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Analysis of the severity of anxiety in a group of pregnant women hospitalized for threatened premature delivery

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ABSTRACT

Introduction: An important element that contributes to the increase of the level of anxiety in pregnant women is threatened preterm labor and the need for hospitalization in pregnancy pathology department. Fear of low intensity, by induction of autonomic and endocrine response, can stimulate defense mechanisms of the body, thus, to a certain extent, having beneficial effects on pregnancy. In contrast, excessive and imprinted fear has negative effects by predisposing to pregnancy and fetal development disorders.

Aim: The aim of the study is to assess the level of anxiety, as a trait and as a state, in a group of pregnant women hospitalized for preterm labor in relation to socio-demographic factors and obstetric situation.

Material and methods: The study included 313 pregnant women hospitalized for threatened preterm labor. Research tools included a questionnaire of own authorship developed to determine characteristics of pregnant subjects and a standardized State-Trait Anxiety Inventory (STAI).

Results and discussion: The mean score of state anxiety (STAI X-1) in the group of pregnant women was 44.27 ± 9.84, with the score range 20–73 points, which indicates a high level of state anxiety. On the other hand, the mean score of trait anxiety (STAI X-2) in the study group was 44.52 ± 8.93, with the score range 20–90 points, which indicates the average level of trait anxiety. There was no statistically significant relationship between the intensity of state anxiety and marital status, place of residence and obstetric situation in the study ($P > 0.05$), while significant differences were found between the severity of state anxiety and the age

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and education of the respondents. Statistical analysis showed no significant differences between intensity of anxiety and age, marital status and obstetric situation ($P > 0.05$).
Conclusions: Pregnant women hospitalized due to preterm labor, who were included in the study, were characterized by high levels of state anxiety and average levels of trait anxiety.

1. Introduction

Preterm delivery is still one of the fundamental problems of modern perinatology due to intensive and expensive treatment of both mother and child, mental and physical disorders occurring in premature babies and high rates of perinatal mortality.[1–5]

Anxiety is one of the most important emotions that has both physiological and psychological features, affecting human functioning and accompanying the body throughout the life. An important element that contributes to the increase of the level of anxiety in pregnant women is threatened preterm labor and the need for hospitalization in pregnancy pathology department. Fear of low intensity, by induction of autonomic and endocrine response, can stimulate defense mechanisms of the body, thus, to a certain extent, having beneficial effects on pregnancy. In contrast, excessive and imprinted fear has negative effects by predisposing to pregnancy and fetal development disorders.[6–8]

2. Aim

The aim of the study was to assess the level of anxiety, as a trait and as a state, in a group of pregnant women hospitalized for preterm labor in relation to socio-demographic factors and obstetric situation.

3. Material and methods

The study included 313 pregnant women hospitalized for preterm labor from October 2010 to March 2012 in the Department of Gynecology and Obstetrics with Admission Room of Cardinal Stefan Wyszynski Provincial Specialist Hospital in Lublin and in the Department of Obstetrics and Perinatology of the Medical University of Lublin.

The study was conducted with the approval of the Bioethics Committee of the Medical University of Lublin. The study was not randomized. Eligibility criteria were hospitalization for preterm labor, gestational age between 23 and 37 weeks and no history of mental disorders. In total, 322 questionnaires were given to pregnant women and correctly completed questionnaires were obtained from 313 respondents. Efficiency ratio of data collection was 97.2%. Incorrect or incomplete questionnaires were not analyzed in the study.

Each of the questionnaires provided to pregnant subjects included a survey of own authorship developed to determine characteristics of pregnant women and State-Trait Anxiety Inventory (STAI; CD Spilberger, RL Gorsuch and RE Lushene), as a standardized research tool. The authors of the Polish version of the STAI, developed in 1987, are CD Spilberger, J Strelau, M Tysarczyk and K Wrześniewski.

In the study population, 62 (19.81%) pregnant women were under 25 years of age, while 137 (43.77%) respondents were between 26 and 30 years of age, and 114 (36.42%) women were above 30 years of age. In total, 24 (7.67%) patients had primary or vocational education, 79 (25.24%) had secondary education, and 210 (67.09%) pregnant women had higher education. Among respondents, 285 of pregnant women (91.05%) were married and 28 (8.96%) were unmarried, 131 (41.85%) women were residents of capital cities and 86 (27.48%) of district cities, while 96 (30.67%) pregnant women were residents of rural areas. Social and living conditions were reported as very good by 104 (33.23%) pregnant women, as good by 162 (51.76%) respondents, as average by 46 (14.70%), and as bad by 1 (0.32%) subject.

Of the 313 (100%) pregnant women hospitalized due to preterm labor, 151 (48.24%) were pregnant for the first time, 99 (31.63%) for the second time, 40 (12.78%) for the third time, while in 23 (7.35%) respondents it was the fourth and subsequent pregnancy. In 246 (78.59%) patients the current pregnancy was planned, while 67 (21.41%) respondents did not plan the current pregnancy. Single pregnancies were found in 299 (95.53%) women, while multiple pregnancies occurred in 14 (4.47%) subjects. In the study group, 60 (19.17%) pregnant women were between 23 and 27 weeks gestation, 103 (32.91%) between 28 and 32 weeks, and 150 (47.92%) between 33 and 37 weeks gestation.

4. Results

STAI results showed that the mean state anxiety (STAI X-1) score in the group of pregnant women was 44.27 ± 9.84 (range 20–73 points), which indicates a high level of state anxiety. Cronbach's reliability coefficient was 0.80. On the other hand, mean trait anxiety (STAI X-2) score in the study group was 44.52 ± 8.93 (range 20–90 points), which indicates the average level of trait anxiety. Cronbach's reliability coefficient was 0.79.

Table 1 presents results of the assessment of the level of state anxiety (STAI X-1) in relation to socio-demographic variables.

The mean level of state anxiety score in the group of patients above 30 years of age was 42.46 and was significantly lower ($P = 0.02$) than in the group of respondents aged 26–30 years (45.48). On the other hand, the mean score in the group of pregnant women below 25 years of age was 44.94 and there were no statistically significant differences ($P > 0.05$) compared to

Table 1 – The correlation between the severity of state anxiety (STAI X-1) and socio-demographic variables.

Socio-demographic variables	STAI X-1								
	N	M	SD	Min	Max	Median	Significance of differences		
								t	P
Age									
Up to 25 years of age (I)	62	44.94	8.80	28.00	73.00	44.00	I–II	−0.38	0.71
26–30 years of age (II)	137	45.48	9.70	24.00	71.00	46.00	I–III	1.60	0.11
Above 30 years of age (III)	114	42.46	10.35	20.00	69.00	41.50	II–III	2.39	0.02*
Education									
Primary/technical (I)	24	46.96	7.56	27.00	60.00	47.00	I–II	0.35	0.73
Higher (II)	79	46.28	8.63	28.00	61.00	46.00	I–III	1.72	0.09
University graduate (III)	210	43.21	10.35	20.00	73.00	43.00	II–III	2.35	0.02*
Marital status									
Married	285	43.98	9.94	20.00	73.00	44.00		−1.68	0.09
Single	28	47.25	8.43	24.00	64.00	49.00			
Place of residence									
Capital city (I)	131	43.70	10.04	20.00	69.00	44.00	I–II	−0.11	0.91
District city (II)	86	43.86	9.85	21.00	71.00	44.00	I–III	−1.30	0.20
Village (III)	96	45.42	9.56	26.00	73.00	45.00	II–III	−1.08	0.28

* Means statistically significant differences.

respondents aged 26–30 years and above 30 years of age. The mean level of state anxiety score in the group of pregnant women with higher education was 43.21 and was significantly lower ($P = 0.02$) than in the group of respondents with secondary education (46.28). On the other hand, the mean score in the group of patients with primary or vocational education was 46.96 and there were no statistically significant differences ($P > 0.05$) compared to respondents with secondary and higher education. In addition, the analysis showed that the mean level of state anxiety in a group of pregnant married women was 43.98 and there were no statistically significant differences ($P > 0.05$) compared to unmarried respondents (47.25). In turn, the mean score of the level of state anxiety in a group of residents of capital cities was 43.70 and there were no statistically significant differences ($P > 0.05$) compared to respondents residing in district cities (43.86) and in rural areas (45.42). The mean score in a group of pregnant women residing in district cities was 43.86 and there were also no statistically significant differences ($P > 0.05$) compared to respondents living in rural areas (45.42).

The analysis of the results of severity of state anxiety (STAI X-1) in relation to the obstetric situation of the studied pregnant women is shown in Table 2.

The analysis showed that the mean level of state anxiety in a group of women who were pregnant for the first time was 45.13, in a group of respondents who were pregnant for the second time was 42.80, while among pregnant women, for whom the current pregnancy was third it was 44.65. In contrast, mean level of state anxiety in a group of women who were pregnant for the fourth and subsequent time was 44.30. There were no statistically significant differences ($P > 0.05$)

Table 2 – The correlation between the severity of state anxiety (STAI X-1) and the obstetric situation.

Obstetric situation	STAI X-1								
	N	M	SD	Min	Max	Median	Significance of differences		
								t	P
Number of pregnancies									
First (I)	151	45.13	9.62	24.00	73.00	45.00	I–II	1.82	0.07
Second (II)	99	42.80	10.37	20.00	64.00	43.00	I–III	0.28	0.78
Third (III)	40	44.65	9.24	29.00	69.00	43.00	II–III	0.38	0.70
Fourth and more (IV)	23	44.30	9.85	27.00	60.00	46.00	I–IV	−0.98	0.33
							II–IV	−0.63	0.53
							III–IV	0.14	0.89
Planning of pregnancy									
Yes	246	44.15	9.94	20.00	71.00	44.00		−0.40	0.69
No	67	44.70	9.55	27.00	73.00	45.00			
Week of gestation									
23–27 (I)	60	45.60	9.951	21.00	69.00	44.50	I–II	1.17	0.24
28–32 (II)	103	43.71	9.889	24.00	71.00	44.00	I–III	0.98	0.33
33–37 (III)	150	44.13	9.788	20.00	73.00	45.00	II–III	−0.33	0.74

Table 3 – The correlation between the severity of trait anxiety (STAI X-2) and socio-demographic variables.

Socio-demographic variables	STAI X-2								
	N	M	SD	Min	Max	Median	Significance of differences		
								t	P
Age									
Up to 25 years of age (I)	62	44.60	7.53	29.00	64.00	44.00	I–II	−0.58	0.57
26–30 years of age (II)	137	45.34	8.74	26.00	83.00	45.00	I–III	0.77	0.44
Above 30 years of age (III)	114	43.50	9.78	20.00	90.00	42.00	II–III	1.57	0.12
Education									
Primary/technical (I)	24	50.08	10.71	37.00	90.00	48.00	I–II	1.29	0.20
Higher (II)	79	47.30	8.79	28.00	83.00	47.00	I–III	3.94	0.0001*
University graduate (III)	210	42.84	8.26	20.00	70.00	42.00	II–III	4.02	0.00007*
Marital status									
Married	285	44.34	9.04	20.00	90.00	44.00		−1.16	0.25
Single	28	46.39	7.57	29.00	64.00	47.00			
Place of residence									
Capital city (I)	131	43.11	9.78	20.00	90.00	42.00	I–II	−0.73	0.47
District city (II)	86	44.03	7.85	28.00	64.00	44.00	I–III	−3.06	0.002*
Village (III)	96	46.87	8.20	28.00	70.00	46.00	II–III	−2.38	0.02*

* Means statistically significant differences.

between the groups. In addition, the analysis showed that the mean level of state anxiety in a group of pregnant women who planned the current pregnancy was 44.15 and there were no statistically significant differences ($P > 0.05$) compared to subjects who did not plan the current pregnancy (44.70). There were no statistically significant differences ($P > 0.05$) between the level of state anxiety and the gestational age in the group of studied women.

Table 3 presents the results of the analysis of the level of trait anxiety (STAI X-2) in relation to socio-demographic variables.

The analysis showed that the mean level of trait anxiety in a group of pregnant women under 25 years of age was 44.60, in a group of respondents aged between 26 and 30 years it was 45.34, while among women above 30 years of age it was 43.50. There were no statistically significant differences ($P > 0.05$) between the level of trait anxiety and age. The score of the mean level of trait anxiety in the higher education group was 42.84 and was significantly lower ($P = 0.00007$) than in secondary education group (47.30), and significantly lower ($P = 0.0001$) than in primary and vocational education group (50.08). The analysis showed that the mean level of trait anxiety in a group of married pregnant women was 44.34 and there were no statistically significant differences ($P > 0.05$) compared to unmarried respondents (46.39). The mean level of trait anxiety in a group of pregnant women living in rural areas was 46.87 and was significantly higher ($P = 0.002$) than in the capital city group (43.11), and significantly higher ($P = 0.02$) than in the district city group (44.03).

The analysis of the results of severity of trait anxiety (STAI X-2) in relation to the obstetric situation of the studied pregnant women is shown in Table 4.

Table 4 – The correlation between the severity of trait anxiety (STAI X-2) and the obstetric situation.

Obstetric situation	STAI X-2								
	N	M	SD	Min	Max	Median	Significance of differences		
								t	P
Number of pregnancies									
First (I)	151	44.61	7.76	26.00	76.00	44.00	I–II	1.28	0.20
Second (II)	99	43.23	9.07	20.00	70.00	43.00	I–III	−1.40	0.16
Third (III)	40	46.67	10.08	30.00	83.00	47.00	I–IV	−0.59	0.55
Fourth and more (IV)	23	45.74	12.49	28.00	90.00	46.00	II–III	−1.96	0.05
							II–IV	−1.11	0.27
							III–IV	0.32	0.75
Planning of pregnancy									
Yes	246	44.05	8.32	20.00	76.00	43.50		−1.80	0.07
No	67	46.25	10.76	28.00	90.00	46.00			
Week of gestation									
23–27 (I)	60	45.17	10.55	28.00	90.00	45.00	I–II	0.98	0.33
28–32 (II)	103	43.75	7.86	26.00	76.00	44.00	I–III	0.26	0.78
33–37 (III)	150	44.79	8.94	20.00	83.00	44.00	II–III	−0.96	0.34

The analysis showed that the mean level of trait anxiety in a group of women who were pregnant for the first time was 44.61, in a group of respondents who were pregnant for the second time was 43.23, while among pregnant women, for whom the current pregnancy was third it was 46.67. In contrast, mean level of trait anxiety in a group of women who were pregnant for the fourth and subsequent time was 45.74. There were no statistically significant differences ($P > 0.05$) between the groups. Furthermore, the analysis showed that the mean level of trait anxiety in a group of pregnant women who planned the current pregnancy was 44.05 and there were no statistically significant differences ($P > 0.05$) compared to subjects in whom the current pregnancy was unplanned (46.25). There were also no statistically significant differences between the level of trait anxiety and gestational age in the group of studied women ($P > 0.05$).

5. Discussion

Anxiety accompanies man throughout the life and is particularly associated with situations considered as new, uncertain or dangerous. Anxiety experienced during pregnancy is associated with concerns about its premature termination and well-being of the fetus.[7,9]

Results of the very study showed that the pregnant women hospitalized due to preterm labor were characterized by high levels of state anxiety (M = 44.27) and the average levels of trait anxiety (M = 44.52). Results obtained in the study, conducted with the use of State-Trait Anxiety Inventory (STAI), remain within the scope of normative data provided by Wrześniewski et al.[10] and are similar to results obtained by Czajka,[11] who found high levels of both state and trait anxiety in 73 pregnant women hospitalized with symptoms of preterm labor.

Similar results were reported by Kwaśniewska et al.[12] who, in a group of 57 women diagnosed with threatened premature labor, found high levels of state anxiety (M = 62.65) and high levels of trait anxiety (M = 70.40). On the other hand, Barańska et al.[13] found that the majority of pregnant women surveyed who were hospitalized for threatened preterm labor were characterized by the average level of state and trait anxiety. A study of Kmity et al.[14] showed that 65 pregnant women with a diagnosis of threatened preterm labor had high levels of state anxiety (1; M = 6.7 Sten) and the average levels of trait anxiety (M = 4.8 Sten). Krzyżanowski[15] also found a high level of state anxiety among pregnant women between 25 and 35 weeks of gestation treated in the Department of Obstetrics and Pathology of Pregnancy, Medical Academy of Lublin due to preterm labor. Dayan et al.[16] also reported high levels of state anxiety (M = 43.0) and the average levels of trait anxiety (M = 42.7) in a group of 49 pregnant women hospitalized in the second trimester of pregnancy. Similarly, in the study of Janicka[17] conducted in a group of 59 pregnant women hospitalized in the third trimester due to complicated course of pregnancy (including preterm labor), high levels of anxiety state (STAI X-1; M = 6.68 Sten) and average levels of trait anxiety (STAI X-2; M = 5.47 Sten) were found. Rutkowska et al.[9] also found high levels of state anxiety (M = 41.62) and the average levels of trait anxiety (M = 40.02) in a group of 61 women hospitalized in the Department of Obstetrics and Pathology of Pregnancy, Medical University of Lublin.

Janicka[17] analyzed the levels of state anxiety (STAI X-1) in the group of hospitalized women in relation to age, education, place of residence, planning a pregnancy and number of pregnancies. Results of her study demonstrate that subjects above 30 years of age were characterized by lower levels of state anxiety (M = 6.38 Sten) than pregnant women at the age of 30 years (M = 7.32). Lower levels of state anxiety (M = 6.40 Sten) were observed in pregnant women with higher education than in respondents with primary or vocational education, or in women with secondary education (M = 6.97 Sten). In contrast, the level of state anxiety was equal (M = 6.68 Sten) both in women living in rural areas and in small towns, as well as in subjects from the cities. Analyzing the obstetric situation of respondents who were hospitalized in the course of complicated pregnancy, Janicka found higher levels of state anxiety in women in subsequent pregnancy (M = 7.34 Sten) compared to women who were pregnant for the first time (M = 6 03 Sten). Higher levels of state anxiety in a group of women who did not plan the pregnancy (M = 7.35 Sten) than among respondents who planned procreation (M = 6.40 Sten) were also demonstrated. Results of our study showed that the levels of state anxiety in the group of patients above 30 years of age were significantly lower ($P = 0.02$) than in the group of patients at the age of 26–30 years and below 25 years of age. The mean score of the level of state anxiety in the group of studied pregnant women with higher education was 43.21 and was significantly lower ($P = 0.02$) than in the group of respondents with secondary education (46.28) and in the group of patients with primary or vocational education (less than 46.96). The results also demonstrate that the level of state anxiety in a group of pregnant women living in capital and district cities was lower than in subjects residing in rural areas. On the other hand, the analysis of the obstetric situation allowed to conclude that the level of state anxiety was higher in the group of women who were pregnant for the first time (M = 45.13) than in subjects who were pregnant for the second time (M = 42, 80), third time (M = 44.65), or for fourth and subsequent times (M = 44.30). In contrast, no significant differences ($P > 0.05$) were found in the level of state anxiety between a group of pregnant women who planned the current pregnancy (M = 44.15) and subjects for whom the current pregnancy was unplanned (M = 44.70).

Analyzing the level of anxiety in women with high risk pregnancy, Pawelczyk et al.[18] concluded that in a group of 29 pregnant women high levels of state anxiety (M = 41.48) and high levels of trait anxiety (M = 45.45) were observed. In addition, Gupton et al.[19] in a group of 105 women treated due to pregnancy at risk (27–36 weeks gestation), found high levels of state anxiety. Similarly, Dole et al.[20] showed that women between 24 and 30 weeks of gestation had a high level of anxiety. The study showed that the level of state anxiety in pregnant women between 23 and 27 weeks of gestation was 45.60 and was higher than in pregnant women between 28 and 32 weeks (M = 43.71) and between 33 and 37 weeks (M = 44.13). Furthermore, it was found that the level of trait anxiety was higher in pregnant women between 23 and 27 weeks of gestation (M = 45.17) than in pregnant women between 28 and 32 weeks (M = 43.75) and between 33 and 37 weeks (M = 44.79).

The discrepancies in the results of the very study and results of other authors indicate that variables, such as age up to 30 years, rural residence, first pregnancy, and 23–27 weeks of gestation, determine a higher level of state anxiety among pregnant women from the Lublin region. This may indicate a lack of adequate psychotherapy in the group of pregnant women with preterm labor. Proper psychotherapy among pregnant women may contribute to the lower level of anxiety and improve quality of life.[21]

6. Conclusions

There is a need to develop a psychotherapeutic model of interaction to reduce the observed level of anxiety in a group of pregnant women hospitalized due to preterm labor.

Providing adequate pregnancy care including psychotherapy during diagnostic and treatment process may allow better compliance and increase the effectiveness of treatment for preterm labor. In addition, it can be assumed that these actions will not only increase the satisfaction of pregnant women with the obtained medical assistance, but also result in a positive opinion on the healthcare provider, which is especially important in view of the impossibility of avoiding competition between healthcare units in the quality of medical services.

Conflict of interest

None declared.

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