Title: The relationship between birth satisfaction, posttraumatic stress disorder and postnatal depression symptoms in Croatian women

Running head: Birth satisfaction, PTSD, and PND symptoms

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Abstract

Background: Studies show that a woman's dissatisfaction with her birth experience may affect her well-being. This study aimed to examine: (1) the birth satisfaction in Croatian women and compare it with UK normative data; (2) the association of different dimensions of birth satisfaction with PTSD and depressive symptoms.

Methods: In a cross-sectional online study, 603 postnatal Croatian women completed the Birth Satisfaction Scale-Revised (subscales: Stress experienced during labour (SL), Women's personal attributes (WA), and Quality of care provision (QC)); City Birth Trauma Scale (subscales: Birth-related symptoms and General symptoms); and Edinburgh Postnatal Depression Scale. Subscale and total scale scored were calculated. Path analysis tested the model of three aspects of birth satisfaction effect on PTSD dimensions and depressive symptoms.

Results: Average birth satisfaction score was significantly lower compared to the UK data on the total scale and all three subscale scores. Path analysis revealed that all three dimensions of birth satisfaction (SL, WA, and QC) had an effect on Birth-related symptoms. However, only Women's personal attributes (i.e., feeling anxiety or in control during childbirth) had an effect on General symptoms and depressive symptoms, as well.

Conclusion: Different aspects of birth satisfaction are important for maternal mental health following childbirth.

Keywords: childbirth, birth satisfaction, posttraumatic stress disorder, postnatal depression, Quality of care

Introduction

Childbirth is a complex event that may lead to a variety of psychological responses, both positive, such as a sense of accomplishment and personal strength, and negative, such as feelings of failure and inadequacy (Olde et al., 2006). It is an event that generally takes place within a single day, is physically intense, and may involve pain, emotional stress, vulnerability, possible physical injury or death, and a permanent role change as a parent. Thus, it is not surprising that women tend to remember their first childbirth experiences vividly and with deep emotions, even 15-20 years later (Simkin, 1991; Simkin, 1992).

Perception of the childbirth experience is highly personalized, as it varies regarding what constitutes a positive and satisfying experience for an individual (Bryanton et al., 2008). Satisfaction is a construct that is complex and multidimensional, and it may change over time. It involves a positive affective response to an experience and a cognitive evaluation of the emotional response (Hodnett, 2002). Childbirth satisfaction consists of several aspects. Padawer et al. (1988) identified three aspects of childbirth perception: concerns regarding woman's physical appearance and sexuality in the perinatal period; woman's conduct during childbirth, and interaction with partner during childbirth. On the other hand, Goodman et al. (2004) identified six dimensions, an overall evaluation, and satisfaction with five participants in childbirth, i.e., self, partner, baby, midwife, and a physician. More recent studies identified three themes related to women's: quality of care (home assessment, birth environment, support, relationships with health care professionals); women's personal attributes (ability to cope during labour, feeling in control, childbirth preparation, relationship with baby); and stress experienced during labour (distress, obstetric injuries, receiving sufficient medical care, obstetric intervention, pain, prolonged labour and baby's health) (Hollins Martin & Fleming, 2011; Hollins Martin & Martin, 2014).

A woman's dissatisfaction with labour and childbirth experience may affect her emotional well-being and her willingness to have another baby (Waldenström et al., 2004). Subjective experience and appraisals of birth were reported to be the main determinants in the development of posttraumatic stress disorder (PTSD) following childbirth (Wijma et al., 1997), which occurs in 3–4 % of all mothers who gave birth (Yildiz et al., 2017). PTSD can develop following a difficult or traumatic birth during which women think they or their baby might die or be seriously injured (Yildiz et al., 2017). Mokhtari et al. (2018) demonstrated a significant relationship between birth satisfaction, perceived support during and after childbirth, and PTSD following childbirth. In terms of specific aspects of birth satisfaction, studies showed that perceived loss of control during labour and childbirth, receiving inadequate and insufficient support from medical staff and partner, invasive obstetric interventions, such as emergency caesarean section and instrumental vaginal childbirth, were significantly associated with increased risk for traumatic birth and developing PTSD (Ayers et al., 2016; Hollander et al., 2017; Reed et al., 2017).

Although PTSD and depression are distinctive disorders according to DSM-5 (American Psychiatric Association [APA], 2013), a substantial amount of research points out high comorbidity of PTSD following childbirth and postnatal depression (PND) (Ayers et al., 2016; Grekin & O'Hara, 2014; Zaers et al., 2008). However, there is a larger comorbidity between PTSD and PND than between PND and PTSD, where most postpartum women with PTSD also present with depression symptoms, while only one in three women with depression symptoms report PTSD symptoms (Dekel et al., 2020; Nakić Radoš et al., 2018).

Furthermore, previous studies showed that low birth satisfaction has been related to the higher levels of PND symptoms (Benoit et al., 2007; Blažević et al., 2018; Yakupova & Suarez, 2021). However, these studies used either one item to measure birth satisfaction (e.g.,

Benoit et al., 2007) or psychometric scales that measure birth satisfaction as a unidimensional construct. For example, birth satisfaction was measured with the unidimensional 6-item Birth Satisfaction Scale Revised Indicator (BSS-RI; Martin et al., 2017) in the study by Yakupova and Suarez (2021) or subscale on satisfaction with Delivery and Conduct During Labor from the Childbirth Perception Questionnaire (CPQ; Padawer et al., 1988) in the study by Blažević et al. (2018). Indeed, a systematic review established the relationship between negative birth experience and PND in most studies but pointed out the heterogeneity in birth experience instruments (Bell & Andersson, 2016). Therefore, former studies could not provide insight into specific aspects of the birth satisfaction and therefore might miss the important mechanisms of the birth satisfaction relationship with adverse maternal mental health. Hence, these associations should be examined with a birth satisfaction instrument which provides several aspects of the birth experience, such as Birth Satisfaction Scale-Revised (BSS-R; Hollins Martin & Martin, 2014). Furthermore, PTSD following childbirth should be measured according to the updated DSM-5 criteria (APA, 2013), which can be performed with the recently developed and childbirth-specific City Birth Trauma Scale (Ayers et al., 2018).

Moreover, birth satisfaction should be one of the crucial indicators of perinatal quality care. However, perinatal care differs between countries (Chalmers et al., 2001; Rashidian et al., 2014). Perinatal health care in Croatia is generally of high quality. The maternal mortality rate of 8 per 100 000 in Croatia is somewhat lower than the average rate of 12 in developed countries (World Health Organization [WHO], 2015). Primary health care is free for all taxpayers, and perinatal women are offered at least nine prenatal check-ups and three ultrasounds during pregnancy with prenatal screening. Prenatal classes are offered to women, although they are mainly medically focused. Furthermore, all births are attended by a skilled health professional (WHO, 2013), and one person can accompany women during childbirth,

mostly her partner (Herman et al., 1997). Maternity service care in Croatia is generally obstetric-led focusing on safe delivery of the baby as the overriding concern and maternal experience as a less salient characteristic of maternity care. This profile of care delivery is consistent with many former Eastern European service delivery models where the medical aspects of care are emphasised and take precedence. This is unsurprising since many of these countries, including Croatia, have not had major policy drivers for change of emphasis in care delivery such as the "Changing Childbirth" report (Department of Health, 1993) into maternity care in the UK.

Furthermore, one in four women in Croatia report traumatic childbirth (Nakić Radoš, Matijaš, Kuhar et al., 2020), so it would be of clear relevance to examine birth satisfaction in the specific context of Croatian women. Therefore, the goal of this study was twofold: (1) to examine the birth satisfaction in a sample of Croatian women and compare it with normative data; (2) to examine the association of three dimensions of birth satisfaction with PTSD and depressive symptoms. A comparison with the original UK BSS-R findings is consistent with a number of validation studies of the BSS-R in non-English languages, for example the Spanish (Romero-Gonzalez et al., 2019) and Italian versions (Nespoli et al., 2020) of the measure. Further, the International Consortium for Health Outcome Measurement's (2016) Pregnancy and Childbirth standard set emphasises the need to be able to compare outcome measures used in the obstetric setting, including the BSS-R between countries and populations. We hypothesized that lower levels of birth satisfaction would be associated with higher PTSD and PND symptoms. However, we could not speculate which dimensions would be related as the previous studies did not examine these specific associations.

Methods

Participants

In this study, 603 postnatal women participated. The inclusion criterium was having an infant aged 1 to 12 months. Women were 30.6 years old (*SD* = 4.7). Most of them were married or cohabiting (99.3%), graduated from college or university (70.2%), and were of average perceived socioeconomic status (48.2%). Of the sample, 7.8% reported a history of psychiatric treatment.

Women gave birth in the previous 12 months (*M* = 6.1 months, *SD* = 3.4). Most had one child (61.0%), while the remainder had two (27.6%) or more (11.4%) children. Most women had an unassisted vaginal childbirth (75.1%), 2.0% had an instrumental vaginal childbirth, 15.1% had an emergency caesarean section, and 7.8 had a planned caesarean section. One in four women reported having a traumatic birth (to a single yes/no question) (28.4%), and 11.8% fulfilled the criteria for PTSD.

Procedure

This was a cross-sectional online study approved by the Ethical Committee [removed for the blind review]. Before participating, women were informed about the purpose of the study, their anonymity, and their right to withdraw at any time at no cost. Participants were not compensated for their enrollment in the study. By clicking on the "next" button, they gave their informed consent. The link to the online questionnaire was advertised and shared through personal contacts and on the Facebook groups for mothers and infants during the two-month period in 2018.

Measures

Birth Satisfaction Scale-Revised (BSS-R; Hollins Martin & Martin, 2014) measures birth satisfaction through three dimensions: *Stress experienced during labour* (SL; exemplary item "I found giving birth a distressing experience.", reverse scored), *Women's personal attributes*

(WA; “I felt out of control during my birth experience.”, reverse scored), and *Quality of care provision* (QC; “I felt well supported by staff during my labour and birth.”). The BSS-R has ten items where each item is scored on a 5-point scale (0 – *strongly disagree* to 4 – *strongly agree*). Scores for the total scale, and three subscales were obtained as linear composite of the corresponding items in the BSS-R. Possible scores range from 0-40, with higher scores indicating higher levels of satisfaction. The scale was validated in Croatian with the same three-factor structure (Nakić Radoš et al., 2021). Cronbach's α of the total scale in this study was .85 and .72, .72, and .81 for the total scale and subscales SL, WA, and QC, respectively.

City Birth Trauma Scale (City BiTS; Ayers et al., 2018) is a self-reported scale of PTSD following childbirth. It comprises 29 items that examine all DSM-5 criteria for PTSD (APA, 2013). Nine items examine the criteria for traumatic experience, onset, duration, and the impact on everyday functioning, while 20 items measure symptoms of Intrusions, Avoidance, Negative cognitions and mood, and Arousal. The latter 20 items are evaluated on a 4-point scale (0 - *not at all*, 1 - *once*, 2 - *2-4 times*, and 3 - *5 or more times*). The City BiTS consists of two subscales: *Birth-related symptoms* (10 items) measuring intrusion, avoidance of everything related to birth and negative cognitions and mood-related to birth, and *General symptoms* (10 items) measuring negative cognitions and mood, reactivity, and arousal. The total score for PTSD following childbirth, and the two subscales, were obtained as a linear composite of the corresponding items in the City BiTS. The scale was previously validated in Croatian with the same two-factor structure (Nakić Radoš, Matijaš, Kuhar et al., 2020). In the current study, the internal consistency was .93, .92, and .92 for the total scale, Birth-related symptoms, and General symptoms, respectively.

Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987) is a self-report scale that examines symptoms of depression in postnatal women. The women's task is to evaluate each of 10 items on a 4-point scale (from 0 to 3). The total score was calculated as a linear

composite of 10 items. It can range from 0 to 30, with higher scores indicating more intensive symptoms of depression. The scale was previously translated and validated in Croatia with a one-factor structure and internal consistency of α = .86 (Nakić Radoš et al., 2013). In the current study, Cronbach's α was .90.

The general data sheet included questions on age, marital status, education level, perceived socioeconomic status (below average, average, above average), and history of psychiatric treatment. Further questions referred to time since birth, the number of children, type of birth (unassisted vaginal childbirth, instrumental vaginal childbirth, emergency caesarean section, or planned caesarean section), and traumatic birth (a single *yes/no* item).

Statistical analysis

There were no missing data due to online collection with a reminder to the participant if some questions were skipped. Pearson's correlation coefficient was used to test associations between different dimensions of birth satisfaction and the level of PTSD and depressive symptoms. A path analysis was applied to test which of these associations had a direct effect on psychopathological symptoms. To perform the planned path analysis, a general rule to have at least 50 participants per variable was followed; with six variables in the model, the figure of 300 participants was substantially exceeded. In the investigated model, three subscales of BSS-R (Stress experienced during labour, Women's personal attributes, and Quality of care provision) were predictors, while depressive symptoms measured with EPDS and PTSD symptoms, measured with subscales of City BiTS (Birth-related symptoms and General symptoms), were the outcome variables. Before conducting path analysis, we examined whether sociodemographic variables (mother' age, perceived socioeconomic status, marital status, and level of education) and history of psychiatric treatment correlated

with psychopathological symptoms. Variables that had significant correlation with depressive symptoms or PTSD symptoms were added in the model as control variables. Several fit indices were used to evaluate the model. The RMSEA below .06, SRMR below .08 and CFI above .95 indicated a good fit (Hu & Bentler, 1999). Also, insignificant χ^2 test ($p > .05$) suggested good fit of the model to the data. Descriptive and correlational analyses were performed with the SPSS Statistics 21.0 for Windows, while path analysis was performed with Mplus 8.1 software (Muthén & Muthén, 1998-2018).

Results

Average birth satisfaction scores

Almost a full range of scores was observed for birth satisfaction scores (Table 1), and the data were normally distributed. Croatian women, on average, reported moderate birth satisfaction. Next, the average scores on three dimensions of BSS-R were compared to the average scores obtained in the study with UK data on 228 postnatal women (Hollins Martin & Martin, 2014) with the online calculator for t-test for independent samples using the GraphPad QuickCalcs Web site (accessed April 2019). Compared to the UK women, women from the Croatian sample reported a lower level birth satisfaction on the full scale (t (829) = 8.93, $p < .0001$) and all three subscales, i.e. on Stress during labour (t (829) = 4.82, $p < .0001$), Women's personal attributes (t (829) = 2.74, $p = .0063$), and Quality of care provision (t (829) = 12.83, $p < .0001$). Mean scores and standard deviations for the UK data (Hollins Martin & Martin, 2014) for the above domains were 28.36 (5.78), 9.70 (3.29), 4.90 (1.98) and 13.76 (2.13), respectively.

Furthermore, PTSD and depression symptoms scores were slightly positively skewed. However, skewness and kurtosis indices were within the range -2 to +2, which are considered as normally distributed data (George & Mallery, 2010).

(Table 1 around here)

Associations between birth satisfaction, psychopathological symptoms, and sociodemographic variables

Birth satisfaction was significantly related to maternal mental health (Table 2). Although the correlations were low, birth satisfaction was significantly correlated with depression symptoms and General symptoms of PTSD, while it was moderately correlated with Birth-related symptoms. More specifically, the birth satisfaction score on the full scale was more related to Birth-related symptoms than to General symptoms of PTSD ($z = 5.22$, $p < .001$). A similar pattern was observed for all three subscales of BSS-R.

Furthermore, we examined the correlation between sociodemographic variables, history of psychiatric treatment and psychopathological symptoms (Table 2). The perceived socioeconomic status was negatively correlated with depression symptoms, and both General and Birth-relation symptoms of PTSD. Education level was negatively correlated with depression symptoms and General symptoms of PTSD. Also, mothers who had a history of psychiatric treatment had more depression symptoms and General symptoms of PTSD. Marital status and mother's age were not corelated with any of the psychopathological symptoms ($p > .05$).

(Table 2 around here)

Paths between birth satisfaction and psychopathological symptoms

Based on the significant bivariate correlations SES, level of education and history of psychiatric treatment were included as control variables in path analysis. Path analysis (Table 3) with direct effects of three dimensions of birth satisfaction on psychopathological symptoms and control variables, showed poor fit of the model ($\chi^2(8) = 58.006$, $p < .001$, RMSEA = .102, SRMR = .048, CFI = .939). After removing insignificant paths, fit indices indicated a good fit of the model ($\chi^2(12) = 20.161$, $p = .0641$, RMSEA = .034, SRMR = .040, CFI = .990). Path analysis (Figure 1) revealed significant direct paths between all three subscales of birth satisfaction and Birth-related symptoms of PTSD symptoms. Lower levels of all three dimensions of birth satisfaction were related to higher levels of Birth-related symptoms. Lower personal attributes satisfaction was related to higher General symptoms of PTSD and higher depression scores. Women who experienced more anxiety and loss of control during childbirth reported higher depressive symptoms and General symptoms of PTSD. Both Birth related symptoms and General symptoms of PTSD were positively correlated with depressive symptoms. The model explained 31.5% of Birth-related symptoms 12.2% of General symptoms and 11.7% of depressive symptoms variance.

(Figure 1 around here)

(Table 3 around here)

Discussion

The main finding of this study was establishing different patterns and relationships between the various dimensions of birth satisfaction and PTSD and PND symptoms. Namely, while all three dimensions of birth satisfaction (Stress experienced during labour, Women's personal attributes, and Quality of care provision) were associated with Birth-related symptoms of PTSD, only Women's attributes were related with General symptoms of PTSD

and depressive symptoms. Also, we found comorbidity between PTSD and PND symptoms, especially between the General symptoms of PTSD and depression symptoms.

Results of this study revealed that all three dimensions of birth satisfaction (Stress experienced during labour, Women's personal attributes, and Quality of care provision) were associated with Birth-related symptoms, but not General symptoms of PTSD. Birth-related symptoms are more specifically related to the core of PTSD following childbirth and thus, represent a specific traumatic stress response, while General symptoms represent dysphoria symptoms (Nakić Radoš, Matijaš, Kuhar et al., 2020). More specific, Birth-related symptoms represent re-experiencing of a traumatic event, avoidance, and negative cognitions and mood that are directly related to the experience during the childbirth (e.g., blame and strong negative emotions during the childbirth), while General symptoms represent negative alterations in cognitions and mood. Previous studies have found that Birth-related symptoms were related to birth satisfaction, while General symptoms were more related to depression, anxiety, and other outcomes, such as mother-infant bonding impairment (Nakić Radoš, Matijaš, Anđelinović et al., 2020; Nakić Radoš, Matijaš, Kuhar et al., 2020). These findings suggest the importance of distinguishing two dimensions of postnatal PTSD when examining risk factors, such as birth satisfaction and adverse outcomes of PTSD.

Furthermore, Quality of care during labour and birth was associated with Birth-related symptoms of PTSD. Receiving insufficient social support from medical staff and from partner is one of the most important components of birth satisfaction (Hollins Martin & Fleming, 2011). The perceived degree of support from the staff who assisted childbirth and presence of partner or companion play crucial roles in the way women perceive the birth experience and may be a risk factor in developing PTSD following childbirth (Andersen et al., 2012; Ayers et al., 2016; Wijma et al., 1997).

Stress during labour was also associated with Birth-related PTSD symptoms, which is in line with Andersen et al. (2012), suggesting that subjective distress during labour and obstetric emergencies were the main risk factors for PTSD following childbirth. Additionally, poor coping skills were significantly related to PTSD development (Andersen et al., 2012; Ayers et al., 2016) and maintenance of its symptoms (Ayers, 2004).

A previous systematic review showed contributing effect of birth satisfaction to PND symptoms (Bell & Andersson, 2016). In line with this finding, the results of our study showed that Women's attributes, as the aspect of birth satisfaction, were related to both PTSD and depressive symptoms. Women's personal attributes subscale refers to anxiety during labour and birth as well as a loss of control during the birth experience. The lack of control during labour and birth was a risk factor in developing PTSD after birth (Olde et al., 2006). As found in a study by Waldenström (1999), somatic anxiety as a trait of a woman's personality was associated with the overall birth experience, with anxious women being less satisfied with the experience. A similar finding was established in a study by Yakupova and Suarez (2021) where perceived severity and unpredictability during childbirth contributed to birth satisfaction, which was in turn associated with PND symptoms. Moreover, anxiety as a personality trait was an important risk factor for PND (Austin et al., 2007), which, by definition, makes a person prone to experience anxiety in situations of perceived threat, danger, and uncertainty (Endler & Kocovski, 2001). Thus, it can be concluded that Women's attributes were associated with General symptoms of PTSD and depressive symptoms due to the anxiety being a risk factor in developing depression. It is noteworthy that depression is in high comorbidity with PTSD both in general (APA, 2013) and perinatal population (Dekel et al., 2020; Grekin & O'Hara, 2014). Moreover, in addition to high comorbidity, PTSD and PND also shares common risk factors, such as lack of support, previous psychopathology, and life stressors (Grekin & O'Hara, 2014).

It is interesting to highlight that Croatian women, compared to the UK sample (Hollins Martin & Martin, 2014), reported lower levels of birth satisfaction. Several possible reasons may underly these findings. Contrary to the UK service childbirth model, birth in Croatia is highly medicalized. There is no continuity of midwifery care, although at least one prenatal check-up in the selected maternity ward is recommended. Furthermore, home birth or an elective caesarean section is not offered to women on demand. A birth plan is not readily discussed. The women's control over the process is relatively low, mainly since clinical-decision making is undertaken exclusively by medical staff rather than in partnership with the woman herself. Some of these particularities may have contributed to lower satisfaction. However, in this study, a high percentage of mothers reported traumatic birth (28.4%) and fulfilled the criteria for PTSD (11.8%). This is in line with a previous study showing that the percentage of PTSD symptoms is higher online than in community samples (Ayers et al., 2009), so these findings should be replicated in a community sample. Also, further comparative research, both qualitative and quantitative, are needed to establish further the underlying effects and possible mediators of the relationship between birth satisfaction and PTSD.

Several limitations of this study should be addressed. First, the sample was recruited online, which provides the benefit of being able to access large samples within a short time. However, it also restricts participants to those who use technology and social networks through which the questionnaires were shared. It should be noted that women in the sample were mostly highly educated and of average or above-average perceived socioeconomic status. Also, we cannot draw conclusions about causality based on the cross-sectional study. It may be that at least some women had depression symptoms during pregnancy or a previous trauma (not related to childbirth), which could put them at risk of negative birth experience (Ayers et al., 2016) and exacerbated symptoms after childbirth. Another limitation might be

the retrospective assessment of women's childbirth and symptoms, as women could participate in this study if the childbirth was within the previous 12 months. Even though women could remember their childbirth very vividly even after 20 years (Simkin, 1992), assessing their birth satisfaction retrospectively could be affected by their current state. If a mother is currently suffering from depression, her memory and interpretation could be biased, as individuals with depression selectively attend to negative information and could have difficulty disengaging attention from negative stimuli (Gotlib & Joormann, 2010). Therefore, future studies should apply a longitudinal design with measurement before and after childbirth.

Results of this study have the substantial theoretical and practical potential for understanding birth satisfaction and its repercussions. Also, the findings contribute to understanding the complex relationship between birth satisfaction and psychopathological symptoms. Given the associations between birth satisfaction and PTSD and PND, the priority should be to ensure high birth satisfaction. As one of the essential components of birth satisfaction, positive and sufficient support may be critical in improving women's perceived control and reducing perceived trauma (Ford & Ayers, 2009). Previous studies showed that women find most disturbing aspects of traumatic childbirth situations when healthcare providers impose procedures over women’s preferences and their embodied knowledge about childbirth (Reed et al., 2017), together with the lack of communication and emotional and practical support (Hollander et al., 2017). Therefore, it is important to look at ways to increase support for women during birth and give them an active role in the process, supporting them in making decisions, encouraging them to trust their own bodies, even if it means disregarding clinical knowledge and practices. Also, medical staff should pay special attention to the communication and providing enough explanations about the procedures to women, which can help in reducing fear due to uncertainty and lack of information. Thus, it

would be helpful to provide workshops and/or courses for partners and medical staff to educate them on how to be better support for women during childbirth. Also, relatively lower birth satisfaction levels than the UK sample imply a need for systematic change in perinatal care in Croatia. Croatian women suggested several improvements in perinatal care, such as improvement in objective characteristics of the environment, facilitating natural childbirth, giving more control to women during the labour and providing more emotional support (Raboteg-Šarić et al., 2017).

Screening women at risk after childbirth should be obligatory, and it is essential to assess birth satisfaction, PTSD and PND symptoms. Further, when examining PTSD, both dimensions of Birth-related and General symptoms should be considered. Early identification and adequate treatment are necessary because there is evidence that PTSD symptoms usually do not disappear spontaneously (Söderquist et al., 2006). However, it is important to emphasize that even if a woman has symptoms (such as depressive symptoms), maternal involvement and emotional availability could be a protective factor for infant attachment (Śliwerski et al., 2020).

To conclude, low birth satisfaction was associated with higher PTSD and depressive symptoms. However, it is essential to distinguish two dimensions of PTSD symptoms because Birth-related symptoms of PTSD were related to all three dimensions of birth satisfaction. In contrast, General symptoms of PTSD were related only to Women's attributes. Further studies, screening, preventive programs, and interventions are recommended.

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Table 1. Descriptive data for birth satisfaction, PTSD and depressive symptoms (*N = 603*)

		Range	
	M (SD)	Observed	Theoretical
Birth Satisfaction Scale-Revised	22.83 (8.65)	1-40	0-40
Stress experienced during labour	8.23 (4.14)	0-16	0-16
Women's personal attributes	4.40 (2.47)	0-8	0-8
Quality of care provision	10.19 (3.99)	0-16	0-16
City Birth Trauma Scale	14.65 (13.03)	0-60	0-60
Birth-related symptoms	5.45 (7.11)	0-30	0-30
General symptoms	9.21 (8.23)	0-30	0-30
Edinburgh Postnatal Depression Scale	8.80 (6.24)	0-30	0-30

Table 2. Pearson's correlation coefficients between psychological and sociodemographic variables (*N = 603*)

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1. Birth Satisfaction Scale-Revised (BSS-R)	-	.87**	.78**	.77**	-.51**	-.56**	-.32**	-.30**	.00	.08	.06	.02	-.08
2. BSS-R Stress experienced during labour		-	.70**	.42**	-.45**	-.51**	-.27**	-.25**	.00	.03	.03	-.01	-.04
3. BSS-R Women's personal attributes			-	.38**	-.48**	-.50**	-.33**	-.32**	-.05	.07	.06	.03	-.08*
4. BSS-R Quality of care provision				-	-.33**	-.37**	-.20**	-.20**	.02	.09*	.06	.05	-.07
5. City Birth Trauma Scale (City BiTS)					-	.82**	.87**	.65**	.01	-.13**	-.05	-.07	.12**
6. City BiTS Birth-related symptoms						-	.44**	.38**	-.02	-.08*	-.02	-.03	.07
7. City BiTS General symptoms							-	.71**	.02	-.14**	-.06	-.09*	.13**
8. Edinburgh Postnatal Depression Scale								-	-.02	-.15**	-.03	-.12**	.13**
9. Mother's age									-	.11**	-.03	.31**	.08*
10. SES										-	.03	.27**	.00
11. Marital status[a]											-	.01	.02
12. Education level[b]												-	.03
13. History of psychiatric treatment													-

Note. [a] Variable was dichotomized (0 - not married, 1- married or cohabiting); [b] Variable was dichotomized (0 - high school education, 1 – college or university level education). *$p < .05$; **$p < .01$.

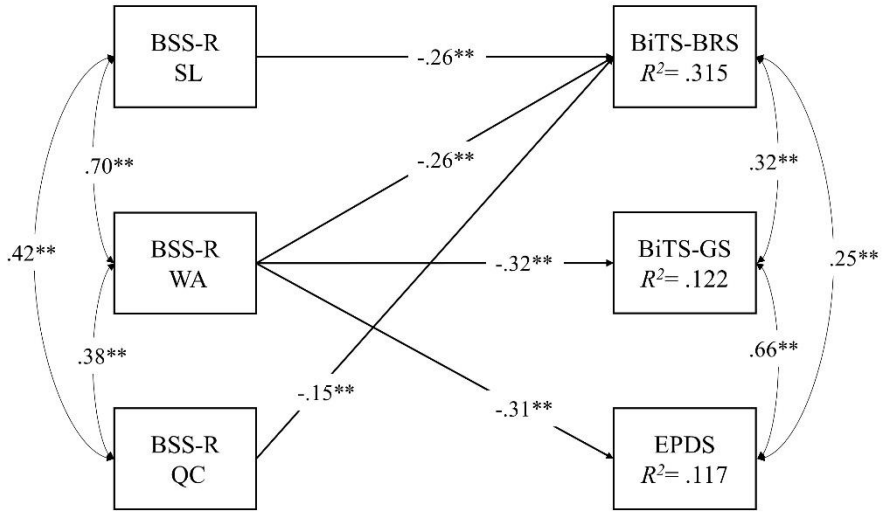
Table 3. Model estimates: Birth satisfaction dimensions associated with PTSD symptoms and depressive symptoms (*N = 603*)

	Unstandardized					Standardized			
	Path estimates	SE	*p*	Lower 95% CI	Upper 95% CI	Path estimates	SE	Lower 95% CI	Upper 95% CI
City BiTS Birth-related symptoms (BRS)									
Stress experienced during labour → BRS	-0.49	0.10	0.000	-0.67	-0.30	-0.28	0.06	-0.39	-0.18
Women's personal attributes → BRS	-0.68	0.18	0.000	-1.01	-0.32	-0.24	0.06	-0.35	-0.11
Quality of care provision → BRS	-0.29	0.08	0.000	-0.45	-0.13	-0.16	0.05	-0.25	-0.07
City BiTS General symptoms (GS)									
Stress experienced during labour → GS	-0.14	0.11	0.195	-0.36	0.07	-0.07	0.06	-0.18	0.04
Women's personal attributes → GS	-0.80	0.18	0.000	-1.15	-0.45	-0.24	0.05	-0.35	-0.14
Quality of care provision → GS	-0.12	0.10	0.209	-0.31	0.07	-0.06	0.05	-0.15	0.03
Depressive symptoms (EPDS)									
Stress experienced during labour → EPDS	-0.06	0.08	0.457	-0.21	0.09	-0.04	0.05	-0.14	0.06
Women's personal attributes → EPDS	-0.63	0.13	0.000	-0.89	-0.36	-0.25	0.05	-0.35	-0.15
Quality of care provision → EPDS	-0.10	0.07	0.154	-0.25	0.03	-0.07	0.05	-0.16	0.02

Note: City BiTS – City Birth Trauma Scale, EPDS – Edinburgh Postnatal Depression Scale, CI – confidence interval, SE – standard error.

Figure legend

Figure 1. Significant model paths between birth satisfaction and PTSD and depressive symptoms. *Note.* Standardized bootstrapped coefficients are presented. BSS-R – Birth Satisfaction Scale-Revised, SL – Stress experienced during labour, WA – Women's personal attributes, QC – Quality of care provision; BiTS BRS – City Birth Trauma Scale, Birth-related symptoms; BiTS GS – City Birth Trauma Scale, General symptoms; EPDS – Edinburgh Postnatal Depression Scale.


BSS-R
SL
BSS-R
WA
BSS-R
QC
BiTS-BRS
R^2= .315
BiTS-GS
R^2= .122
EPDS
R^2= .117
-.26**
-.26**
-.32**
-.15**
-.31**
.70**
.42**
.38**
.32**
.25**
.66**