalarından seçilmiştir. Katılımcılara; araştırmacı tarafından görüşme sırasında doldurulan sosyo-demografik form ve katılımcıların bireysel olarak doldurduğu Çocukluk Çağı Travmaları Ölçeği (CTQ-28) uygulanmıştır.

**Bulgular:** Çalışma sonucunda PB grubunda yer alan katılımcılarda toplam CTQ puanı sağlıklı kontrol grubuna göre istatistiksel olarak anlamlı derecede yüksek bulunmuştur ($p$=0,006). Travma puanları, travma alt türüne göre incelendiğinde ise; PB grubunda duygusal ihmal ve duygusal istismar alt ölçek puanlarının sağlıklı kontrol grubuna göre istatistiksel olarak anlamlı derecede yüksek olduğu görülmüştür (sırasıyla; $p$=0,004 ve $p$=0,009).

**Sonuç:** Çalışma sonucunda PB gelişiminde, çocukluk çağı travmatik yaşantılarının etkili bir rolü olabileceği ve çocukluk çağında yaşanan travmanın niteliğinin, erişkin yaşamda ortaya çıkabilen ruhsal hastalıklar için ön görücü bir etken olabileceği düşünülmüştür.

**Anahtar kelimeler:** Çocukluk çağı travması, duygusal ihmal, duygusal istismar, panik bozukluk. **Nobel Med 2018; 14(1): 39-48**

## INTRODUCTION

Panic disorder (PD) is a mental disorder where recurrent, unexpected panic attacks that affect one's daily-life activities and functionality as a result of anticipation anxiety. The main characteristic of a panic attack is the presence of at least 4 of the 13 physical or cognitive symptoms such as palpitation, trembling, perspiration, suffocation, fear of loss of self-control, and death. Panic attacks typically start suddenly and intensify within 10 minutes. A typical panic attack generally resolves between 15-20 minutes, however, it might take from 1 minute to 1 hour in some situations.[1] PD, like other anxiety disorders, is more common in males in comparison to females. The most common age range of the disorder is between ages 15 and 24.[1,2] According to the results of the epidemiological studies from several countries, the lifetime prevalence of PD is between 1.5% and 2.5%.[1,2] PD usually starts as a result of a triggering situation such as the loss of relatives, divorce, or economic problems, and it is most probably familial. The lifetime prevalence of PD has been found to be quite high among the first-degree relatives of the patients with PD.[2] There has been many studies that examine the genetic foundations of PD in the literature. For example, Stein *et al.* argued that a biological risk factor called anxiety sensitivity causes sensitivity, producing an increase in fear perception among patients with PD, and such a situation is inherited from family.[3] According to Stein *et al.*, the difference in fear perception might cause patients with PD affected to interpret their perceptively-lived events as more stressful and untenable, and to be influenced more by trauma in comparison to individuals without PD.[3]

Although it is known that heredity can be the etiological factor for the disorder, people with the same genetic do not necessarily have PD. This, in turn, has led researchers to focus more on environmental factors. Specifically, it has come out to agenda that negative life events or traumatic experiences in childhood might contribute to disorder development with the help of genetic affinity among patients with PD. In terms of the potential for PD development, it is widely known that one of the precursors is separation anxiety. In the first days of life, intimacy that comes from a

continuous and stable object plays a key role. If the caregiver is not sensible and responsive, separation anxiety occurs due to the threat of loss of this caregiver. It is known that individuals who have shown separation anxiety in their early childhood period are more prone to having PD.[4] In a study by Servant and Parquet examining the relationship between early life events and PD, it was found that separation, especially loss of or separation from the mother has a direct effect on the progress of PD in adult life.[4]

Based on the literature, many studies are indicating that childhood traumatic life events are key factors for the appearance of some psychiatric disorders such as depression, dysthymia, acute stress disorder, post-traumatic stress disorder (PTSD), dissociative disorder, and specific phobias.[2,5-12] PD is also one of the psychiatric disorders that have been thought for a long time to be related with childhood traumas. For instance, Freud mentions panic attacks of a young girl, Katharine, who was abused sexually by her father when she was 14 years old, and reports that panic attacks might be related to childhood traumas.[6]

Among the studies that investigate childhood sexual and physical abuse in patients with PD, the abuse rate in this group of patients was found to be within the range of 13% to 54%.[2,7] In a study by Stein *et al.* that compares an experimental group of anxiety disorder sufferers with a control group of healthy individuals, the experimental group was found to have a history of childhood physical abuse approximately three times more.[2] Moreover, in an other study, the patients with PD and patients with obsessive compulsive disorder (OCD) were compared in terms of lifetime traumatic experiences and 1 year before the disorder development.[8] The results of this study suggested that while there is no significant difference between the two groups with regards to the history of trauma 1 year before the disorder development, patients with PD were found to experience more traumas when considering the prevalence of lifetime trauma.[8]

Regarding the studies in the literature, it can clearly be said that PD is a multidimensional disorder influenced by many symptoms and factors.[3,7] Although there exist many studies focusing on the relationship between patients with PD and their childhood traumatic experiences, there seems to be a critical gap in the literature in terms of revealing the relationship with respect to the type or quality of trauma they have experienced during childhood. Therefore, the purpose of this study is to investigate the relationship between patients with PD and their traumatic experiences during childhood with respect to particular types of traumas by comparing them with healthy individuals in the control group. More specifically, the present study aims at explaining the effects of childhood traumatic experiences on PD development. The research questions that have been addressed in this study are as follows:

- Is there a relationship between patients with PD and their childhood traumatic experiences?
- Is there a relationship between patients with PD and their childhood traumatic experiences with regards to the type or quality of trauma?

## MATERIAL AND METHOD

The sample for this study consisted of 59 outpatients who applied to the Department of Psychiatry of Düzce University School of Medicine in Turkey between July 2014 and January 2015, in addition to 61 healthy individuals selected as the control group. These 59 individuals, between the ages of 18 to 65 years, were selected from outpatients who had been recently diagnosed with PD based on American Psychiatric Association Diagnostic and Statistical Manual of Mental Disorders (DSM-5) diagnosis criteria or had been diagnosed earlier and were continuing to receive treatment, who were able to understand the given questionnaire and to respond appropriately, and who did not have any other mood disorder, anxiety disorder, mental retardation, dementia, or psychosis symptoms.[13] The 61 healthy individuals in the control group were selected from medical staff and their relatives who had not received any psychiatric diagnosis or treatment. The individuals in both groups volunteered to participate in this study. In order to conduct the present study, the required permission was obtained from the ethics committee of Düzce

**Table 1.** Socio-demographic information

| | | Experimental group n=61(%) | Control group n=59(%) | p |
|---|---|---|---|---|
| **Gender** | Male | 25(41.0) | 23(39.0) | 0.854[a] |
| | Female | 36 (59.0) | 36(61.0) | |
| **Marital status** | Married | 39(63.9) | 40(67.8) | 0.511[b] |
| | Single | 18(29.5) | 18(30.5) | |
| | Divorced | 4(6.6) | 1(1.7) | |
| **Job** | Public servant | 5(8.2) | 11(18.6) | 0.018[a] |
| | Worker | 17(27.9) | 17(28.8) | |
| | Housewife | 31(50.8) | 14(23.7) | |
| | Student | 4(6.6) | 9(15.3) | |
| | Other* | 4(6.6) | 8(13.6) | |
| **Residence** | Urban | 45(73.8) | 48(81.4) | 0.384[a] |
| | Rural | 16(26.2) | 11(18.6) | |
| **Monthly income perception** | Good | 12(19.7) | 20(33.9) | 0.165[a] |
| | Medium | 36(59.0) | 26(44.1) | |
| | Not good | 13(21.3) | 13(22.0) | |
| **Age (years)**** | | 34.0±16.0 | 33.0±19.0 | 0.954[c] |
| **Number of Siblings** | | 3.0±2.3 | 4.0±2.2 | 0.494[c] |
| **Education Level (years)**** | | 10.0±7.0 | 11.0±10.0 | 0.078[c] |
| **Mother Education (years)**** | | 5.0±5.0 | 5.0±5.0 | 0.842[c] |
| **Father Education (years)**** | | 5.0±6.5 | 5.0±5.0 | 0.697[c] |

***:** Unemployed, farmer, retired, worker, craftsmen, medical agent, ****:** median±inter quartile range, (Med±IQR)
**a:** Pearson Chi-Square test, **b:** Fisher Freeman Halton test, **c:** Mann Whitney U test

**Table 2.** The comparisons of the childhood trauma questionnaire (CTQ) scores in both groups

| | Experimental group Med (min-max) | Control group Med (min-max) | p |
|---|---|---|---|
| **Emotional abuse** | 7.0±5.0 | 5.0±3.0 | 0.009 |
| **Emotional neglect** | 11.0±6.0 | 9.0±5.0 | 0.004 |
| **Physical abuse** | 5.0±1.0 | 5.0±0.0 | 0.145 |
| **Physical neglect** | 7.0±4.5 | 6.0±4.0 | 0.253 |
| **Sexual abuse** | 5.0±0.0 | 5.0±0.0 | 0.605 |
| **CTQ Total** | 38.0±17.5 | 31.0±14.0 | 0.006 |

**CTQ:** The childhood trauma questionnaire, **Med (min-max):** median (min-max), Mann Whitney U test

University School of Medicine with the decision number 2014/56 in September 16th, 2014.

After written informed consent was obtained from each individual, the Childhood Trauma Questionnaire (CTQ) was filled out by the participants themselves and the socio-demographic form was filled out by the first author on behalf of those participants. The CTQ was developed by Bernstein *et al.* to measure childhood traumatic experiences and it was translated into Turkish by Şar *et al.*[14,15] The questionnaire was a self-report measure and it used a five-point Likert type scale in which the options range from "never" to "very often." It had 28 items including three items that measure the minimization of trauma.[14,15] The questionnaire gives a total score that consists of five sub-scores including sexual abuse, physical abuse, emotional abuse, emotional neglect, and physical neglect. The internal consistency coefficient (i.e., Cronbach's Alpha) was 0.93. High scores indicate high frequency of traumatic experiences. While scores greater than 5 are significant for sexual abuse and physical abuse, the scores above 7 demonstrate emotional abuse and physical neglect. Moreover, emotional neglect requires scores above 12.[14,15] Regarding the total score for the questionnaire, 35 or above indicates childhood trauma.[14] The socio-demographic form includes information about the participants' age, gender, marital status, education level, job, residence, perception of monthly income, the number of siblings, their mother and father's education level, and the duration of disorder (for the experimental group).

## Statistical Analysis

In this study, quantitative variables were given as mean, standard deviation, median, inter quartile range, minimum and maximum values, and categorical variables were given as frequency and percentage. Shapiro Wilk test was applied to check whether the quantitative variables were distributed normally. Kruskall Wallis and Mann Whitney U tests were conducted to examine whether there are significant differences among the categorical variables in terms of CTQ total score and sub-scores. To test which specific subgroups were significantly different from the others, Dunn test was carried out after Kruskall Wallis test was performed. To understand the relationship between experimental and control groups with regards to the categorical variables, Pearson Correlation and Fisher Freeman Halton Chi-Square tests were performed. To test the relationship between quantitative variables and scores on the CTQ, Spearman Correlation was

| Table 3. The relationships between quantitative variables and the childhood trauma questionnaire (CTQ) scores in experimental group | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Quantitative Variables** | | **Emotional abuse** | **Emotional neglect** | **Physical abuse** | **Physical neglect** | **Sexual abuse** | **CTQ** |
| **Age** | r | -0.138 | 0.189 | 0.019 | 0.340 | -0.070 | 0.103 |
| | p | 0.290 | 0.145 | 0.883 | 0.007 | 0.591 | 0.428 |
| **Number of siblings** | r | 0.189 | 0.081 | 0.211 | 0.335 | 0.372 | 0.291 |
| | p | 0.144 | 0.536 | 0.102 | 0.008 | 0.003 | 0.023 |
| **Education** | r | -0.072 | -0.240 | -0.214 | -0.295 | -0.181 | -0.267 |
| | p | 0.579 | 0.063 | 0.098 | 0.021 | 0.163 | 0.038 |
| **Mother education*** | r | -0.150 | -0.403 | -0.243 | -0.388 | -0.140 | -0.368 |
| | p | 0.249 | 0.001 | 0.059 | 0.002 | 0.282 | 0.004 |
| **Father education*** | r | -0.120 | -0.223 | -0.357 | -0.338 | -0.155 | -0.327 |
| | p | 0.356 | 0.085 | 0.005 | 0.008 | 0.232 | 0.010 |

**CTQ:** The childhood trauma questionnaire, ***:** year, Spearman Correlation test

used. A *p* value of less than 0.05 was considered to show a statistically significant result. Statistical analyses were conducted using the SPSS (version 21) software.

## RESULTS

Considering the socio-demographic characteristics of both experimental and control groups, no covariance analysis was performed because both groups were uniformly distributed. The experimental group and the control group were similar in terms of gender, ages, marital status, educational levels, number of siblings, monthly income perception, mothers' and fathers' education levels and residence area. The socio-demographic characteristics of the sample in this study are given on Table 1.

In terms of job situation, while 5 individuals (8.2%) were public servants and 17 individuals were workers (27.9%) in the experimental group, the number of public servants and workers were 11 (18.6%) and 17 (28.8%) in the control group. Moreover, while 31 individuals (50.8%) were housewives and 4 individuals belonged to the category of "other" in the experimental group, the number of individuals in the categories of housewife and "other" were 14 (23.7%) and 8 (13.6%), respectively. Among the patients with PD in the experimental group, 22 of them (36.1%) had a duration of disorder below 1 year, 25 of them (41%) between 1 and 5 years, and 14 of them (23%) more than 5 years.

The comparisons between the experimental group and the control group with regards to CTQ sub-scores and the total CTQ score are given on Table 2.

Based on Table 2, it was found that the experimental group (i.e., patients with PD) had statistically significant childhood traumas in comparison to the control group (i.e., healthy individuals) based on median values of the CTQ total (*p*=0.006). In terms of CTQ sub-scores, the results indicate that emotional abuse and emotional neglect values were significantly higher in the experimental group (*p*=0.009 and *p*=0.004, respectively). Although physical abuse and sexual abuse median values were found to be greater than the cut-off values of the questionnaire in the experimental group, there did not appear to be any statistically significant difference in both groups (*p*=0.145 and *p*=0.605, respectively). Similarly, there was no significant difference in both groups in terms of physical neglect despite higher median values in the experimental group (*p*=0.253).

Moreover, quantitative variables in the socio-demographic form were compared to the CTQ total score and sub-scores by carrying out the Pearson Correlation, and the findings are presented on Table 3. According to Table 3, a positive significant correlation between the number of siblings and CTQ total score exists (r=0.291). In other words, the number of siblings increases as parallel to

**Table 4.** The relationships between categorical variables and the childhood trauma questionnaire (CTQ) scores in experimental group

| Categorical variables | | Emotional Abuse* | p | Emotional Neglect* | p | Physical Abuse* | p | Physical Neglect* | p | Sexual Abuse** | p | CTQ* | p |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Gender** | Male | 7.0±7.5 | 0.788[a] | 13.0±6.5 | 0.147[a] | 5.0±2.0 | 0.203[a] | 7.0±5.0 | 0.755[a] | 5.0±0.0 | 0.793[a] | 39.0±17.0 | 0.747[a] |
| | Female | 7.0±4.7 | | 10.0±6.7 | | 5.0±1.0 | | 8.0±3.7 | | 5.0±0.0 | | 37.0±17.7 | |
| **Marital status** | Married | 7.0±4.0 | 0.791[b] | 12.0±7.0 | 0.325[b] | 5.0±1.0 | 0.364[b] | 8.0±4.0 | 0.016[b,c] | 5.0±0.0 | 0.712[b] | 38.0±16.0 | 0.573[b] |
| | Single | 9.0±6.2 | | 10.0±6.2 | | 5.0±2.0 | | 5.0±3.0 | | 5.0±0.0 | | 39.0±18.2 | |
| | Divorced | 5.0±9.2 | | 12.0±14.0 | | 6.0±14.2 | | 8.0±10.0 | | 5.0±3.7 | | 37.0±51.2 | |
| **Job** | Public servant | 13.0±10.0 | 0.449[b] | 10.0±7.5 | 0.077[b] | 6.0±6.0 | 0.291[b] | 8.0±5.5 | 0.185[b] | 5.0±1.0 | 0.819[b] | 43.0±18.5 | 0.325[b] |
| | Worker | 6.0±5.0 | | 9.0±8.0 | | 5.0±.5.0 | | 7.0±4.5 | | 5.0±0.0 | | 33.0±14.0 | |
| | Housewife | 7.0±4.0 | | 14.0±7.0 | | 5.0±1.0 | | 8.0±5.0 | | 5.0±0.0 | | 40.0±17.0 | |
| | Student | 9.0±6.0 | | 13.0±8.5 | | 6.0±1.7 | | 5.0±2.2 | | - | | 39.0±17.5 | |
| | Other** | 7.0±6.5 | | 11.0±11.7 | | 5.0±1.7 | | 9.0±5.0 | | - | | 38.0±24.5 | |
| **Monthly income (perception)** | Good | 7.0±4.0 | 0.930[b] | 9.0±6.5 | 0.098[b] | 9.0±1.7 | 0.878[b] | 6.0±5.5 | 0.875[b] | - | 0.327[a] | 33.0±12.2 | 0.644[b] |
| | Medium | 7.0±5.7 | | 11.0±6.7 | | 11.0±1.0 | | 7.0±4.0 | | 5.0±0.0 | | 40.0±19.7 | |
| | Not good | 6.0±5.5 | | 14.0±8.0 | | 14.0±2.5 | | 8.0±4.0 | | 5.0±0.0 | | 38.0±11.5 | |
| **Residence** | Urban | 6.0±5.5 | 0.627[a] | 11.0±7.5 | 0.500[a] | 5.0±1.0 | 0.969[a] | 7.0±4.0 | 0.033[a] | 5.0±0.0 | 0.349[a] | 38.0±18.5 | 0.371[a] |
| | Rural | 7.0±4.5 | | 12.0±5.7 | | 5.0±2.5 | | 9.0±5.7 | | 5.0±0.0 | | 39.0±15.2 | |
| **Duration (year)** | < 1 year | 7.0±5.5 | 0.959[b] | 12.0±8.5 | 0.348[b] | 5.0±1.0 | 0.556[b] | 7.0±3.5 | 0.022[b,c] | 5.0±0.2 | 0.238[b] | 41.0±15.2 | 0.333[b] |
| | 1-5 years | 7.0±4.5 | | 11.0±6.5 | | 5.0±1.0 | | 6.0±4.0 | | 5.0±0.0 | | 37.0±12.0 | |
| | > 5 years | 7.0±7.2 | | 13.0±8.0 | | 5.0±4.0 | | 9.0±7.5 | | 5.0±0.0 | | 46.0±20.0 | |

**CTQ:** The childhood trauma questionnaire, ***:** median ± inter quartile range, ****:** unemployed, farmer, retired, crafts, **a:** Mann Whitney U test, **b:** Kruskall Wallis test, **c:** Dunn's test

the CTQ total score in the experimental group. When considering CTQ sub-scores, it can clearly be said that the increase in the number of siblings is significantly related to the increase in physical neglect and sexual abuse (r=0.335 and r=0.372, respectively).

In terms of the relationship between education and childhood traumatic experiences, the results indicate that a negative significant correlation exists between education and the CTQ total score. As period of education increases, the CTQ total score and physical neglect decrease (r=-0.267 and r=-0.295, respectively). When we examine mothers and fathers' education levels, it can clearly be said that there is a negative significant correlation between the mothers' education level and physical neglect and emotional neglect between mothers' education level and physical neglect, and between mothers' education level and emotional neglect (r=-0.388 and r=-0.403, respectively). A negative significant correlation also exists between the fathers' education level, physical neglect and physical abuse (r=-0.338 and r=-0.357, respectively). Moreover, as the mothers and fathers' education levels decrease, the CTQ total score increases (r=-0.368 and r=-0.327, respectively).

Furthermore, categorical variables in the socio-demographic form were compared to the CTQ total score and sub-scores by obtaining the Spearman Correlation, and the findings are presented on Table 4.

Table 4 indicates that while being divorced and living in a rural area affected physical neglect significantly ($p$=0.016 and $p$=0.033, respectively), these two situations did not make a significant difference in terms of the CTQ total score ($p$>0.05). When we consider the relationship between duration of disorder and childhood traumatic experiences, a positive relationship was found between the duration of disorder and physical neglect ($p$=0.022), and no significant relationship appeared between the duration of disorder and CTQ total score ($p$>0.05). In terms of the effects of gender, job, and perception of monthly income on childhood traumatic experiences, there was no significant difference ($p$>0.05).

## DISCUSSION

The effects of childhood traumatic experiences on various psychiatric disorders have been extensively studied in the recent years. In particular, these studies have focused on the effects of childhood abuse and neglect on anxiety disorders.[2,5,7,12,16,17] However, studies have not considered the specific relationship between patients with PD and their childhood traumatic experiences with regards to all types or quality of trauma including sexual abuse, physical abuse, emotional abuse, emotional neglect, and physical neglect in a study. This study takes this next step by investigating the relationships between patients with PD and all types of childhood traumatic experiences including sexual abuse, physical abuse, emotional abuse, emotional neglect, and physical neglect.

Considering the findings in the present study, while there was no significant difference between the experimental and control groups in terms of the number of siblings and gender, it was found that the increase in the number of siblings in the experimental group caused physical neglect, sexual abuse, and an increase in total CTQ score. This result might stem from the fact that the increase in the number of siblings causes the members of the family to have shortages in obtaining basic needs. Hence, physical neglect might worsen. Furthermore, individuals who have been living in rural areas were found to have significantly higher physical neglect than the ones in urban areas. By considering these findings, it is evident that multi-child and large family structure in rural areas causes physical neglect due to both increase in the number of siblings and the deficiency of the availability of opportunities. Another abuse type related to the number of siblings was found to be sexual abuse in this study. The findings indicate that the increase in the number of siblings leads to increase in sexual abuse. The literature also supports our finding due to the fact that sharing the same room with other siblings increases sexual abuse and the prevalence of incest.[18] Moreover, the results in this study demonstrate that that one's education level and his/her mother and father's education levels, separately, were related to the increase in childhood traumas. While one's physical neglect increases as both his/her education level and his/her mother and father's education levels decrease, emotional neglect increases as parallel to the decrease in his/her mother's education level, and physical abuse decreases as his/her father's education level increases.

Based on our findings related to CTQ median values, the experimental group (i.e., patients with PD) had significantly higher childhood traumatic experiences compared to the control group (i.e., healthy individuals). The findings in the literature support our result in this study because the prevalence of childhood traumas in patients with PD was within the range of 13% to 54% in the literature.[2,7,12,16] The findings of the study by Leskin and Sheikh based on 274 patients with PD documented that patients with PD had a high probability of having traumatic experiences, and 14.2% of them experienced trauma during their childhood.[19] In another study, Kessler *et al.* found that 8% of patients with PTSD had a history of abuse during their childhood.[17] The most striking feature of Kessler *et al.*'s study with regards to Leskin *et al.*'s study is that physical abuse during childhood in patients with PD was quite higher than in patients with PTSD.[17,19] Furthermore, in another study examining the relationships between childhood traumas and anxiety disorders, patients with PD were found to have 8.7 times more childhood traumas, and 3.7 times more instances of Agoraphobia, Social Phobia, and Generalized Anxiety Disorder as compared to the control group of healthy individuals.[16,20] Therefore, the present study, in accord with the studies in the literature, suggests that PD is a mental disorder that is highly related to childhood traumatic experiences.

Although the concept of trauma is usually used as a triggering or uncovering factor for the disorder in terms of Anxiety Disorder sub-types, the results of the present study revealed that trauma also plays a key role in the period of PD development. Some studies in the literature have explained the role of the traumatic events in the different lifetime periods of patients with PD .[21,22] For example, in a study by Horesh *et al.* that compared the stressful

events patients with PD have experienced with the control group's experiences, traumatic events were investigated separately as those that occurred during childhood, adolescent period, adulthood and 1 year before the beginning of the disorder.[21] While Horesh *et al.* found more prevalence of traumatic events in patients with PD than the control group in childhood and adolescent periods, there was no significant difference in both experimental and control groups in adulthood and 1 year before the beginning of the disorder.[21] In another study that explains anxiety disorders with regards to life events, 25 patients with PD were compared to 15 patients with OCD.[8] While there was no significant difference based on the number of life events one year before the beginning of the disorders, the former group was found to have more negative life events than the latter group in terms of total life events.[8] The results of our study showed that the duration of the disorder in patients with PD is related to physical neglect during childhood. As physical neglect increases, the duration of PD extends.

Regarding the CTQ sub-scores, the experimental group was found to have significantly higher emotional abuse and emotional neglect in comparison to the control group. The studies in the literature also report that emotional abuse and emotional neglect in childhood play a greater role in many psychiatric disorders including depression in adult life, social phobia, and PD in comparison to sexual and physical abuse and neglect.[21-27] For example, the study of Bonevski and Novotni examined the relationship in terms of childhood traumas in patients with PD as the experimental group and healthy individuals as the control group. Patients with PD were found to have significantly greater exposure to emotional abuse, emotional neglect and physical abuse, but there was no significant difference for sexual abuse and physical neglect between both groups.[22] Bonevski and Novotni also found a significant relationship between the amount of abuse to which patients have been exposed and the severity of clinical indications of the disorder.[22] Similarly, in another study, one of each of 10 patients with PD appeared to have emotional abuse during their childhood, implying that PD might accompany with emotional abuse.[24] Some studies also emphasize that early life events that might lead to a predisposition to emotional abuse and emotional neglect such as early separation from the caregivers, divorce of mother and father, and alcohol addiction of one of the parents a significantly higher rate among patients with PD, compared to healthy individuals.[4,18,20,21] Regarding our finding that the experimental group had statistically higher emotional abuse and emotional neglect than the control group, an exposure to emotional abuse and emotional neglect in early periods might cause an individual to experience the state of hyperarousal and hyperanxiety related to body senses. This, in turn, might facilitate PD development along with the presence of the genetic background. Cortes *et al.* claimed that childhood traumas highly influence cognitive structuring and the mechanisms for coping with stress so that children who have been exposed to traumas spend immense energy, and such a situation leads to weaknesses in dealing with stress sources other than trauma.[16] Moreover, after experiencing traumas, individuals might have further indications of anxiety due to the dysfunction of the hypothalamoadrenal axis through changes at the neurotransmitter level.[28,29] Additionally, it was shown in some animal studies that the negative effect of stress on the brain might increase anxiety by causing neurobiological changes.[28] As independent from the mechanism forming disorder, traumatic experiences, with the help of genetic diathesis, seem to cause a chronic hyperarousal and the state of anxiety. Such a situation leads to a disorder on a diagnostic basis.[8]

One limitations of this study is to collect data based on self-report. Another limitation is the small sample size. Larger sample size would be more representative of the population. Despite these limitations, the findings of this study suggest new lines of research on the effects of childhood traumatic experiences on PD development.

## CONCLUSION

Main result of this study is that PD is a mental disorder in which childhood traumatic events play a critical role in its developmental process. As

parallel to this result, obtaining significantly higher emotional abuse and emotional neglect in patients with PD with regards to healthy individuals seems to be a precursor for the identification of a psychiatric disorder group with respect to the type or quality of trauma in childhood. Therefore, an important implication of this study is that providing preventive and supportive healthcare services to individuals who have been exposed to trauma, and pursuing follow-ups with them are milestones in diagnosing the PD development in addition to other mental disorders related to trauma. Moreover, the results of the present study suggest that during medical examinations, patients with PD need to be asked about whether they have experienced trauma before or not because the identification of traumatic experiences has a high potential for informing physicians about the decision for effective treatment and is within the process of psychotherapy.

*The authors declare that there are no conflicts of interest.

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