

Research Article

The Association Between the Duration of Breastfeeding in Infancy and Adult Psychopathology: A Cross-Sectional Study in Turkey

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Abstract

AIM: To evaluate the association of duration of breastfeeding in infancy and adulthood psychiatric disorders, sexual problems, and clinical features of patients in the Turkish population.**METHOD:** A sample of 166 patients with depressive disorder, anxiety disorders, obsessive-compulsive disorder, or trauma and stressor-related disorders were consecutively gathered from the outpatient clinic in March-May 2021 in a cross-sectional descriptive study. The patients with a breastfeeding time of fewer than 6 months and equal or more than 6 months were compared in terms of sociodemographic and clinical characteristics, scale scores, and current or lifelong psychiatric disorders.**RESULTS:** The percentages of the history of psychiatric disorder ($p = .009$), the number of comorbid psychiatric disorders ($p = .020$), and the patients diagnosed with current ($p = .001$) and lifetime ($p = .004$) panic disorder or lifetime vaginismus ($p = .019$) were significantly higher in the patients with a breastfeeding time fewer than 6 months compared to the patients with more than 6 months. While the duration of maternal ($p = .010$) and paternal education ($p = .004$) was significantly higher, the birth order was significantly lower ($p = .010$) in the patients with a breastfeeding time of fewer than 6 months compared to the patients with more than 6 months.**CONCLUSION:** Breastfeeding time of more than 6 months seems favorable in terms of the absence of current or lifetime psychiatric disorder, especially panic disorder and vaginismus, compared to the patients with fewer than 6 months.**Keywords:** Anxiety, breastfeeding, depression, psychopathology, vaginismus

Introduction

The studies have shown that prolonged breastfeeding was associated with both the short-term benefits for both children and mothers and long-term consequences (de Mola et al., 2016). It has been reported that while breastfeeding protects the mothers against breast and ovarian cancers and type-2 diabetes, it protects the children against infections and decreases the risk of obesity and diabetes (Victoria et al., 2016). Researchers also reported that breastfeeding was related to increased childhood intelligence tests and cognitive test performance and is associated with a higher income in adulthood (Bernardo et al., 2013). Besides, breastfeeding is negatively related to psychological stress, anxiety and depressive symptoms, psychobehavioral problems, major depression (MD), and attention deficit and hyperactivity disorder (Poton et al., 2018). When the literature is reviewed, there is no study examining the association between breastfeeding duration and adulthood psychiatric and sexual disorders in the Turkish population. Therefore, this is the first study that has examined the association between breastfeeding duration and the severity of psychiatric symptoms in Turkish patients. It was

aimed to investigate the association between breastfeeding time and adulthood psychiatric disorders, sexual problems, and clinical features of patients diagnosed with anxiety disorders (generalized anxiety disorder (GAD), social anxiety disorder (SAD), specific phobia (SP), and panic disorder (PD)), MD, obsessive-compulsive disorder (OCD), or trauma and stressor-related disorders (TSRD) in the Turkish population.

Research Questions

1. Are there any associations between the sociodemographic characteristics of psychiatric patients and the duration of breastfeeding?
2. Does a shorter duration of breastfeeding causes an increase in the frequency of adulthood psychiatric and sexual disorders?
3. Does breastfeeding duration affect psychiatric patients' clinical parameters and symptom severity?

Method

Study Design

It was a cross-sectional descriptive study.

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Sample

The study included 166 adult patients (134 female and 32 male) diagnosed with depressive disorder, anxiety disorders, OCD, or TSRD, and consecutively admitted to the outpatient clinic of the Bakirkoy Prof. Dr. Mazhar Osman Mental Health and Neurology Training and Research Hospital from March to May 2021. The patients were recruited with similar ethnicity from the same geographical areas.

Data Collection

The treatment records were obtained from a follow-up program, covering their treatment schedule. First, the patients were assessed with a Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I). Accordingly, the sociodemographic and clinical features (age, number of children, number of siblings, birth order, education, maternal education, paternal education, current or lifetime psychiatric disorders, number of comorbid psychiatric disorders, etc.) were recorded with information from the patients, their families, and previous psychiatric admission records.

Then, the Beck Anxiety Inventory (BAI), Beck Depression Inventory (BDI), Clinical Global Impression-Severity Scale (CGIS), Global Assessment of Functioning (GAF), Arizona Sexual Experiences Scale (ASEX), and Maudsley Obsessive-Compulsive Inventory (MOCI) were applied to all participants.

A dichotomous measure of breastfeeding using a cut-off point of 6 months was created, as research has suggested that breastfeeding may have unique benefits on health, cognition, and even behavior once it crosses the 6 months threshold (Jackson, 2016; Oddy et al., 2010). The patients with a breastfeeding time of fewer than 6 months (66 patients) and equal or more than 6 months (100 patients) were compared in terms of sociodemographic and clinical characteristics and presence of current or lifelong psychiatric disorder.

Data Collection Tools

Sociodemographic and Clinical Characteristics Data Form

This form is a detailed interview form that includes questions about clinical information such as sociodemographic characteristics, breastfeeding duration, disease history, and complaints about psychiatric disorders prepared by the researchers.

Structured Clinical Interview for DSM-IV-TR (SCID-I)

First et al. developed the SCID-I in 1997, a structured interview chart for diagnosing Axis I disorders according to DSM-IV-TR diagnostic criteria (Spitzer et al., 1992). Çorapçioğlu et al. conducted validity-reliability of SCID-I for the Turkish population in 1999 (Çorapçioğlu et al., 1999).

Clinical Global Impression Scale (CGI)

Guy developed CGI in 1976 to assess the progression of all psychiatric disorders at any age for clinical research purposes (Guy, 1976). Global Impression Scale is a three-dimensional semi-structured scale used during the semi-structured interview to assess disease severity and treatment response of people with psychiatric disorders.

Global Assessment of Functioning (GAF)

Global Assessment of Functioning is the clinicians' evaluation of the patients' overall level of functioning (Luborsky, 1962). The translation procedure of the Turkish version of SCID-CV also contains the GAF scale, but the individual reliability study of this instrument was not conducted with any Turkish sample.

The Maudsley Obsessive-Compulsive Inventory (MOCI)

Hodgson and Rachman developed this as a self-assessment tool consisting of 30 true and false items (Hodgson & Rachman, 1977). In addition, Erol and Savaşır conducted the validity-reliability research of the Turkish version of MOCI, and seven more items were added (Erol & Savaşır, 1988).

Beck Depression Inventory (BDI)

It is a self-report scale composed of 21 items, consolidated from those observations and ranked 0-3 for severity (Beck et al., 1961). Hisli conducted the adaptation and validity-reliability studies of the Turkish version of BDI (Hisli, 1989).

Beck Anxiety Inventory (BAI)

It is a self-report scale composed of 21 items and measures the severity of anxiety in children and adults (Beck et al., 1988). Ulusoy conducted the adaptation and validity-reliability studies of the Turkish version of BAI (Ulusoy et al., 1998).

Arizona Sexual Experiences Scale (ASEX)

A questionnaire designed to evaluate the five main components of sexual function such as excitement, stimulation, penile erection/vaginal wetness, orgasm, and satisfaction from orgasm. McGahuey et al. and Soykan conducted validity-reliability studies of the Turkish version of ASEX (McGahuey et al., 1999; Soykan, 2004).

Statistical Analysis

Statistical analysis was performed using IBM SPSS version 21.0 (IBM Corp. released 2012; Armonk, NY, USA). Descriptive statistics included mean, standard deviation, frequency, and percentage. Pearson chi-square or Fisher's exact test was used for comparing discrete variables. The Shapiro-Wilk test evaluated the suitability of continuous variables to normal distribution. Continuous variables' comparisons were performed with the student's *t*-test. The statistical significance was accepted as a $p < .05$ for the results of all analyses.

Ethical Considerations

The Clinical Research Ethics Committee approved this study of Uskudar University (Approval date: March 14, 2021, Protocol no: 61351342/Mart 2021-14) under the ethical standard for human experimentation established by the Declaration of Helsinki (World Medical Association [WMA], 2013) (2021/03).

Results

One hundred and sixty-six patients diagnosed with MD, anxiety disorders, OCD, or TSRD were evaluated due to sociodemographic and clinical characteristics in Table 1. When comparing sociodemographic and clinical characteristics of patients due to breastfeeding duration, the percentage of the

Table 1.
Comparison of Sociodemographic and Clinical Characteristics of Patients According to Duration of Breastfeeding (N = 166)

	Duration of Breastfeeding		χ^2 /Fisher Test	p
	<6 months *n (%)	≥6 months *n (%)		
Gender				
Female	58 (87.8)	76 (76)	2.8*	.580
Male	8 (12.2)	24 (24)		
Marital status				
Married	36 (54.5)	68 (68)	4.0*	.135
Single	26 (39.4)	30 (30)		
Divorced	4 (6.1)	2 (2)		
Children				
No	30 (45.5)	32 (32)	2.5*	.079
Yes	36 (54.5)	68 (68)		
Living place				
Village	12 (18.2)	32 (32)	3.9 [§]	.136 [§]
District	40 (60.6)	52 (52)		
Province	14 (21.2)	16 (16)		
Domestic violence				
No	48 (72.7)	80 (80)	0.8*	.275
Yes	18 (27.3)	20 (20)		
Suicide attempt				
No	56 (84.8)	90 (90)	5.6*	.318
Yes	10 (15.2)	10 (10)		
Psychiatric history				
No	44 (66.6)	84 (84)	5.8*	.009
Yes	22 (33.3)	16 (16)		

Note: *n = 66; *n = 100; *Pearson chi-square; [§]Fisher's exact test.

history of psychiatric disorder was significantly higher in the patients with a breastfeeding time of fewer than 6 months compared to the patients with a breastfeeding time of more than 6 months ($p = .009$) (Table 1). In addition, when comparing the percentages of current or lifetime psychiatric disorders (i.e., MD, PD, GAD, SAD, SP, OCD, TSRD, and vaginismus) due to breastfeeding duration, the percentages of the patients diagnosed with current ($p = .001$) and lifetime ($p = .004$) panic disorder or lifetime vaginismus ($p = .019$) were significantly higher in the patient's group with a breastfeeding time fewer than 6 months compared to the patient's group more than 6 months (Table 2).

Comparing clinical parameters and scale scores (i.e., age, number of children, number of siblings, birth order, education, maternal education, paternal education, number of comorbid psychiatric disorders, CGI, GAF, BDI, BAI, MOCI, and ASEX) showed that while the duration of maternal education ($p = .010$), paternal education ($p = .004$), and the number of comorbid disorder

($p = .020$) were significantly higher in the patients with a breastfeeding time of fewer than 6 months compared to the patients with more than 6 months, the birth order was significantly higher in the patients with a breastfeeding time more than 6 months compared to the patients with fewer than 6 months ($p = .010$) (Table 3).

Discussion

Several studies have documented the short-term and long-term influences of breastfeeding on the offspring's physical health in the literature. Besides, breastfeeding improves mental health and cognitive development (Merjonen et al., 2011). Some mechanisms that could explain these results have been identified. First, breastfeeding may positively affect mother-child bonding, indirectly protect against maternal neglect, and support developing personality (Jansen et al., 2008; Liu et al., 2014). Second, breast milk consists of amino acids, essential fatty acids, minerals, and vitamins related to improved cognitive functioning (Horta et al., 2015), language (Whitehouse et al., 2011), and neurological development (Feldman & Eidelman, 2003). Eicosapentaenoic acid (EPA) is one of the potential components included in the mechanisms describing the relationship between breastfeeding and cognitive function, together with docosahexaenoic acid (DHA) advised as a diet supplement for depression (Martins, 2009). Breastfeeding may also change oxytocin's secretion, which improves both mother and child's mental health (Merjonen et al., 2011).

In the present study, a history of psychiatric disorder, the number of comorbid psychiatric disorders, the presence of current or lifetime panic disorder, and lifetime vaginismus were found to be negatively associated with breastfeeding duration. When the literature was reviewed, it could be seen that the number of studies evaluating the effect of breastfeeding on specific mental disorders is limited. Most researchers reported the protective influence of breastfeeding on general behavior (Liu et al., 2014) or mental health in children and adolescents (Reynolds et al., 2014). However, the evidence is not definitive among those few studies assessing specific mental disorders. de Mola et al. reported that Brazilian individuals breastfed for more than 6 months were less likely to have more severe depression symptoms, measured by the BDI (de Mola et al., 2016). Similarly, Peus et al. reported that being depressed was higher among those breastfed for less than two weeks in adults (Peus et al., 2012). Contrarily, Anselmi et al. published that breastfeeding was not related to common mental disorders in 23-year-old adults (Anselmi et al., 2008). Breastfeeding also can protect the infant from features of antisocial personality in adulthood. Merjonen et al. reported that breastfeeding might have long-term influences on infant hostility. A population-based study showed a significant difference in hostility between breastfed patients in infancy and non-breastfed ones (Merjonen et al., 2011). A possible pathway explaining the relationship between breastfeeding and psychiatric disorders could also be the relationship between breastfeeding and cognitive development. Victora et al. reported that increased performance in intelligence was associated with breastfeeding thirty years later. Therefore, it can significantly impact real-life by increasing educational success and income in adulthood (Victora et al.,

Table 2.
Comparison of Current or Lifetime Psychiatric Disorders of Patients According to Duration of Breastfeeding (N = 166)

	Duration of Breastfeeding				p ^a	p ^b
	<6 months *n (%)		≥6 months *n (%)			
	Current ^a	Lifetime ^b	Current ^a	Lifetime ^b		
Depression						
Yes	28 (42.4)	40 (60.6)	44 (44)	52 (52)	.841 [*]	.275 [*]
No	38 (57.6)	26 (39.4)	56 (56)	48 (48)		
Obsessive Compulsive Disorder						
Yes	16 (24.3)	16 (24.3)	20 (20)	20 (20)	.516 [*]	.516 [*]
No	50 (75.7)	50 (75.7)	80 (80)	80 (80)		
Panic Disorder						
Yes	30 (45.5)	30 (45.5)	22 (22)	24 (24)	.001 [*]	.004 [*]
No	36 (54.5)	36 (54.5)	78 (78)	76 (76)		
General Anxiety Disorder						
Yes	28 (42.4)	28 (42.4)	36 (36)	36 (36)	.405 [*]	.405 [*]
No	38 (57.6)	38 (57.6)	64 (64)	64 (64)		
Social Anxiety Disorder						
Yes	16 (24.2)	20 (30.3)	16 (68)	22 (68)	.188 [*]	.228 [*]
No	50 (75.8)	46 (69.7)	84 (22)	78 (22)		
Trauma and Stress-Related Disorder						
Yes	2 (3.1)	10 (15.2)	0 (0)	10 (10)	.157 [§]	.318 [*]
No	64 (96.9)	56 (84.8)	100 (100)	90 (90)		
Specific Phobia						
Yes	12 (18.2)	12 (18.2)	28 (28)	30 (30)	.148 [*]	.087 [*]
No	54 (81.8)	54 (81.8)	72 (72)	70 (70)		
Anxiety Disorder						
Yes	2 (3.1)	2 (3.1)	2 (2)	2 (2)	.650 [§]	.650 [§]
No	64 (96.9)	64 (96.9)	98 (98)	98 (98)		
Vaginismus						
Yes	0 (0)	24 (36.4)	0 (0)	20 (20)	^z n	.019 [*]
No	66 (100)	42 (63.6)	100 (100)	80 (80)		

Note: *n = 66; *n = 100; ^zn = no statistics could be calculated; ^{*}Pearson chi-square; [§]Fisher's exact test.

2015). It was essential to see that these findings were compatible with the literature showing that the more extended breastfeeding period was protective against psychiatric disorders similar to other populations.

Vaginismus is a comparatively uncommon uncontrolled contraction of the outer third of the vagina, and pelvic muscles result in the prevention of sexual intercourse, causing interpersonal difficulty (Lucena et al., 2015). It can occur secondary to a history of dyspareunia or frequently followed by dyspareunia; therefore, the DSM-5 equivalent of vaginismus and dyspareunia diagnoses in DSM-IV is genito-pelvic pain/penetration disorder (American Psychiatric Association [APA], 2013). When the

literature was reviewed, no study on the relationship between breastfeeding duration and sexual female dysfunction was found. In this study is the first to report the association between vaginismus and the duration of breastfeeding. It was known that general anxiety levels, not only concerning penetration, are raised among patients diagnosed with vaginismus; therefore, this disorder may share common predisposing factors with anxiety disorders (Watts & Nettle, 2010). Frohlich et al. published that women with depressive symptoms presented higher sexual pain disorder, besides inhibiting sexual arousal and sexuality than control groups without depression since the women with vaginismus had significantly higher scores on the depression scale (Frohlich & Meston, 2002). Depression and anxiety

Table 3.
Comparison of Clinical Parameters and Scale Scores of Patients According to Duration of Breastfeeding (N = 166)

	Mean ± SD <6 months	Mean ± SD ≥6 months	t	p*
Age	26.8 ± 9.2	31.1 ± 10.2	-1.9	.052
Number of children	1.9 ± 1	2.3 ± 0.8	-1.4	.150
Number of siblings	4 ± 1.7	4.6 ± 2.5	-1.2	.200
Birth order	2 ± 1.4	3.1 ± 2	-2.6	.010
Education	8.6 ± 3.6	8 ± 3.1	0.8	.400
Maternal education	3.8 ± 4.1	1.9 ± 3	2.5	.010
Paternal education	6.3 ± 3.5	3.9 ± 3.6	3.0	.004
Number of comorbid disorder	2.5 ± 1	2 ± 0.9	1.6	.020
CGI	4.3 ± 0.8	4.1 ± 1	0.7	.500
GAF	55.3 ± 6.9	56.7 ± 8	-0.8	.400
BDI	25.3 ± 12.7	24.1 ± 9.2	0.4	.600
BAI	36.4 ± 15.3	34.3 ± 13.5	0.6	.500
MOCI	20.3 ± 6.7	20.7 ± 5.9	-0.2	.800
ASEX1	3.8 ± 1.3	3.7 ± 1.7	0.2	.800
ASEX2	3.5 ± 1.5	3.8 ± 1.4	-0.7	.400
ASEX3	3 ± 1.2	3.3 ± 1.4	-0.7	.400
ASEX4	3.9 ± 1.1	3.6 ± 1.3	0.9	.300
ASEX5	3.5 ± 1.2	3 ± 1.4	1.1	.200

Note: *t-test.

symptoms severity were significantly higher in Turkish women with vaginismus than the control group in the study published by Karaguzel et al. (Karagüz el al., 2016). Also, the patients with vaginismus were more insecurely attached, anxious, and fearful than the healthy group in Turkish populations (Ozcan et al., 2015). Therefore, it has been speculated that the higher rates of anxiety disorders in participants with short breastfeeding duration can explain the higher rate of vaginismus, considering the relationship between anxious-insecure and fearful-insecure attachment styles and vaginismus.

Breastfeeding is not only a biological issue but also associated with multifactorial issues, including personal, social, economic, and traditional characteristics; therefore, breastfeeding can be influenced by age, weight, education, and confidence (Tang et al., 2019). The mother's education status has been recognized as a critical determinant of the child's survival and well-being. In this study, the duration of maternal and paternal education was significantly higher in patients with a breastfeeding time of fewer than 6 months compared to more than 6 months. When the literature was reviewed on maternal education and breastfeeding relationship in detail, many kinds of research reported a positive association between maternal education and breastfeeding. Mainly, it was shown that increased duration of maternal education was associated with more favorable breastfeeding in Italy (Bertini et al., 2003), Nepal (Acharya & Khanal, 2015), and the

United States (Heck et al., 2006). However, researchers reported a negative relationship between breastfeeding and maternal education duration in Bangladesh (Mihirshahi et al., 2010) and Ethiopia (Alemayehu et al., 2009) similar to the present study. This might be described by the fact that when women are better educated, the employment opportunity is increased, and thus the chance to stay at home and the duration of breastfeeding can be limited. At the same time, women may be influenced by media advertising milk replacements. Although most women breastfeed their children for a short time, they often discontinue breastfeeding too early for these reasons.

In the present study, it was found that birth order is positively associated with the duration of breastfeeding. A literature examination suggests that while there is evidence that children with higher birth order tend to be worse in many dimensions in developed countries, the effects of birth order on children's schooling are more favorable in developing countries. For example, parallel to the current finding, in Ecuador, De Haan et al. published that older children spend less quality time with their mothers and are breastfed shorter (De Haan et al., 2014). These favorable birth order tendencies are parallel with the research outcomes of Jayachandran and Kuziemko for the Indian population. They showed that breastfeeding duration increases with birth order. There could be two mechanisms explaining this association. First, breastfeeding reduces a woman's possibility of childbearing. Second, women typically wean a kid when pregnancy occurs again (Jayachandran & Kuziemko, 2011). In developing countries, as individuals progress economically over time, they have many opportunities to invest in their own or their child's health and well-being after birth (Buckles & Kolka, 2014). It was also thought that the mother's increased experience and self-confidence in caring for the baby are also related to the increase in breastfeeding duration of the following births.

Study Limitations

While this study's strengths lie in the fact that this study is the first research investigating the association between breastfeeding duration and symptom severity of Turkish participants diagnosed with psychiatric disorders, we can mention some limitations. The first limitation of this study was the low number of cases. Second, because the present research was cross-sectional, we cannot conclude causality. Third, we determined 6 months as the cut-off point and created two groups. More groups could be compared if there were sufficient samples.

Conclusion and Recommendations

In conclusion, while a history of psychiatric disorder, number of comorbid psychiatric disorders, current or lifetime panic disorder, and lifetime vaginismus is negatively associated with breastfeeding duration, birth order is positively associated with breastfeeding duration. Furthermore, it was found that the duration of maternal education and paternal education were significantly higher in the patients with a breastfeeding time of fewer than 6 months compared to the patients with a breastfeeding time of more than 6 months. Confirming these findings with various ethnic communities would help perceive the

association between breastfeeding duration and psychiatric disorders.

Ethics Committee Approval: The Clinical Research Ethics Committee approved this study of Üsküdar University (Approval date: March 14, 2021, Protocol no: 61351342/Mart 2021-14) under the ethical standard for human experimentation established by the Declaration of Helsinki (2021/03).

Informed Consent: Written informed consent was obtained from all participants who participated in this study.

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