



## ORIGINAL RESEARCH – QUALITATIVE

# Prediction of posttraumatic stress disorder symptomatology after childbirth – A Croatian longitudinal study



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## ABSTRACT

**Background:** Following childbirth, a vast number of women experience some degree of mood swings, while some experience symptoms of postpartum posttraumatic stress disorder.

**Aim:** Using a biopsychosocial model, the primary aim of this study was to identify predictors of posttraumatic stress disorder and its symptomatology following childbirth.

**Methods:** This observational, longitudinal study included 372 postpartum women. In order to explore biopsychosocial predictors, participants completed several questionnaires 3–5 days after childbirth: the Impact of Events Scale Revised, the Big Five Inventory, The Edinburgh Postnatal Depression Scale, breastfeeding practice and social and demographic factors. Six to nine weeks after childbirth, participants re-completed the questionnaires regarding psychiatric symptomatology and breastfeeding practice.

**Findings:** Using a multivariate level of analysis, the predictors that increased the likelihood of postpartum posttraumatic stress disorder symptomatology at the first study phase were: emergency caesarean section (odds ratio 2.48; confidence interval 1.13–5.43) and neuroticism personality trait (odds ratio 1.12; confidence interval 1.05–1.20). The predictor that increased the likelihood of posttraumatic stress disorder symptomatology at the second study phase was the baseline Impact of Events Scale Revised score (odds ratio 12.55; confidence interval 4.06–38.81). Predictors that decreased the likelihood of symptomatology at the second study phase were life in a nuclear family (odds ratio 0.27; confidence interval 0.09–0.77) and life in a city (odds ratio 0.29; confidence interval 0.09–0.94).

**Conclusion:** Biopsychosocial theory is applicable to postpartum psychiatric disorders. In addition to screening for depression amongst postpartum women, there is a need to include other postpartum psychiatric symptomatology screenings in routine practice.

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## Summary of relevance:

- Problem or issue: It is currently unclear how to best identify predictors of PTSD following childbirth.
- What is already known: Complications during childbirth, low levels of partner support, history of sexual trauma, lack of education, anxiety sensitivity, neuroticism, pre-existing PTSD all contribute to PTSD development. Early debriefing done by

midwives or psychologists is very important for PTSD prevention.

- What this paper adds: Since PTSD symptomatology 3–5 days after childbirth is the strongest predictor of development, screening of woman at risk using IES-R may be conducted in maternity units. Living in a nuclear family and in an urban area are protective factors.

## 1. Introduction

During the first postpartum month, 85% of women experience some degree of mood swings, and a certain percentage of those will

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suffer from some form of postpartum psychiatric disorder.<sup>1</sup> Postpartum psychiatric disorders include: (1) postpartum blues (30–85% prevalence within the first week), (2) non-psychotic postpartum depression (10–15% prevalence within the first two weeks, up to three months) and (3) puerperal psychosis (0.1–0.2% prevalence within the first two to four weeks).<sup>1</sup> There is also an increasing amount of data related to the development of posttraumatic stress disorder (PTSD) after birth (0–7% prevalence within 6 months and as high as 26% in certain risk groups),<sup>2,3</sup> which has been shown to be associated with depression during pregnancy and postpartum depression.<sup>4</sup> Therefore, some of the known predictors of perinatal depression and postpartum depression symptomatology might also be predictors of postpartum PTSD.

Results of a study that included 42,225 Norwegian women identified breastfeeding cessation as a risk factor for depression and other anxiety disorders.<sup>5</sup> Furthermore, the following birth complications have also all been associated with an acute stress reaction and/or PTSD: childbirth pain, fear for oneself or for the child's life, prolonged labour, dissociation as a result of pain,<sup>6</sup> medical intervention during labour (i.e. instrumental birth, emergency caesarean section),<sup>7,8</sup> the medical condition of the mother as a consequence of labour,<sup>6,9</sup> preterm birth and the medical condition of the newborn child.<sup>6,9–11</sup> Likewise, childbirth complications can precipitate a “traumatic birth experience”,<sup>12</sup> which can potentially lead to postpartum psychiatric disorders, including postpartum depression and PTSD. Pregnancy complications have also been found to be relevant to the development of PTSD after childbirth.<sup>9</sup> Other studies have also demonstrated that various social-demographic indicators are predictive factors for the development of PTSD, including low purchasing power,<sup>10</sup> low levels of partner support,<sup>13</sup> history of sexual trauma<sup>3</sup> and pre-existing PTSD or re-traumatisation.<sup>2</sup> It has also been well established that a history of psychiatric disease,<sup>10</sup> anxiety sensitivity<sup>3</sup> and neuroticism<sup>14</sup> are all related to PTSD following childbirth, stillbirth or miscarriage.

Despite all knowledge accumulated from the aforementioned studies, the total number and exact specification of predictors for posttraumatic reactions following childbirth have still not been established. The question that presents itself is how to best identify predictors of PTSD following childbirth. The primary aim of this study was to identify predictors of clinically relevant PTSD symptomatology at 3–5 days and 6–9 weeks following childbirth. To do so, a biopsychosocial model, which includes biological, psychological, and social factors,<sup>15</sup> was applied. The secondary aim of the study was to identify the degree to which posttraumatic stress and depression symptomatology overlap.

## 2. Participants, ethics and methods

The study was performed at the Department of Gynaecology and Obstetrics, University of Zagreb School of Medicine, University Hospital Centre Zagreb in Croatia and was approved by its institutional ethical board.

It was designed as a longitudinal study conducted at two intervals following childbirth: the first was conducted 3–5 days after birth while the second was performed 6–9 weeks following birth.

During a six week period, a total of 395 postpartum women were consecutively assessed for eligibility to participate in the study. Inclusion criteria included literacy, willingness to complete the questionnaire, willingness to provide contact details (address and telephone number) and signed informed consent. The exclusion criteria were the existence of a known active psychiatric illness treated by psychotropic medications (affective disorders, psychosis, anxiety disorders and addiction) and illiteracy.

In the first phase of the study, questionnaires were given to participants by a medical doctor and were completed in the hospital by the participants themselves. Responses related to medical history and procedures were confirmed by medical examination or from available medical documentation. The questionnaires gathered the following information: socio-demographic data, mode of birth, marital status, number of children, family members, employment status, living conditions, gender of the newborn child, pregnancy complications, traumatic events during their lifetime and pregnancy outcome fear. The questionnaire also included questions regarding complications during and after birth, such as the duration of labour, subjective feelings regarding unbearable pain and dissociation as a result of pain, medical interventions during labour (instrumental birth, emergency caesarean section) and any medical condition occurring as a consequence of labour, preterm birth of a child and any medical conditions of the newborn child.<sup>6</sup> In order to examine social support, a 7-item questionnaire with binary yes/no answers was used (with the author's permission). Included in this questionnaire were questions about marital status, marital problems, undesired or unplanned pregnancies and psychological difficulties experienced in previous pregnancies.<sup>16</sup> Dayan's “childhood adversity” questionnaire (used with the author's permission) assesses physical abuse, sexual abuse, institutional or foster family placement, feelings of rejection by at least one parent (parental rejection) and family secrets.<sup>17</sup> Due to its acknowledged psychometric properties, the Big Five Inventory (BFI) was used to assess personality traits.<sup>18</sup> This scale has 44 items to assess the 5 personality dimensions – extraversion, agreeableness, conscientiousness, neuroticism, and openness. Self-report ratings for each item are graded from 1 (disagree strongly) to 5 (agree strongly). In the Croatian version, the coefficients of internal reliability (Cronbach  $\alpha$ ) were 0.69 for agreeableness, 0.69 for extraversion, 0.78 for conscientiousness, 0.78 for openness to experience and 0.80 for neuroticism.<sup>19</sup>

Screening for PTSD symptoms was carried out with the Croatian version of the Impact of Events Scale Revised (IES-R). This is a 22-item self-report measure that assesses subjective distress caused by traumatic events directly related to 14 of the 17 DSM-IV symptoms of PTSD<sup>20</sup> and is a revised version of the older, 15-item IES.<sup>21</sup> This scale is recommended by an international group of researchers, clinicians, and user-group representatives for use in screening for PTSD after childbirth.<sup>2</sup> All items in the IES-R are ranked from 0 (“not at all”) to 4 (“extremely”), which yields a total score between 0 and 88.<sup>20</sup> It was translated and validated (convergent validation) in Croatian with a reliability (Cronbach  $\alpha$ ) of 0.91.<sup>22</sup> Cut-off points between 24 and 33 have shown both a sensitivity and specificity greater than 70%.<sup>23</sup> In this investigation, a cut-off score of 24 was used to determine the presence of a traumatic birth experience. The Edinburgh Postnatal Depression Scale EPDS (Croatian validated version) was used for screening postpartum depression symptoms. The EPDS is a 10-item postpartum depression screening questionnaire completed by mothers and scored by clinicians. Authors of EPDS suggested that threshold of 12/13 is appropriate for depression diagnosis, and 9/10 for screening in primary care.<sup>24</sup> At a cut-off score of 8.5, the sensitivity of the scale for determining the presence of postpartum depression is 77.3%, with a specificity of 82.4% and a PPV of 27.9% in Croatian population.<sup>25</sup>

The second phase of the study was conducted 6–9 weeks following birth. All participants were contacted by phone and informed about a second set of questionnaires, which were then sent to them by regular mail. The second set of questionnaires included the IES-R and EPDS as well as questions regarding breastfeeding practice.

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