

## ORIGINAL PAPER

## FACTORS ASSOCIATED WITH CHILDBIRTH – RELATED FEAR AMONG SLOVAK WOMEN

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## Abstract

**Aim:** Aim of the study was to examine the intensity of childbirth-related fear, its components and relationship with selected variables (age, parity, and delivery history) among pregnant women in Slovakia. **Design:** The study was designed as a descriptive cross-sectional study. **Methods:** A cross-sectional study, 156 pregnant women participated in the research (age  $29.7 \pm 4.73$ ). The Wijma Delivery Expectancy/Experience Questionnaire (W-DEQ, version A) was used to assess the intensity of childbirth-related fear. A short questionnaire of our own design was used to measure the components of child-related fear. Correlation analysis, ANOVA, and linear regression were employed. **Results:** The average intensity of child-related fear in the research sample was  $68.8 (\pm 11.6)$ , extreme fear was identified among 9.6% of pregnant women. Child-related fear and age were significantly negatively correlated ( $R = -0.16$ ;  $p = 0.05$ ). Results of ANOVA showed significant differences in intensity of fear according to delivery history ( $F = 4.58$ ;  $p = 0.005$ ). In the linear regression model, parity and delivery history were shown to be significant predictors of fear of childbirth. The most prevalent components of childbirth-related fear were pain (21.2%), prolonged labor (19.2%), and use of forceps or vacuum extraction (17.6%). **Conclusion:** Being a primipara, or perceiving a previous labor as complicated were significant factors influencing the fear of childbirth in our sample. The identification of the components and related factors of childbirth-related fear is important in planning effective intervention strategies aimed at anxiety prevention during pregnancy, and contributes to improvement in the quality of life of pregnant women.

**Keywords:** content of fear, childbirth-related fear, childbirth-related fear prevention, predictors of childbirth-related fear, pregnant women.

## Introduction

Fear of childbirth (FOC) is regarded as the most frequent fear during the period of pregnancy, according to certain studies (Petersen et al., 2009; Haines et al., 2012). In a study by Demšar et al. (2015) approximately 75% of women had low or medium FOC, while the remaining quarter had high or very high FOC. Other studies have shown that approximately 20% of nulliparous women experience medium or intense levels of FOC, requiring the professional help and support of healthcare professionals, in addition to that of their families. Approximately 6% of women suffer from phobic FOC (tokophobia), which is often related to previous labor trauma (Butcher, 2014; Gosselin et al., 2016).

To a varying extent, the following factors are considered to be predictors of FOC during

pregnancy: previous life experience, hearing negative stories about labor, posttraumatic stress disorder (caused by rape, abuse, or a previous complicated labor), lack of childbirth experience, ambivalence towards pregnancy and maternity (Hart, McMahon, 2006), age, education, social-economic status, and lack of social support (Laursen et al., 2008; Räisänen et al., 2014). Other studies have indicated significant psychological predictors for FOC, for instance, personality type, anxiety, and low self-esteem (Ryding et al., 2007; Handelzalts et al., 2015; Klabbers et al., 2016), and psycho-social FOC predictors (Toohill et al., 2014).

Childbirth as a biological process is represented by various physiological factors, some of which might be perceived as unknowable or uncontrollable by pregnant women. For some, this situation is psychologically complicated, and might result in increased feelings of insecurity, anxiety, and intense childbirth-related fear. Conversely, positive and relaxed feelings increase the probability of simple and complication-free labor. A feeling of security is

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very important for the psychological well-being of an expectant mother. Intensity of experience of FOC, is influenced also by the quality of communication and support from healthcare personnel (midwives, nurses, gynaecologists, obstetricians, and therapists) (Klabbers et al., 2016).

Significant attention should be paid to pregnant women and their childbirth-related fears, particularly with regard to midwifery care, as FOC can have unfavourable consequences on both pregnancy and the course of labor. Intense feelings of anxiety can have a negative influence on the course of labor, for instance, increasing the duration of the first period of labor. There is evidence to suggest that women experiencing intense fear are at greater risk of requiring acute caesarean section in comparison to women who do not experience FOC (Adams, Eberhard-Gran, Esklid, 2012). Other studies have indicated that FOC among multiparas is a factor in an increased ratio of caesarean section by request (Mancuso et al., 2006; Sydsjö et al., 2012; Räisänen et al., 2014; Fenwick et al., 2015). In Finland, Sweden and the United Kingdom, FOC is the main reason for caesarean section in 7–22% of all labors. (Rouhe et al., 2011). Childbirth-related fear could also be a significant pathogenic factor in postpartum depression (Jaju, Al Kharusi, Gowri, 2015; Song, Yu, 2015).

In light of the above, it is necessary to focus on not only physical, but also psycho-social factors, including intense feelings of anxiety related to labor, in order to provide effective and high quality healthcare to pregnant women.

## Aim

The aim of the study was to explore the intensity of childbirth-related fear among pregnant women, its components, and associations with selected variables (age, childbirth history, parity, and trimester).

## Methods

### Design

A quantitative cross – sectional study was used.

### Sample

The cohort consisted of women that had fulfilled the following inclusion criteria: pregnant, willing to cooperate, and provision of written consent. The average age of respondents was 29.66 years. The youngest respondent was 18 years-old, and the oldest was 42 years-old. The characteristics of the cohort (n = 156) with regard to the determined factors (parity, subjective experience of previous labor, and trimester) are presented in Table 1.

**Table 1** Basic characteristics of participants

Characteristic (n = 156)	n (%)
Parity	
primigravidity	82 (52.56)
secundigravidity	47 (30.13)
multigravidity	27 (17.31)
Experience of last labor	
complicated	30 (19.23)
non-complicated	42 (26.92)
i cannot assess it	2 (1.28)
primigravidity	82 (52.56)
Trimester	
1 <sup>st</sup> trimester	20 (12.82)
2 <sup>nd</sup> trimester	39 (25.00)
3 <sup>rd</sup> trimester	97 (62.18)

### Data collection

The standardized questionnaire *Wijma Delivery Expectancy/Experience Questionnaire version A (W-DEQ version A)* was used (Wijma, Wijma, Zar, 1998), and translated into Slovak by reverse-translation. The questionnaire focused on the measurement of the intensity of childbirth-related fear. It consists of 33 questions in six domains. Each question is scored according to a six-point Likert scale. The total score of the questionnaire indicates the intensity of fear of childbirth, ranging from 0 to 165. The higher the final value, the higher the intensity of childbirth-related fear. A value of 85 or more indicates significant childbirth-related fear. The internal consistency reliability (the Cronbach alpha reliability) coefficient of the W-DEQ A in this research was 0.645.

In addition to the standardized questionnaire, we used a one-item question focusing on the components of fear of childbirth. This item provides eight possible answer variants, with the option of choosing more than one answer. A pilot study was conducted on five female respondents. The pilot study led to modifications to the problematic wording of certain items. Data collection was carried out from October 2015 to February 2016. The method of convenient sampling was used. Participants (pregnant women) were recruited at three obstetrical outpatient clinics. Respondents who agreed to participate in the research project were asked to complete the questionnaires during their visit to the outpatient clinic, or they could choose to participate online, in which case, an electronic form of the questionnaire was sent to the email addresses provided by the participants. A total of 192 questionnaires were distributed: 120 questionnaires in person, and 72 by email. The response rate was 90.63% in the group of participants who completed questionnaires during their visit to the clinic, and 73.61% in the group of women who sent

questionnaires by email. The overall response rate was 81.25%.

### Data analysis

To analyse the data, descriptive statistics, Spearman correlation coefficient, ANOVA, and a linear regression method were employed. Statistical analyses were performed using IBM SPSS, version 22. The result of analysis was considered statistically significant if the p-value of the test was less than 0.05 ( $p < 0.05$ ).

### Results

Table 1 shows the characteristics of research participants in terms of parity, trimester and the subjective perception of their last labor. 52.56% of participants were primiparas, 30.13% secondiparas, and 17.31% multiparas. 12.82% of respondents were in the first pregnancy trimester, 25.00% in the second trimester and 62.18% in the third trimester. With regard to the subjective perception of previous labor, 26.92% of respondents described their last labor as without complication, 19.23% as complicated and 1.28% stated that they were not able to evaluate their last labor.

Table 2 depicts the average intensity of childbirth-related fear. The average intensity of childbirth fear among participants was 68.74 (SD 11.58). A high level of childbirth fear (W-DEQ  $\geq 85$ ) was identified among 15 women (9.61%).

**Table 2** Mean levels of childbirth-related fear in research sample

	n (%)	mean (SD)
W-DEQ <85	141 (90.38)	66.40 (9.37)
W-DEQ $\geq 85$	15 (9.61)	90.80 (5.60)
Total sample	156 (100)	68.74 (11.58)

SD – standard deviation

**Table 3** Childbirth-related fear among women acc. to previous labor complication, parity, and trimester

	n (%)	mean (SD)	F*	p
Complicated labor	30 (19.23)	71.83 (11.97)	4.58	0.004
Non-complicated labor	42 (26.92)	63.39 (11.34)		
Primigravidity	82 (52.56)	70.41 (11.12)	2.56	0.080
Secundigravidity	47 (30.12)	68.21 (11.97)		
Multigravidity	27 (17.30)	64.70 (12.04)		
1 <sup>st</sup> trimester	20 (12.82)	73.25 (13.19)	2.11	0.130
2 <sup>nd</sup> trimester	39 (25.00)	69.38 (10.88)		
3 <sup>rd</sup> trimester	97 (62.18)	67.56 (11.38)		

F\* – ANOVA; p – significance level at  $p < 0.05$

A linear regression model was used to examine the effect of selected variables on the level of childbirth-related fear among study participants. Age, trimester, parity, and previous labor were entered as possible

The relationship between the age of pregnant women and childbirth fear was also examined in our study. A statistically significant negative correlation ( $R = -0.16$ ;  $p = 0.042$ ) was found between the variables in the research sample.

Table 3 shows the average childbirth fear of participants with regard to subjective perception of their last labor, parity, and trimester. The average fear intensity among women who perceived their last labor to have been complicated was 71.83 ( $\pm 11.97$ ). In the group of women with positive perception of their last labor the W-DEQ mean was 63.39 ( $\pm 11.34$ ). Among primiparas, or women who did not evaluate their last labor, the mean was 70.41 ( $\pm 11.12$ ). The results of analysis of variance (ANOVA) show a significant difference ( $F = 4.58$ ;  $p = 0.005$ ) in the intensity of childbirth-related fear among women according to perception of their last labor. The LSD post hoc tests confirmed differences in childbirth-related fear intensity among women who subjectively experienced their previous labor as complicated, and women who experienced their previous labor as non-complicated. On the other hand, there were no significant differences between women who experienced their previous labor as complicated, and primiparas. A difference in childbirth-related fear with regard to parity was also found ( $F = 2.56$ ;  $p = 0.080$ ). The LSD Post Hoc test showed a statistically significant difference between primiparas and multiparas. Primiparas had a significantly higher level of childbirth fear ( $70.38 \pm 10.98$ ) in comparison to multiparas ( $64.70 \pm 12.04$ ). Differences between women based on pregnancy trimester were not statistically significant (Table 4).

predictors in the linear regression model, while level of fear was treated as a dependent variable. The results of this analysis showed that parity and previous labor were both statistically significant

( $\beta = -2.26$ ;  $p \leq 0.05$ ; resp.  $\beta = -2.06$ ;  $p \leq 0.05$ ). Age and trimester were not found to be significant factors influencing the fear of labor in this model. The total explained variance in the linear regression model was 7.91% (Table 4).

**Table 4** Linear regression model with the effect of variables on the level of childbirth-related fear among study participants

	$\beta$ coefficient	p-level
Age	-1.04	0.301
Trimester	-1.55	0.123
Parity	-2.26	<b>0.025</b>
Previous labor	-2.06	<b>0.041</b>
Total explained variance	7.9%	

Statistically significant effects are in **bold** ( $p \leq 0.01$ )

Table 5 shows the components of childbirth-related fear. As women had the option of choosing more than one response, the total number of answers in the table below is 307. Pregnant women in the research sample defined the specific components of their childbirth-related fear as follows: pain (21.17%), long duration of labor (19.21%), use of forceps or vacuum-extraction during labor (17.59%), perineal injury (14.65%).

**Table 5** Components of childbirth-related fear

	n (%)
Pain	65 (21.17)
Prolonged labor	59 (19.21)
Panic and loss of control during labor	21 (6.84)
Feeling of incapability and incapacity	14 (4.56)
Perineal injury	45 (14.65)
Incorrect method of pushing and breathing	19 (6.19)
Late arrival to maternity hospital	2 (0.77)
Fear of C-section	28 (9.12)
Fear of using of forceps and vacuum-extractor	54 (17.59)
Total number of responses	307 (100.00)

## Discussion

One of the aims of this study was to examine the intensity of childbirth-related fear in a research sample of pregnant women in Slovakia. Significant childbirth-related fear was identified in almost 10% of women participating in the study. Research studies focusing on intensity of childbirth-related fear show a variation in proportion of significant FOC in particular countries. A review study carried out in 2009 in Norway reported a 15.8% prevalence of serious FOC (Nieminen, Stephansson, Ryding, 2009). However, according to another, more recent study carried out in 2011 in Norway, serious FOC was identified in 8.8% of women (Størksen et al., 2012). Serious FOC was found in 4.5% of women in Belgium; 7.6% in Island, 15.2% in Sweden, and up

to 15.6% in Estonia (Schei et al., 2014). In Canada, a 9.2% prevalence was found (Spice et al., 2009). Prevalence of FOC in West-European countries was approximately 20%, and 6-10% of women suffered from intense childbirth-related fear that had an impact on their daily life (Kjærgaard et al., 2008).

Identification of FOC predictors has direct implications for midwifery practice, especially in the context of childbirth-related fear as a nursing diagnosis. Consequently, we were interested in factors related to high levels of FOC, such as age, parity and previous experience of labor.

The results of our study showed a significant association between higher age and higher levels of childbirth-related fear in the research sample. This is in line with the results of Räisänen et al. (2014), and Gao et al. (2015). Comprehensive psychoprophylaxis plays a significant role in decreasing childbirth-related fear among primiparas, and should be given proper attention in midwifery practice (Navaee, Abedian, 2015). Childbirth-related fear might also be one of the factors associated with the highly prevalent current trend of postponing maternity to a later age among woman in highly developed countries.

Previous labor experience and its relationship with FOC were also examined in this study. The results show that the average intensity of fear of childbirth by primiparas was significantly higher in comparison to multiparas, which is in line with the study by Rouhe et al. (2009), who also found that fear of childbirth is influenced by parity. Among primiparas, the fear of the unknown might be a significant factor influencing FOC, while among multiparas, the level of FOC is significantly influenced by previous labor experience (Nieminen, Stephansson, Ryding, 2009). Previous childbirth experience among pregnant women may be associated with labor trauma, and might make a significant contribution to their experience of childbirth-related fear (Nilsson, Bondas, Lundgren, 2010). The results of analysis of variance reveal significant differences in the intensity of FOC among women with complicated and non-complicated previous labor. The level of FOC intensity among women who perceived their labor to be complicated was higher than the level of FOC among women with non-complicated previous labor.

However, there was no statistically significant difference between women with complicated labors and primiparas. Other studies have also demonstrated the influence of parity and previous labor experience (complicated labors: instrumental vaginal labor,

C-section labor) on risk of experiencing FOC (Nieminen, Stephansson, Ryding, 2009; Rouhe, 2009; Elvander, Cnattingius, Kjerulff, 2013; Toohill et al., 2014). It has been suggested that FOC during pregnancy could negatively influence experience of labor (Sluijs, 2012).

Analysis of fear of childbirth components revealed the most frequent reasons for FOC in the research sample. The most common answer was labor pain (21.17%), prolonged labor (19.21%), use of forceps or vacuum extraction (17.59%), and perineal injury (14.65%). Pain was also identified as the most frequent component of childbirth-related fear among pregnant women in a study by Gosselin et al. (2016). According to a study by Leap et al. (2010), the ability to cope with labor pain among pregnant women is significantly influenced by the support of midwives during pregnancy and labor, based on the relationship of trust established during psycho-prophylactic courses. In this study, the ability to overcome worries, self-doubts, and the pain experienced in childbirth have resulted in feelings of pride, happiness, and positive stimulation after labor.

In the linear regression model in our study, parity and previous labor experiences were shown to be significant predictors of labor fear. This indicates that being a primipara, or perceiving a previous labor as complicated, were the most significant factors influencing childbirth fear in our sample. However, the total explained variance in the linear regression model was low, meaning that other factors probably influence the level of childbirth fear among women. Psychosocial characteristics such as socioeconomic status, depression and anxiety, and personality traits, might be significant in this regard.

Pregnant women with high levels of childbirth-related fear require effective support during pregnancy and labor. By using appropriate attitude-focused strategies, healthcare personnel could significantly contribute to the prevention and reduction of childbirth-related fear.

During labor, an intimate, calm, and friendly atmosphere, with emphasis on an individual approach is vital in providing a comfortable and secure environment for pregnant women. This requires the creation of a strong and positive relationship between pregnant women and healthcare professionals by means of effective communication, full acceptance, empathy, support, appreciation, and respect (Sydsjö et al., 2015). The positive effect of psycho-prophylaxis on reducing FOC among women has also been demonstrated in other studies (Karabulut et al., 2016; Kızılırmak, Başer, 2016; Serçekuş, Başkale, 2016).

Based on the results of this study, we regard it as vital to significantly improve education of healthcare personnel in the area of psychology, psychotherapeutic communication, prevention, and fear-coping mechanisms. Screening measures focused on identifying pregnant women at risk of experiencing FOC should be used in obstetrician and midwifery practice to a greater extent. Regular supervision and basic psychotherapeutic education are also options for strengthening effective interventions targeted at reduction of childbirth-related fear.

### *Limitations of study*

Certain limitations were inherent in the nature of the research (i.e., online questionnaires, conventional sampling process, the number of respondents). The study did not allow causal conclusions, and its external validity is limited. Notwithstanding these methodological limitations, the study focused on a topic rarely explored in the region of Central and Eastern Europe.

### **Conclusion**

This study identified factors associated with higher levels of childbirth-related fear among pregnant women in Slovakia (higher age, previous negative labor experience, and being a primipara), as well as the most frequent components of childbirth-related fear. Paying greater attention to the predictors of FOC could help in the process of identifying women at higher risk of intense childbirth-related fear, and thus improve the effectiveness of intervention strategies. Prevention and reduction of childbirth-related fear, especially as part of psycho-prophylaxis, could contribute to more effective labor courses and quality of life among pregnant women.

### **Ethical aspects and conflict of interest**

Our study complies with standard ethical rules. The study was approved by the local Ethics committee of the Žilina region (Slovak Republic), and all participants received information about the study aims, and details about their participation. The data collection was anonymous, and all participants expressed their willingness to be included in the study. The authors declare that they are not aware of any conflict of interest.

### **Author contribution**

The concept and study design (LM, ZS, SK), data analysis and interpretation (LM, ZS, SK, AR), processing the draft of the manuscript (LM, ZS, SK),

critical revision of the manuscript (LM, ZS, SK), article finalization (LM).

## References

- Adams SS, Eberhard-Gran M, Esklid A. Fear of childbirth and duration of labor: a study of 2206 women with intended vaginal delivery. *BJOG: An International Journal of Obstetrics and Gynaecology*. 2012;119(10):1238–1246.
- Demšar K, Velikonja VG, Svetina M, Verdenik I. Fear of childbirth. Midwifery in the international context, challenges and visions for the future. In: Petročnik P, Došler A., editors. *Proceedings of scientific papers with peer review*. Ljubljana: University of Ljubljana, Faculty of Health Sciences, 2015.
- Elvander C, Cnattingius S, Kjerulff K. Birth experience in women with low, intermediate or high levels of fear: findings from the first baby study. *Birth*. 2013;40(4):289–296.
- Fenwick J, Toohill J, Creedy DK, Smith J, Gamble J. Sources, responses and moderators of childbirth fear in Australian women: a qualitative investigation. *Midwifery*. 2015;31(1):239–246.
- Gao LL, Liu XJ, Fu BL, Xie W. Predictors of childbirth fear among pregnant Chinese women: a cross-sectional questionnaire survey. *Midwifery*. 2015;31(9):865–870.
- Gosselin P, Chabot K, Béland M, Goulet-Gervais L, Morin AJ. Fear of childbirth among nulliparous women: relations with pain during delivery, post-traumatic stress symptoms, and postpartum depressive symptoms. *Encephale*. 2016;42(2):191–196.
- Haines HM, Rubertsson Ch, Pallant JF, Hildingsson I. The influence of women's fear, attitudes and beliefs of childbirth on mode and experience of birth. *BMC Pregnancy and Childbirth*. 2012;12:55.
- Handelzalts JE, Becker G, Ahren MP, Lurie S, Raz N, Tamir Z, Sadan O. Personality, fear of childbirth and birth outcomes in nulliparous women. *Archives of gynecology and obstetrics*. 2015;291(5):1055–1062.
- Hart R, McMahon CA. Mood state and psychological adjustment to pregnancy. *Archives Women's Mental Health*. 2006;9(6):329–337.
- Jaju S, Al Kharusi L, Gowri V. Antenatal prevalence of fear associated with childbirth and depressed mood in primigravida women. *Indian Journal of Psychiatry*. 2015;57(2):158–161.
- Karabulut Ö, Coşkun Potur D, Doğan Merih Y, Cebeci Mutlu S, Demirci N. Does antenatal education reduce fear of childbirth? *International Nursing Review*. 2016;63(1):60–67.
- Kızıllırmak A, Başer M. The effect of education given to primigravida women on fear of childbirth. *Applied Nursing Research*. 2016;29:19–24.
- Kjærgaard H, Wijma K, Dykes AK, Alehagen S. Fear of childbirth in obstetrically low-risk nulliparous women in Sweden and Denmark. *Journal of Reproductive and Infant Psychology*. 2008;26(4):340–350.
- Klabbers GA, van den Heuvel MMA, van Bakel HJ, Vingerhoets A. Severe fear of childbirth: its features, assesment, prevalence, determinants, consequences and possible treatments. *Psychological Topics*. 2016;25(1):107–127.
- Laursen M, Johansen C, Hedegaard M; Danish National Birth Cohort. Fear of childbirth: predictors and temporal changes among nulliparous women in the Danish National Birth Cohort. *BJOG: An International Journal of Obstetrics and Gynaecology*. 2008;115(3):354–360.
- Leap N, Sandall J, Buckland S, Huber U. Journey to confidence: women's experiences of pain in labor and relational continuity of care. *Journal of Midwifery & Women's Health*. 2010;55(3):234–242.
- Mancuso A, De Vivo A, Fanara G, Settineri S, Triolo O, Giacobbe A. Women's preference on mode of delivery in Southern Italy. *Acta Obstetrica et Gynecologica Scandinavica*. 2006;85(6):694–699.
- Navaee M, Abedian Z. Effect of role play education on primiparous women's fear of natural delivery and their decision on the mode of delivery. *Iranian Journal of Nursing and Midwifery Research*. 2015;20(1):40–46.
- Nieminen K, Stephansson O, Ryding EL. Women's fear of childbirth and preference for cesarean section – a cross-sectional study at various stages of pregnancy in Sweden. *Acta Obstetrica et Gynecologica Scandinavica*. 2009;88(7):807–813.
- Nilsson C, Bondas T, Lundgren I. Previous birth experience in women with intense fear of childbirth. *Journal of Obstetric, Gynecologic & Neonatal Nursing*. 2010;39(3):298–309.
- Petersen JJ, Paulitsch MA, Guethlin C, Gensichen J, Jahn A. A survey on worries of pregnant women – testing the German version of the Cambridge worry scale. *BMC Public Health*. 2009;9:490.
- Räsänen S, Lehto SM, Niselsen HS, Gissler M, Kramer MR, Heinonen S. Fear of childbirth in nulliparous and multiparous women: a population-based analysis of all singleton births in Finland in 1997–2010. *BJOG: An International Journal of Obstetrics and Gynaecology*. 2014;121(8):965–970.
- Rouhe H, Salmela-Aro K, Halmesmäki E, Saisto T. Fear of childbirth according to parity, gestational age, and obstetric history. *BJOG: An International Journal of Obstetrics and Gynaecology*. 2009;116(1):67–73.
- Rouhe H, Salmela-Aro K, Gissler M, Halmesmäki E, Saisto T. Mental health problems common in women with fear of childbirth. *BJOG: An International Journal of Obstetrics and Gynaecology*. 2011;118(9):1104–1111.
- Ryding EL, Wirfelt E, Wängborg IB, Sjögren B, Edman G. Personality and fear of childbirth. *Acta Obstetrica et Gynecologica Scandinavica*. 2007;86(7):814–820.
- Schei B, Lukasse M, Ryding EL, Campbell J, Karro H, Kristjansdottir H, Laanpere M, Schroll AM, Tabor A, Temmerman M, Parys S, Wangel AM, Steingrimsdottir T. A history of abuse and operative delivery – results from a European multi-country cohort study. *PLoS One*. 2014;9(1):e87579.
- Serçekeş P, Başkale H. Effects of antenatal education on fear of childbirth, maternal self-efficacy and parental attachment. *Midwifery*. 2016;34:166–172.
- Sluijs AM, Cleiren MP, Scherjon SA, Wijma K. No relationship between fear of childbirth and pregnancy-/delivery-outcome in a low-risk Dutch pregnancy cohort delivering at home or in hospital. *Journal of Psychosomatic Obstetrics & Gynecology*. 2012;33(3):99–105.
- Song W, Yu S. Neuroendocrine functions of puerperae with postpartum depression aggravated by stressful childbirth-related events. *Journal of Biological Regulators & Homeostatic Agents*. 2015;29(3):689–694.
- Spice K, Jones SL, Hadjistavropoulos HD, Kowalyk K, Stewart SH. Prenatal fear of childbirth and anxiety sensitivity. *Journal of Psychosomatic Obstetrics & Gynecology*. 2009;30(3):168–174.

- Størksen HT, Eberhard-Gran M, Garthus-Niegel S, Eskild A. Fear of childbirth; the relation to anxiety and depression. *Acta Obstet Gynecol Scand*. 2012;91(2):237–242.
- Sydsjö G, Sydsjö A, Gunnervik C, Bladh M, Josefsson A. Obstetric outcome for women who received individualized treatment for fear of childbirth during pregnancy. *Acta Obstetricia et Gynecologica Scandinavica*. 2012;91(1):44–49.
- Sydsjö G, Blomberg M, Palmquist S, Angerbjörn L, Bladh M, Josefsson A. Effects of continuous midwifery labor support for women with severe fear of childbirth. *BMC Pregnancy Childbirth*. 2015;15:115.
- Toohill J, Fenwick J, Gamble J, Creedy DK, Buist A, Ryding EL. Psycho-social predictors of childbirth fear in pregnant women: an Australian study. *Open Journal of Obstetrics and Gynecology*. 2014;4(9):531–543.
- Wijma K, Wijma B, Zar M. Psychometric aspects of the W-DEQ; a new questionnaire for the measurement of fear of childbirth. *Journal of Psychosomatic Obstetrics and Gynecology*. 1998;19(2):84–97.