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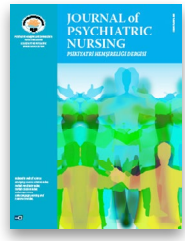

Original Article

The relation between postpartum maternal traumatic stresss and bonding

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Abstract

Objectives: Postpartum post-traumatic stress disorder (PTSD) is an important and still underrecognized problem that affects women and their families. The psychological well-being of the mother is critical to attachment, which is fundamental to the infant's psychological development. This study was conducted to determine the effect of traumatic stress on mother-infant bonding in the postpartum period and to examine risk factors.

Methods: This was a descriptive study conducted with 360 women who had infants 6 months of age. The participants completed a personal information form, the City Birth Trauma Scale (CityBiTS), and the Postpartum Bonding Questionnaire (PBQ), and the data were analyzed. The distribution of the data was evaluated using the Kolmogorov-Smirnov test, and the Kruskal-Wallis, Mann-Whitney U test, and logistic regression analysis were used to analyze the data.

Results: The mean age of the study participants was 29.24±3.52 years, and the majority had a bachelor's degree (76.1%). The mean total CityBiTS score was 20.23±14.32 (possible range: 0-60). The CityBiTS data revealed that 90.6% (n=326) of the women had at least 1 or more symptoms of trauma and 16.4% (n=59) women in the sample met all of the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition diagnostic criteria for PTSD. It was observed that the CityBiTS scores increased in parallel with the PBQ scores. Emergency cesarean section, vaginal examination by several different people during labor, and complications for mother or infant increased the traumatic stress score. A history of abuse, an unwanted pregnancy, and no opportunity to provide skin-to-skin contact had negative effects on postpartum bonding ($p<0.05$).

Conclusion: In this study, 16.4% of the participants met the criteria for a diagnosis of PTSD, and a greater traumatic stress score negatively affected mother-infant bonding. Women at risk of PTSD and poor bonding should be followed up closely in the postpartum period and provided with the appropriate care.

Keywords: Birth; bonding; postpartum period; traumatic stress.

The birth experience profoundly changes the life of the mother and presents both joys and challenges.[1,2] Childbirth is a positive experience for many women, but it can also be traumatic. Factors such as a lack of sufficient support, difficulty with birth pain, a feeling of loss of control, disregard for privacy, complications, or interventions can cause significant distress.[3–7]

Birth trauma refers to physical or psychological suffering related to childbirth. In addition to actual physical threats they may face, a mother may perceive the birth experience as a threat to herself or the baby.[3,8] Health professionals have noted that even if everything goes smoothly during the birth, the mother may perceive the birth negatively and develop traumatic stress symptoms in the postpartum period.[1,4] While most women feel emotions such as excitement, happiness, appreciation, and amazement, others may experience significant fear, desperation, horror, or dread. Women who experience postpartum nightmares, flashbacks, irritability, or guilt, or avoid talking about and remembering the birth should be

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What is presently known on this subject?

- Post-traumatic stress disorder in the postpartum period has a negative impact upon the woman, the infant, the family, and ultimately, the community. The potential long-lasting effects of weak mother-infant bonding are a critical concern.

What does this article add to the existing knowledge?

- Postpartum traumatic stress had a negative effect on maternal bonding. This study was the first in Turkey to use the City Birth Trauma Scale and the Postpartum Bonding Questionnaire to assess the risks for and effect of traumatic stress on mother-infant bonding. The results provide valuable clinical data that can help avoid traumatic experiences.

What are the implications for practice?

- Risk factors for postpartum post-traumatic stress and bonding difficulty should be monitored carefully and addressed early. Recognition and treatment of psychiatric struggles in the postpartum period can prevent poor mother-infant bonding and serves to benefit community mental health.

assessed for post-traumatic stress disorder (PTSD).[1,3–8] Exposure to any shocking, dangerous, or frightening event can lead to the development of PTSD, a condition that can affect thoughts, emotions, and behavior.[1,3,4,7] A traumatic birth experience can have multiple negative effects on the mother, the infant, and the family, and ultimately, on the community. Poor mother-infant bonding can have important and lasting consequences.[9–12]

Bonding is the formation of a unique emotional relationship. The bond established between the child and the parents is not limited to childhood, but continues for a lifetime.[13] Factors such as a planned pregnancy, readiness for the birth, an easy or uncomplicated birth, support from health professionals and others, and the psychological well-being of the parents in the postpartum period have a positive impact on the bonding process and healthy attachment.[14–16] In contrast, factors such as an unplanned/unwanted pregnancy, stress and anxiety during the pregnancy, a problematic pregnancy or delivery, emergency cesarean delivery, separation from the baby, and insufficient support can negatively affect the bonding process.[14,15,17]

Assessment of the mental health of women during the postpartum period is not regularly performed in this country and women are frequently left to struggle on their own.[5] As with other illnesses, early diagnosis and treatment is important for psychiatric diseases. The identification of pregnant women at risk of developing a psychiatric disorder is an important element of providing of appropriate, high-quality care. Bonding and attachment are highly influential to development and remain significant throughout life. Protecting and caring for the mental health of the mother and child benefits the entire community.[14,10] The objective of the present study was to analyze the relationship between postpartum traumatic stress and bonding and to explore and define risk factors.

Materials and Method

Study Design

This descriptive, relational study was conducted with data from patients treated between January and May 2020 gathered from the pediatric department of a private hospital in Istanbul, Turkey.

Participants

A review of the admissions to pediatric service for the previous year determined that a sample of at least 334 women was needed for a confidence interval of 95%. A total of 385 women presenting for routine childhood vaccinations or 6-month check-ups were interviewed. Those who did not wish to participate, did not fully complete their responses, or did not meet the other study criteria were excluded. All of the participants had a child 6 months of age; agreed to participate in the study; spoke Turkish; were aged 18-39 years; had a non-risky, primipara, singleton pregnancy; gave birth in the 37th week or later; and were living with their partner in a nuclear family unit. The final group comprised 360 women.

Instruments

The study data were collected using a personal information form, the City Birth Trauma Scale (CityBiTS), and the Postpartum Bonding Questionnaire (PBQ).

Personal Information Form

The researchers created a form based on the relevant literature consisting of questions to elicit sociodemographic characteristics (age, education, occupation, income status), history of trauma, pregnancy history, birth details (type, interventions, duration of second stage of birth, complications, etc.), and characteristics of the infant.

City Birth Trauma Scale

The CityBiTS instrument is specifically designed to evaluate PTSD related to childbirth based on the criteria in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5).[4] The scale is an assessment tool intended to guide clinical care and research. A validity and reliability study of a Turkish version of the scale published in 2020 retained the original scale items and yielded a Cronbach alpha coefficient of 0.91 for the total scale.[18] Items 1 and 2 identify stressors as defined by the DSM-5 criteria and have a yes/no response. Two subscales measure symptoms. The response scale asks for a rating of frequency of symptoms over the previous week using a scale of 0 (not at all) to 3 (5 or more times). The birth-related symptoms subscale includes 11 items: items 3-7 correspond to re-experiencing the birth, items 8 and 9 correspond to symptoms of avoidance, and items 10-13 correspond to negative cognitions and mood. The general symptoms subscale includes 9 items: items 14-16 correspond to negative cognitions and mood, and items17-22 correspond to signs of hyperarousal. The maximum total score for PTSD symptoms (items 3-22) is 60. A higher score indicates a greater level of symptoms. Items 23 and 24 are associated with disassociation,

which is not a symptom of PTSD, and are provided for other purposes. Item 25 reflects delayed onset, and item 26 suggests PTSD prior to childbirth and is a measure of prevalence rather than new incidence. The Cronbach alpha value for the present study was 0.93.

City Birth Trauma Scale diagnostic criteria:

[A] Stressor criterion:	Women fulfil DSM-5 criterion A if they respond yes to Q1 or Q2
[B] Re-experiencing symptoms:	Women score 1 or more on any question from Q3 to Q7 inclusive
[C] Avoidance symptoms:	Women score 1 or more on Q8 or Q9
[D] Negative cognitions and mood:	Women score 1 or more on 2 questions from Q10 to Q16 inclusive
[E] Hyperarousal:	Women score 1 or more on 2 questions from Q17 to Q22 inclusive
[F] Duration:	Women score 1 or more on Q26
[G] Distress and impairment:	Women score 1 or more on Q27 or Q28
[H] Exclusion criteria:	If women score 1 or more on Q29 then exclude them from diagnostic PTSD

Postpartum Bonding Questionnaire

The PBQ was developed by Brockington et al.[19] to assess impairment of mother-infant bonding in the postpartum period. Yalçın et al.[20] performed a validity and reliability study of a Turkish version. The measurement tool consists of 25 items and uses a 6-point, Likert-type scale ranging from 0 (always) to 5 (never). The 4 subscales and their cutoff points are impaired bonding: ≥12, rejection and anger: ≥17, anxiety about caring for the infant: ≥10, and risk of abuse: ≥3. A higher score indicates greater bonding impairment. The Cronbach alpha reliability coefficient of the PBQ in this study was .92.

Data Collection

Mothers presenting for routine appointments who met the enrollment criteria were informed about the study, provided consent, were interviewed by a researcher and completed the study assessment forms.

Statistical Analysis

Number and percentage figures were used to describe the study data. Normal distribution was assessed using the Kolmogorov-Smirnov test. The Kruskal-Wallis test and the Mann-Whitney U test were used to compare and analyze data without a normal distribution. Comparisons of >2 groups were also assessed for normality of distribution and Kruskal-Wallis analysis of variance was performed. Post hoc testing of the Mann-Whitney U test was performed using the Bonferroni correction method for a maximum of 3 groups. The significance level applied was $\alpha \leq 0.017$. However, in order to use a standard significance level ($\alpha=0.05$) throughout the study, the results of Bonferroni-corrected Mann-Whitney U tests were adjusted appropriately. Logistic regression analysis was used to identify risk factors. The levels of significance used were $p<0.05$ and $p<0.01$.

Ethical Considerations

This study was approved by the Marmara University Health Sciences Institute Ethics Committee (2018-258) as well as the Pendik District Hospital administration (2020-201). The ethical principles of the Declaration of Helsinki were observed throughout, including providing a detailed explanation of the research and maintaining privacy and confidentiality.

Results

The mean age of the study participants was 29.24±3.52 years (min-max: 20-39 years), the mean length of formal education was 15.04±1.09 years (min-max: 8-18 years) and 94.4% (n=340) resided as a nuclear family. In all, 37.2% of the women (n=134) had a vaginal delivery. Assessment of delivery-related perceptions revealed that 48.1% reported positive emotions (related to holding and touching the baby, the baby's sounds, the first sight of the baby, scent of the baby, feeling relief and excitement, etc.) and 42.2% expressed negative feelings (related to emergency cesarean, birth pain, vaginal examinations, fear of losing the baby, etc.). In all, 69.7% of responses to an item beginning with "I wish…" reflected a disappointment that their husbands had not been with them, not having sufficient support, the delivery was performed at another hospital, and a wish they had been able to be calmer, seize the moment, and so on. The characteristics of the participants are presented in Table 1.

The mean total CityBiTS score was 20.23±14.32 (possible range: 0-60), 90.6% of the women (n=326) had ≥1 symptoms of trauma, and 16.4% (n=59) met the diagnostic criteria of PTSD. The CityBiTS scores of participants who were unemployed, had insufficient financial income, underwent an emergency cesarean delivery or medical interventions during delivery, experienced complications after the delivery related to the mother or the infant, or did not have the opportunity to experience mother-infant contact after the birth were significantly higher ($p<0.05$). The personal characteristics and mean CityBiTS scores are presented in Table 2.

The mean PBQ score was 14.42±16.21 (possible range: 0-110). Women with a history of abuse or poor bonding themselves, an unplanned pregnancy, not having the opportunity for skin-

to-skin contact, and those who experienced a lack of respect for privacy or insufficient support in the postpartum period were determined to be at-risk (Table 3).

Examination of the relationship between traumatic stress and bonding revealed that stress led to bonding disorders ($p<0.05$) (Table 4).

Discussion

The postpartum period is a time of psychological vulnerability for women. It has been reported that 1 in 5 mothers experience psychiatric difficulties during the postpartum period, and 7 of 10 do not receive treatment, which has a negative impact on the mother, the child, and family.[1,2,10] Thus, early diagnosis of postpartum disorder is critical, as the effects are lasting and broad. This study was conducted to examine postpartum traumatic stress levels and the effect on mother-infant bonding.

The mean CityBiTS score recorded in this study was 20.23±14.32 and 9 of 10 women had ≥1 symptoms of trauma. Almost 1 in 5 women (16.4%) met the criteria for PTSD. In other studies using this scale, Bayrı Bingöl and Bal[5] reported a mean score of 11.51±11, and Ayers et al.[21] noted a mean of 11.7±11.0. Nakić Radoš et al.[22] reported a mean CityBiTS score of 14.65±13.03. The results of the present study were higher than those seen in previous research.

Postpartum PTSD symptoms have been observed in between 3% and 39% of women in the relevant literature.[23–26] The range of prevalence may be related to the frequency of measurement/awareness, different assessment tools, and culture.

Consistent with literature reports, the level of traumatic stress was greater in women who were unemployed or had financial burdens.[5,27–31] Others have observed that socioeconomic status had a mid-level predictability of traumatic stress,[32] and that good financial status supported adaptation in the postpartum period and better ability to cope with stress, while financial insufficiency contributes to stress and makes women more vulnerable to PTSD.[28–30,33] Other studies have found that employment and financial status did not have any impact on the level of traumatic stress levels.[25,34] Our findings suggested that financial security eased management of stressors.

Notably, employment and financial status did not affect bonding ($p>0.05$), as has been seen in other studies.[15,35,36] It has been reported that women who worked outside the home had greater self-confidence, better motherhood skills, and stronger bonding than those who did not.[37,38] This may reflect study population characteristics and sociocultural value judgements; however, women with a higher level of education requested more information about delivery, the postpartum period, and baby care, and this knowledge and attitude may have contributed to the mother-infant bonding process.

Our results did not reveal a relationship between a history of abuse and traumatic stress ($p>0.05$), though it did appear to contribute to bonding disorders ($p=0.004$). In contrast, sev-

Table 1. Characteristics of study participants (n=360)

Characteristics	n	%
Education		
≤8 years	8	2.2
≥9 years	352	97.8
Family type		
Nuclear family	340	94.4
Extended family	20	5.6
Employment		
Yes	167	46.4
No	193	53.6
Income		
Income < expenses	67	18.6
Income meets expenses	210	58.3
Income > expenses	83	23.1
Abuse history		
Yes	66	18.3
No	294	81.7
Pregnancy plan		
Planned	275	76.4
Unplanned	85	23.6
Type of delivery		
Vaginal birth	134	37.2
Planned cesarian	117	32.5
Emergency cesarian	109	30.3
Midwife support in delivery		
Yes	280	77.8
No	80	22.2
Respect for privacy		
Yes	315	87.5
No	45	12.5
Treated respectfully by health professionals		
Yes	333	92.5
No	27	7.5
Sufficient postpartum support		
Yes	238	66.1
No	122	33.9
Mother complication		
Yes	62	17.2
No	298	82.8
Newborn complication		
Yes	82	22.8
No	278	77.2
Skin-to-skin contact		
Yes	243	67.5
No	117	32.5
Wish statement related to childbirth		
Yes	251	69.7
No	109	30.3
First thoughts/emotions when recalling the birth		
Positive	173	48.1
Neutral	35	9.7
Negative	152	42.2

Table 2. Participant characteristics and City Birth Trauma Scale scores (n=360)

Characteristic		n/%	Mean±SD	p
Employment	Yes	167 / 46.4	17.71±12.81	0.004*
	No	193 / 53.6	22.4±15.21	(z=-2.866)
Income	Income < expenses (1)	67 / 18.6	23.75±14.11	0.042** (kk=6.321)
	Income meets expenses (2)	210 / 58.3	19±13.82	1–2 p=0.036***
	Income > expenses (3)	83 / 23.1	20.51±15.38	1–3 p=0.248***
				2–3 p=1***
Type of birth	Vaginal birth (1)	134 / 37.2	19.13±13.92	0.027** (kk=7.238)
	Planned cesarian (2)	117 / 32.5	18.81±14.48	1–2 p=1***
	Emergency cesarian (3)	109 / 30.3	23.09±14.34	1–3 p=0.081***
				2–3 p=0.04***
Induction	Yes	115 / 31.9	22.15±14.03	0.05*
	No	245 / 68.1	19.33±14.4	(z=-1.963)
Amniotomy	Yes	80 / 22.2	22.69±13.8	0.041*
	No	280 / 77.8	19.53±14.41	(z=-2.044)
Fundal pressure	Yes	105 / 29.2	24.22±15.07	0.001*
	No	255 / 70.8	18.58±13.69	(z=-3.266)
Non-stress testing	Yes	263 / 73.1	23.97±14.67	0.002*
	No	97 / 26.9	18.85±13.97	(z=-3.053)
Mother complication	Yes	62 / 17.2	26.79±15.12	0.0001*
	No	298 / 82.8	18.86± 13.79	(z=-3.782)
Newborn complication	Yes	82 / 22.8	23.4±14.91	0.024*
	No	278 / 77.2	19.29±14.03	(z=-2.256)
Need for newborn intensive care unit	Yes	47 / 13.1	24.96±15.87	0.028*
	No	313 / 86.9	19.52±13.96	(z=-2.201)
Duration of first breastfeeding (m)	0–60 (1)	259 / 71.9	18.85±13.8	0.018** (kk=7.992)
	61–120 (2)	40 / 11.1	24.1±16.1	1–2 p=0.157***
	≥121 (3)	61 / 16.9	23.54±14.48	1–3 p=0.05***
				2–3 p=1***
Skin-to-skin contact	Yes	243 / 67.5	18.6±13.65	0.003*
	No	117 / 32.5	23.6±15.13	(z=-2.966)
Total number of vaginal examinations during labor	0–10 (1)	337 / 93.6	19.64±14.02	0.018** (kk=8.022)
	11–20 (2)	17.04.2007	26.65±15.35	1–2 p=0.169***
	21–30 (3)	6.01.2007	35±18.15	1–3 p=0.05***
				2–3 p=1***
Vaginal examination by different people	Yes	155 / 43.1	22.49±15.01	0.013*
	No	205 / 56.9	18.52±13.56	(z=-2.494)
First thoughts/emotions when recalling the birth	Positive (1)	173 / 48.1	15.21±11.45	0.0001** (kk=44.399)
	Neutral (2)	35 / 9.7	19.11±14.34	1–2 p=0.474***
	Negative (3)	152 / 42.2	26.2±15.07	1–3 p=0.0001***
				2–3 p=0.033***
Wish statement related to childbirth	Yes	251 / 69.7	22.67±14.66	0.0001*
	No	109 / 30.3	14.61±11.76	(z=-4.949)
Midwife/nurse care from beginning to end of the delivery	Yes	280 / 77.8	19.35±14.1	0.024*
	No	80 / 22.2	23.29±14.74	(z=-2.261)
Respect for privacy	Yes	315 / 87.5	18.62±13.02	0.0001*
	No	45 / 12.5	31.51±17.73	(z=-4.536)
Treated respectfully by the health professionals	Yes	333 / 92.5	19.19±13.7	0.0001*
	No	27.07.2005	33.07±15.85	(z=-4.159)
Sufficient postpartum support	Yes	238 / 66.1	16.05±11.9	0.0001*
	No	122 / 33.9	28.38±15.16	(z=-7.356)

*z score: Mann-Whitney U test; **kk: Kruskal-Wallis analysis of variance; *** Bonferroni-corrected Mann-Whitney U test for pairwise comparisons. SD: Standard deviation.

Table 3. Participant characteristics and Postpartum Bonding Questionnaire scores (n=360)

Characteristics		n/%	Mean±SD	p
Abuse history	Yes	66 / 18.3	18.41±16.81	0.004*
	No	294 / 81.7	13.52±15.96	(z=-2.915)
Pregnancy plan	Planned	275 / 76.4	13.59±16.63	0.001*
	Unplanned	85 / 23.6	17.11±14.53	(z=-3.322)
Skin-to-skin contact	Yes	243 / 67.5	13.38±15.12	0.048*
	No	117 / 32.5	16.57±18.14	(z=-1.974)
Respect for privacy	Yes	315 / 87.5	13.73±15.83	0.036*
	No	45 / 12.5	19.2±18.1	(z=-2.094)
Sufficient postpartum support	Yes	238 / 66.1	13.76±17.56	0.001*
	No	122 / 33.9	15.7±13.14	(z=-3.251)
First thoughts/emotions when recalling the birth	Positive (1)	173 / 48.1	11.69±15.14	0.0001** (kk=22.549)
	Neutra (2)	35 / 9.7	14.29±14.54	1–2 p=0.244***
	Negative (3)	152 / 42.2	17.55±17.25	1–3 p=0.0001***
				2–3 p=0.839***

*z score: Mann-Whitney U test; **kk: Kruskal-Wallis Varyans Analysis; *** Bonferroni-corrected Mann Whitney U test for pairwise comparisons. SD: Standard deviation.

eral studies have observed that prenatal trauma or a history of abuse increased the risk of PTSD and the postpartum psychological condition of the mother.[6,28,31,39] Support from family members in the postpartum period has been noted to be influential.[4,8] This is common practice in our culture, and likely helps to prevent or relieve stress in the postpartum period.

A history of abuse had a negative effect on bonding (p=0.004). This has been supported in earlier research examining mother-infant bonding.[40] Attachment patterns are acquired early in childhood. Abuse or other problems occurring in the prenatal period can have an impact on the bonding process.[39] Hart and McMahon[41] observed that prior psychological or physiological trauma experienced by the mother affected bonding. Kınık and Özcan[42] also found that women with a history of abuse experienced difficulties in the transition to a motherhood role and mother-infant bonding.

In our study, a planned pregnancy did not have a significant effect on the traumatic stress level (p>0.05), while an unplanned pregnancy was associated with bonding disorders (p=0.001). The literature suggests that women with planned pregnancies experience less PTSD than those with an unplanned or unwanted pregnancy.[5,27] Furthermore, a planned pregnancy has been reported to have a positive effect on the bonding process while an unplanned pregnancy has been associated with a negative bonding model.[15–17,43] It is not unexpected to find that the desire to have a child and the ability to prepare for the experience promote good bonding.

Our finding that women who underwent an emergency cesarean section had a higher level of traumatic stress (p=0.027) is similar to that of many other studies.[4,5,23,26,27,29,31,44] This may in part be related to insufficient preparation. Education about delivery and the possibility of the need for a cesarean section birth and other interventions could ease concerns and reduce stress. A cesarean birth did not significantly affect bonding in our study (p>0.05). Ruppert[43] suggested that a mother who experienced traumatic circumstances related to birth was less able to develop a suitable emotional connection due to the associated need to protect herself. Nakić Radoš et al.,[22] however, noted that PTSD symptoms related to delivery did not affect mother-infant bonding and may even promote an advanced bonding, perhaps as a result of hormonal changes occurring postpartum that lead to a suppression of negative feelings and, in fact, may have a healing impact.

The number of vaginal examinations conducted during labor and examinations performed by several people did not affect mother-infant bonding at postpartum period in our study (p>0.05), as previously reported in the literature.[28,45] However, higher traumatic stress scores were recorded in women who underwent more vaginal examinations (p=0.018) and examination by several different healthcare professionals (p=0.013). Güneş and Karaçam[46] reported that women felt fear/pain during vaginal examinations and that the gender of the healthcare professional performing the examination might influence the level of traumatic stress. Vaginal examinations might particularly lead to trauma for women with a history of abuse.[47] Feelings of a disregard for one's privacy and dignity, not being included in the decision-making process, a loss of control, and feeling abused during the examination contribute to this response.

We also found that certain measures and interventions, such as induction of labor, amniotomy, fundal pressure, and nonstress testing implemented during the labor process increased the level of traumatic stress (p<0.05). A number of studies have recorded similar findings.[5,39,48] The most important indication of PTSD development is a negative delivery experience. Balde et al.[49] stated that women were not consulted before the application of fundal pressure during labor, which led to a feeling of being abused and a negative evaluation of the birth expe-

Table 4. Comparison of City Birth Trauma Scale and Postpartum Bonding Questionnaire scores (n=360)

		Bonding scores					
		n	%	Mean±SD	Intergroup p value and z score	Log. reg. p value (OR)	Log. reg. TR
Meet all DSM-5 criteria for PTSD	Yes	301	83.6	13.39±16.37	0.0001* (z=-4.406)	0.01** (OR=1.019)	1.005–1.034
	No	59	16.4	19.68±14.35			
≥1 trauma symptoms	No	34	9.4	14.5±16.6	0.747 (z=-0.322)	0.975 (OR=1)	0.978–1.022
	Yes	326	90.6	14.41±16.19			
[A] Stressor criterion	No	186	51.7	13.02±15.72	0.019* (z=-2.342)	0.097 (OR=1.011)	0.998–1.025
	Yes	174	48.3	15.91±16.63			
[B] Re-experiencing symptoms	No	73	20.3	13.45±20.52	0.011* (z=-2.535)	0.569 (OR=1.005)	0.988–1.022
	Yes	287	79.7	14.66±14.95			
[C] Avoidance symptoms	No	198	55.0	12.18±15.99	0.0001* (z=-4.834)	0.006** (OR=1.021)	1.006–1.035
	Yes	162	45.0	17.15±16.11			
[D] Negative cognitions and mood	No	85	23.6	10.53±19.62	0.0001* (z=-5.483)	0.014** (OR=1.03)	1.006–1.054
	Yes	275	76.4	15.62±14.83			
[E] Hyperarousal	No	69	19.2	7.13±13.27	0.0001* (z=-6.899)	0.0001** (OR=1.102)	1.055–1.151
	Yes	291	80.8	16.14±16.38			
[F] Duration	No	160	44.4	10.34±15.66	0.0001* (z=-6.911)	0.0001** (OR=1.041)	1.02–1.062
	Yes	200	55.6	17.68±15.93			
[G] Distress and impairment	No	125	34.7	10.76±17.42	0.0001* (z=-5.792)	0.003** (OR=1.03)	1.01–1.051
	Yes	235	65.3	16.36±15.21			
[H] Exclusion criteria	No	337	93.6	14.11±16.03	0.121 (z=-1.549)	0.182 (OR=1.014)	0.994–1.034
	Yes	23	6.4	18.87±18.41			
PTSD with dissociative symptoms	Pre-birth PTSD	43	51.8	20.58±19.69	0.685 (z=-0.406)	0.636 (OR=1.005)	0.984–1.027
	Late-onset PTSD	40	48.2	22.72±21.91			

*p<0.05 statistically significant difference; **p<0.05 statistically significant impact (logistical regression analysis); z score: Mann-Whitney U test. OR: Odds ratio; PTSD: Post-traumatic stress disorder; TR: Trust range.

rience. The literature suggests that obstetric interventions can contribute to the development of traumatic stress.[5,30,31,45,48] It is important to explain the potential interventions that may be necessary during delivery to avoid trauma and stress.

Our results did not indicate that interventions performed during labor had a significant effect on mother-infant bonding (p>0.05). As previously noted, other studies have also found that birth-related traumatic stress did not negatively affect the bonding process and may, in fact, strengthen it.[22,50]

The development of complications in the mother or the baby and the need for special care for the infant increased the level of traumatic stress (p<0.05). Several studies have provided supporting evidence of the view that complications arising during the delivery or the postpartum period may have contributed to anxiety, depression, PTSD, or other psychiatric disorders.[6,23,28–30,48]

Lower traumatic stress and higher bonding levels were seen in mothers who breastfed within 1 hour of delivery (p<0.05). Early contact and breastfeeding have been reported to promote mother-infant bonding and help prevent PTSD.[5,6,51,52] Several authors have noted that skin-to-skin contact strengthens the bonding process.[42,53,54] Contact is thought to help trigger an emotional response, the release of oxytocin, and relaxation, which promotes positive bonding between mothers and infants.

In our study, 92.5% of the participants reported that health professionals treated them respectfully, 87.5% noted that they paid attention to their privacy, 77.8% had a nurse/midwife present from the beginning to the end of the delivery, and these participants had lower traumatic stress levels (p<0.05). The significance of the attitude of healthcare professionals in postpartum traumatic stress has been examined previously.[1,26,30] Some research has indicated that primary support during the delivery and positive perceptions of birth could reduce or avoid traumatic stress and contribute to the psychological and physical condition of the mother and child, as well as add to a sense of satisfaction in motherhood.[55,56] Strong support from health professionals together with healthy communication helped women feel better and reduced the level of traumatic stress.[27,55] Women who experience unsupportive behavior from healthcare professionals and a negative birth experience are more vulnerable to postpartum depression and traumat-

ic stress.[6,10,23,25,30,48] The support of nurses during the delivery process has a long history of a positive impact on birth results. It is not surprising that women who receive support during the delivery have lower levels of traumatic stress or that those who do not receive any support experience more stress.

In our study, 66.1% of the participants reported receiving sufficient support from family members and others close to them, and they had a lower level of traumatic stress. Furthermore, the level of bonding disorder was not significant (p=0.001). Social support has been demonstrated to reduce symptoms of trauma during the critical delivery and postpartum period.[7–9,25,45,48] However, other researchers found that social support did not affect traumatic stress.[57] Nonetheless, generally, studies support the importance of social support in the postpartum period with caring for the mother and the infant, promoting mother-infant bonding, parenting, and helping with the adaptation to new roles and responsibilities.[27,58] The cultural value given to social support in Turkey may help to reduce traumatic stress after childbirth.

Ertekin and Polat[59] noted that perceived social support during the postpartum period was related to PTSD symptoms and maternal bonding. Since the early postpartum period can be difficult for a variety of reasons, women may experience significant stress and be at risk for psychological disorders. This can have a meaningful impact on mother-infant bonding.[4] The results of the Handelzalts et al.[50] study indicated that postpartum PTSD had a negative effect on bonding. In fact, numerous studies in the literature have suggested that PTSD has poor implications for mother-infant bonding.[4,7,22,28,43,45] We also found that greater stress had negative bonding consequences (p<0.05).

Limitations

This study was conducted in a single hospital in Turkey with women who had infants 6 months of age, which limits the generalization of the data. In addition, all of the data were self-reported, which provides some advantages, but also some important disadvantages to accurate interpretation.

Conclusion

The mean total CityBiTS score in this study was 20.23±14.32 (possible range: 0-60) and 90.6% (n=326) of the women had ≥1 symptoms of trauma. In our study group, 16.4% (n=59) met all of the DSM-5 diagnostic criteria for PTSD. The women who were unemployed, had insufficient financial income, emergency cesarean delivery, medical intervention during delivery, were not treated respectfully, or did not receive sufficient support had higher levels of traumatic stress. Increased traumatic stress affects successful mother-infant bonding; a history of abuse or poor bonding, unplanned pregnancy, no opportunity for skin-to-skin contact, a lack of respect for privacy, and insufficient support were determined to be risk factors to bonding process.

Psychiatric nurses have a critical role in the prevention, early diagnosis, and treatment of PTSD in the postpartum period. Early attachment patterns and PTSD have a significant impact throughout life; attention to mother-infant bonding represents a contribution to public mental health. Women with risk factors for PTSD and poor bonding should be followed closely to address any psychiatric difficulty as soon as possible. Given that the effects are painful, reaching, and long-lasting, additional studies and education programs on the topic are needed. The existing research and implementation currently remains limited.

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