# Labor anxiety – risk factors and impact on the course of labor, puerperium and neonatal condition

Katarzyna Gregor[1] (ABDEF), Ewa Banaś[1] (ABDEF), Marzena Malec[1] (ABD),
Michalina Ilska[2] (ACDEF), Agnieszka Jagielska[1] (ABD), Karol Rak[1] (ABD),
Bartosz Czuba[1] (ABD), Wojciech Cnota[1] (ABDEF)

[1] Clinical Department of Gynecology and Obstetrics, Medical University of Silesia in Katowice,
   Poland
[2] Department of Human Development and Family Studies, Institute of Psychology,
   University of Silesia in Katowice, Poland

SUMMARY

**Introduction.** Labor anxiety is a negative phenomenon that can affect the perinatal period.
**Aim.** The aim of the study was to identify factors that increase the risk of labor anxiety, and to assess the impact of this phenomenon on the course of labor, puerperium and neonatal condition.
**Material and methods.** The study included 68 patients hospitalized in the Clinical Department of Gynecology and Obstetrics in Ruda Slaska, Poland. The material was collected from the medical documentation, a questionnaire concerning sociodemographic aspects, Labor Anxiety Questionnaire (KLP) and the Edinburgh Postnatal Depression Scale (EPDS).
**Results.** A low level of labor anxiety occurred in two-third of the respondents (61.76%). The young age of the women was associated with higher prenatal stress ($r = - .259, p = .044$). The level of labor anxiety did not vary depending on other socio-demographic factors, such as place of residence, level of education or financial situation. The higher the labor anxiety, the higher the symptoms of depression ($r = .351, p = .003$) measured at admission to hospital. An increased level of childbirth anxiety significantly influenced the length of natural labor ($r = .717, p = .001$). There was no correlation between antenatal anxiety and labor pain ($r = -.069; p = .654$), birth weight ($r = -.020; p = .871$), Apgar score ($r = -.054; p = .672$) and duration of hospital stay of the mother ($r = .065; p = .609$) and child ($r = -.201; p = .149$).
**Conclusions.** Labor anxiety affects the course of delivery or puerperium. Particular attention should be paid to young pregnant women with labor anxiety at the highest level, which may lead to prolonged labor and postnatal depression.
**Key words:** pregnancy; labor anxiety; postnatal depression; labor; puerperium; risk factors

**Address for correspondence:** Katarzyna Gregor
Clinical Department of Gynecology and Obstetrics
Wincentego Lipa 2, 41-703 Ruda Śląska, Poland
e-mail: gregor.katarzyna@gmail.com

## INTRODUCTION

Labor anxiety is a common phenomenon. Various sources state that this condition may affect 23–64% of women of child-bearing age [1]. Discrepancies in frequencies of labor anxiety probably result from the lack of uniform diagnostic criteria [2–4]. Anxiety is defined as unclear, unpleasant emotional state, characterized by experiencing worry, fear, stress and distress [5]. The literature refers to it as both fear (as in *fear of childbirth*) and anxiety (as in *antenatal anxiety*). Some studies describe a relationship of antenatal anxiety with certain other symptoms, such as nightmares, concentration disorders, psychosomatic symptoms and increased risk of postpartum depression [6,7]. Next to its direct impact on the condition of women, it also has a significant influence on the neonatal condition, as certain studies indicate. Authors have reported correlations between labor anxiety and low birth weight, intrauterine growth restriction as well as behavioral, emotional and cognitive disorders [8–10]. Since fear elevates the maternal serum catecholamine level, it may lead to long-term fetal exposure to cortisol, a stress hormone [11]. Antenatal anxiety also seems to affect the course of labor. Studies report a relationship of antenatal fear with prolonged labor [12] and with an increased elective cesarean section rate, particularly in multiparous women [13].

## AIM

The aim of the study was to identify factors that increase the risk of labor anxiety, and to assess the impact of this phenomenon on the course of labor, puerperium and neonatal condition.

## MATERIAL AND METHODS

A survey study was conducted among 68 women giving birth at the Department of Gyne-

cology and Obstetrics in November and December 2018. The questionnaires were completed twice: at admission to hospital and during the postnatal period (1–3 days after delivery). Exclusion criteria were the lack of consent to participate and regular uterine contractions. The surveys included: a self-constructed questionnaire, Labor Anxiety Questionnaire (*Kwestionariusz Lęku Porodowego,* KLP-II by Putyński and Paciorek, 2008) and Edinburgh Postnatal Depression Scale (EPDS). Data concerning the course of labor, puerperium and neonatal condition were obtained from medical records.

The Edinburgh Postnatal Depression Scale (EPDS, Cox et al., 1987 after: Kossakowska, 2013) is the most common screening tool enabling assessment of the severity of depression in women during pregnancy and puerperium. The EPDS has been used in both antenatal period (Murray and Cox 1990; van Bussel, Spitz and Demyttenaere 2009; Escribà-Agüir et al. 2013) as well as in early and late puerperium (van Bussel, Spitz and Demyttenaere, 2009, Escribà-Agüir et al. 2013; Kaźmierczak et al. 2014; Maliszewska 2017). The EPDS is used to evaluate the patient's well-being within a week preceding the study. This questionnaire consists of 10 statements describing various aspects of patient's well-being. The responses are scored from 0 to 3. The total score reflects the general outcome (max. score 30). The higher the value, the higher the postnatal depression index. The borderline value, indicating an increased depression index, is score 12–13. The Cronbach's alpha coefficient for the questionnaire is 0.91 [14].

Labor Anxiety Questionnaire (KLP-II Putyński and Paciorek, 2008) is a tool used to assess labor anxiety in pregnant women. It consists of nine statements. A respondent selects one of four categories in response to each of the statements: *strongly agree, rather agree, rather disagree* and *strongly disagree*. The higher the result, the greater the intensification of labor anxiety. The reliability Cronbach's alpha coefficient is satisfactory and amounts to 0.69 (Putyński & Paciorek, 2008). A score of up to 13 denotes low and average labor anxiety, 14–15 means increased anxiety, 16–17 reflects high anxiety and above 18 – very high anxiety [15].

## RESULTS

The mean age of the respondents was 30 years (M = 30.16; SD = 4.03). Most of the women were married (60.3%), lived in medium-sized (64.7%) or small (16.2%) towns, and had secondary (47.1%) and higher (45.6%) education. Primiparous women constituted 50% of the respondents; most pregnancies were planned (75%), 17.6% of the respondents had problems with getting pregnant, and 27.9% had a history of miscarriages. The time to conception was approximately 7 months and varied between the women (min. = 0 months; max. = 11 years). Normal course of pregnancy was observed in 83.8% of the respondents. More than a third of the women (35.3%) participated in ante-natal classes and had a labor plan prepared (32.4%). More than a half of the women (54.4%) wanted to avoid episiotomy during delivery. A vast majority of the respondents were willing to use pharmacological (83%) and non-pharmacological (76.5%) pain relief methods and wanted a close person to accompany them in labor (86.8%).

The Labor Anxiety Questionnaire KLP-II yielded the following results: a low level of antenatal anxiety was observed in two-thirds of



**Fig. 1.** Percentage of observations in four categories of the KLP-II
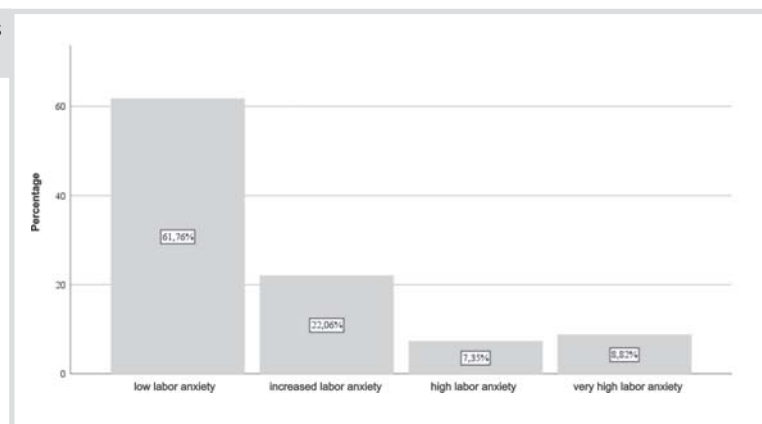
the respondents (61.76%), 22.06% presented an increased anxiety level, 7.35% declared high anxiety and 8.82% had a very high anxiety level (Fig. 1). Table 1 presents descriptive statistics for the labor anxiety variable.

The Edinburgh Postnatal Depression Scale showed an increased antenatal depression index in 13.24% of the respondents. Table 2 presents descriptive statistics for the EPDS measured ante- and postnatally.

The evaluation of the impact of selected sociodemographic data on the level of labor anxiety was made using the Mann-Whitney U test, Kruskal-Wallis test and Student's T test. A correlation was found between age of the pregnant women and the intensity of the investigated phenomenon: younger women were more anxious about labor ($r = -.259$; $p = .044$). However, labor anxiety did not depend on the place of residence ($H = 5.483$; $p = .140$), education ($H = 5.587$; $p = .137$), employment ($H = .889$; $p = .828$), financial situation ($H = 3.631$; $p = .163$) or marital status ($H = 3.106$; $p = .212$).
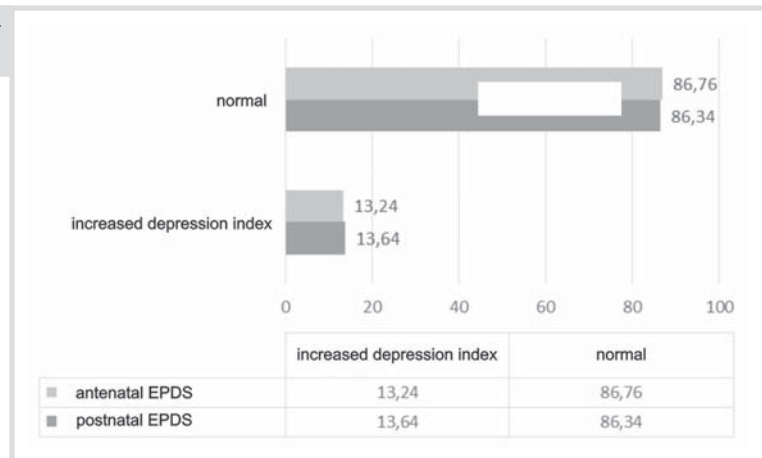
The analysis of the data obtained from the medical interview showed the following relationships: primiparous ($M = 13.52$; $SD = 3.54$) and multiparous ($M = 12.35$; $SD = 3.24$) women self-evaluated their labor anxiety at a similar level. In the subgroup of multiparous women, the type of the previous delivery (cesarean section vs natural delivery) did not differentiate the levels of antenatal anxiety at the time of the survey. History of miscarriages ($M = 12.68$; $SD = 3.46$) and no history of miscarriages ($M = 13.04$; $SD = 3.43$) did not differentiate the levels of labor anxiety in the current pregnancy. It was also found that the level of antenatal fear was similar in women with planned ($M = 13.23$; $SD = 3.43$) and unplanned pregnancies ($M = 12.05$; $SD = 3.34$). Also, difficulty with getting pregnant ($M = 14.08$; $SD = 5.43$) and no such difficulty ($M = 12.78$; $SD = 2.78$) did not differentiate the group in terms of the intensity of the investigated phenomenon. A subjective evaluation of a threat to pregnancy did not correlate with the labor anxiety level. Complete data are displayed in Table 2.

The relationship between labor anxiety and postpartum depression was evaluated in correlation analyses. It was shown that the higher the labor fear, the greater the symptoms of depression ($r = .351$; $p = .003$) measured both at admission and after delivery ($r = .351$; $p = .019$). Table 3 shows the full list of the presented analyses.

The analysis also included a reciprocal relationship between fear of childbirth and data on the course of labor and neonatal condition. Anova variance failed to reveal significant differences in the studied groups ($F(2.63) =$

**Fig. 2.** EPDS values measured ante- and postnatally



|  | increased depression index | normal |
|---|---|---|
| antenatal EPDS | 13,24 | 86,76 |
| postnatal EPDS | 13,64 | 86,34 |

**Tab. 1.** Descriptive statistics for the whole group in ante- and postnatal measurements

|  | Antenatal measurement | | | | Postnatal measurement | | | |
|---|---|---|---|---|---|---|---|---|
|  | *Min* | *Max* | *M* | *SD* | *Min* | *Max* | *M* | *SD* |
| KLP | 6.00 | 23,00 | 12.94 | 3.42 | - | - | - | - |
| ESDP | .00 | 16.00 | 6.88 | 4.05 | .00 | 28.00 | 7.25 | 5.62 |

\* Student's T test for dependent samples (p<0.05)

1.263; $p$ = .290). The women whose pregnancies ended with a natural vaginal delivery ($M$ = 12.95), elective cesarean section ($M$ = 12.40) and urgent cesarean section ($M$ = 14.05) evaluated their anxiety at a similar level.

The studies revealed that an increased level of childbirth anxiety significantly influenced the length of natural labor ($r$ = .717, p = .001). This relationship was strongly positive. There was no correlation between antenatal anxiety and labor pain ($r$ = -.069; $p$ = .654), birth weight ($r$ = -.020; $p$ =.871), Apgar score ($r$ = -.054; $p$ = .672) and duration of hospital stay of the mother ($r$ = .065; $p$ = .609) and child ($r$ = -.201; $p$ = .149).

## DISCUSSION

Studies on labor anxiety frequently yield conflicting outcomes. This may result from a number of factors, such as cultural differences, different research tools and varied sample sizes of test and control groups. Our studies have shown that labor anxiety was independent of parity: both primiparous and multiparous women had a similar level of labor anxiety. The results are

in line with the reports of some Polish authors [16,18,19]. Other authors, however, have noted significantly higher levels of anxiety in primiparous women [17,21].

There were no differences in the level of experienced labor anxiety between the women with a history of pregnancy failures and in those with no such events. These data support the hypothesis that previous experiences do not affect the course of the current labor [19]. The research also showed that the duration of labor depended on the level of antenatal anxiety. The higher the fear of childbirth, the longer the labor. The results of our studies are concordant with Norwegian research conducted in a large group of patients [12]. It revealed that labor anxiety does not affect labor pain, neonatal condition evaluated in the Apgar scale, birth weight or duration of maternal and neonatal hospitalization. These data are confirmed by studies of other Polish authors [7].

Younger women tend to experience greater labor anxiety. Similar results have also been reported by other authors [1,16]. However, different outcomes, indicating increased labor anxiety in older women, have been reported by

**Tab. 2.** Comparative analyses of labor anxiety levels in relation to data obtained from the medical history

| Grouping variable | KLP GROUP I | | KLP GROUP II | | Test | |
|---|---|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* | *t / U* | *p* |
| Parity | Primiparous | | Multiparous | | t = 1.427 | .158 |
| | 13.52 | 3.54 | 12.35 | 3.24 | | |
| Multiparous women: manner of delivery | Natural | | CC | | U = 152.5 | .350 |
| | 13.00 | 2.95 | 12.05 | 3.59 | | |
| History of miscarriages | Yes | | No | | U = 493.5 | .077 |
| | 12.68 | 3.46 | 13.04 | 3.43 | | |
| Pregnancy planning | Planned | | Unplanned | | U = 348.0 | .223 |
| | 13.23 | 3.43 | 12.05 | 3.34 | | |
| Difficulty getting pregnant | Yes | | No | | U = 316.0 | .818 |
| | 14.08 | 5.43 | 12.78 | 2.78 | | |
| Pregnancy risk status | Normal pregnancy | | High-risk pregnancy | | U = 323.5 | .867 |
| | 12.98 | 3.18 | 12.72 | 4.64 | | |

* p < 0,05

**Table 3.** Correlations of the tested variables in the whole group in ante- and postnatal measurements as well as labor duration and age

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. KLP | 1 | | | | |
| 2. ESDP | ,351** | 1 | | | |
| 3. ESDP2 | ,351* | ,630** | 1 | | |
| 4. Age | -,259* | -,176 | ,165 | 1 | |
| 5. Duration of labor | ,717** | ,075 | -,242 | -,379 | 1 |

*p<.05; **p<.001

Sioma-Markowska et al. and other Polish authors [17,18]. Antenatal anxiety is not correlated with the place of residence, education, financial status or employment. The results of this study support literature data [19, 20].

Fear of childbirth experienced by the respondents was also associated with higher degrees of postnatal depression. These observations are supported by other authors [22]. That is why it should be highlighted that labor anxiety may be a sensitive marker of postpartum depression. According to the new standards of obstetric care in Poland, care for a pregnant woman and for a woman in labor also involves the evaluation of her mental condition, including the risk of postpartum depression [23].

The results may occur extremely useful in the identification of patients at risk of postpartum depression even before the conclusion of pregnancy.

## CONCLUSIONS

Antenatal anxiety has a negative effect on the course of labor and puerperium, prolongs labor and increases the risk of postpartum depression. One of the risk factors of increased labor fear may be younger age of pregnant women. In order to reduce antenatal anxiety and minimize its negative effects, it seems sensible to develop an algorithm enabling identification of women with increased fear of childbirth.

**REFERENCES**

1. **Saisto T, Halmesmäki E.** Fear of childbirth: a neglected dilemma. *Acta Obstet. Gynecol. Scand.* 2003;82:201-208.
2. **Areskog B, Uddenberg N, Kjessler B**. Fear of childbirth in late pregnancy. *Gynecol. Obstet. Invest.* 1981;12:262-266.
3. **Lukesch HL.** Geburts-Angst-Skala G-A-S [Birth-Anxiety-Scale]. Göttingen: Hogrefe.1983.
4. **Guszkowska M.** Lęk przed porodem I determinujące go czynniki – przegląd literatury. *Perinat Neonat Ginekol.* 2012;5: 154-161.
5. **Reber A**. Słownik psychologii. Warszawa. Wydawnictwo Naukowe SCHOLAR. 2000.
6. **Martini J, Knappe S, Beesdo-Baum K et al.** Anxiety disorders befor birth and self-perceived distress during pregnancy: associations with maternal depression and obstetric, neonatal and early childhood outcomes. *Early Hum Dev.* 2010;86(5):305–310.
7. **Gebuza G, Kaźmierczak M, Gierszewska M.** Lęk przed porodem w III trymestrze ciąży i jego powiązania ze stanem noworodka. 2015; *Medycyna Ogólna i Nauki o Zdrowiu*. 2015;21,1:39–44.
8. **Henrichs J, Schenk J, Roza S et al.** Maternal psychological distress and fetal growth trajectories: the Generation R Study. *Psychom Med*. 2010;40(4):633–643.
9. **Maina G, Saracco P, Giolito M et. al.** Impact of maternal psychological distress on fetal weight, prematurity and intrauterine growth retardation. *J Affect Disord*. 2008; 111(2–3):214–220.
10. **Talge N, Neal C, Glover V.** Antenatal maternal stress and long-term effects on child neurodevelopment: how and why?. *J Child Psychol Psychiatry*. 2007;48(3–4): 245–61.
11. **Sarkar P, Bergman KO, Connor T, Glover V.** Maternal antenatal anxiety and amniotic fluid cortisol and testosterone: possible implications for foetal programming. *J Neuroendocrinol*. 2008;20:489–496.
12. **Adams S, Eberhard-Gran M, Eskild A.** Fear of childbirth and duration of labour: a study of 2206 women with intended vaginal delivery. *BJOG* 2012;119:1238–1246.
13. **Ryding E, Lukasse M, Van Parys AS.** Fear of Childbirth and Risk of Cesarean Delivery: A Cohort Study in Six European Countries. *Birth*. 2015;42:48-55.
14. **Kossakowska K.** Edynburska skala depresji poporodowej – właściwości psychometryczne i charaktystyka. *Acta Universitatis Lodziensis Folia Psychologica* 2013;17:39-50.
15. **Putyński L, Paciorek M.** Kwestionariusz lęku porodowego (KLP II) wersja zrewidowana – konstrukcja i właściwości psychometryczne, *Acta Universitatis Lodziensis Folia Psychologica* 2008;12:129-133.
16. **Szymański S, Brączyk W, Konstanty-Kurkiewicz V.** Wpływ zajęć w szkole rodzenia na zmniejszenie lęku porodowego. *Pielęgniarstwo Polskie* 2017;2(64):232-235.
17. **Sioma-Markowska U, Żur A, Skrzypulec-Plinta V**. Causes and frequency of tocophobia — own experiences. *Ginekol Pol*. 2017;88(5):239-243.
18. **Bączyk G, Cybulska V, Koźlak V.** Poziom lęku przedporodowego u kobiet w ciąży. *Probl Hig Epidemiol*. 2011; 92(4):774-777.
19. **Kaźmierczak M, Sołdyńska M, Gierszewska M.** Ocena lęku przed porodem u kobiet ciężarnych. *Pielęgniarstwo i Zdrowie Publiczne* 2017;26(1): 69-75.
20. **Błaszczak A, Pilch D, Szamlewska B.** Badanie poziomu lęku kwestionariuszem STAI C.D. Spilberga u kobiet w okresie okołoporodowym. *Perinat Neonat Ginekol*. 2011; 4(3):163-168.
21. **Alehagen S, Wijma K, Wijma B.** Fear during labor. *Acta Obstetricia et Gynecologica Scandinavica*, 2001; 80(4): 315–320.
22. **Beck CT.** Predictors of postpartum depression: an update. *Nursery Research*. 2001;50:275-285.
23. Rozporządzenie Ministra Zdrowia z dnia 16 sierpnia 2018r. w sprawie standardu organizacyjnego opieki okołoporodowej. Dz.U. poz. 1756: 19.