Socio-demographical and psychosocial determinants of anxiety symptoms in a population of pregnant women in the regions of central and eastern Poland

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Abstract

Introduction and objective. Until recently, depression and anxiety during pregnancy were a neglected medical problem. The purpose of this study was to determine the prevalence of symptoms of anxiety and depression during pregnancy and identification of the socio-demographic and psychosocial factors.

Material and methods. The study was prospective and longitudinal, and the research group consisted of 314 adult pregnant women. To assess the prevalence of anxiety symptoms and depression, the Hospital Anxiety and Depression Scale (HADS) was applied. To assess the psychosocial variables the Rosenberg Self-Assessment Scale, Marital Communication Questionnaire and the Berlin Social Support Scale and authors' Socio-demographical questionnaire were used. To assess the normal distribution the Shapiro-Wilk test was used. For non-parametric tests the Mann Whitney U test and Kruskal Wallis ANOVA were used due to the distribution of the variables tested against the intergroup comparisons that deviate from the normal distribution.

Results and conclusions. Co-existence of anxiety and depression in different trimesters amounted relatively to 12.7% in the first trimester, 10.8% in the second trimester and 12.4% in the third trimester of pregnancy. Symptoms of anxiety were often experienced by unmarried women, non-working women, and those respondents who estimated their housing and financial situation as being worse. Those most susceptible to depressive symptoms were tested women with primary education and those who assessed as worse their financial and housing situation. Higher self-esteem, good communication in a relationship, satisfying social support was associated with a lower incidence of anxiety symptoms during pregnancy. Higher self-esteem, good communication in a relationship, and satisfying social support was associated with a lower incidence of anxiety symptoms during pregnancy.

Key words

pregnancy, anxiety, depression, self-esteem, social support

INTRODUCTION

Studies show that contrary to what was thought previously, pregnancy does not protect women against the development of depression [1, 2]. It is commonly believed that mental health problems during pregnancy are much less frequent compared to the postnatal period, resulting in the fact that anxiety and depressive disorders in pregnancy are generally not sufficiently often recognized [3, 4, 5].

About half of patients with depression have symptoms that meet criteria for the co-existence of groups of anxiety, but the data on anxiety disorders occurring in pregnancy are very limited. The co-occurrence of depression and severe symptoms or anxiety systems worsens the course of depression, causes poorer response to treatment, favours the occurrence of abuse and dependence on alcohol and psychoactive substances, poorer psychosocial functioning and increases the risk of suicide [6]. Therefore, it was decided to examine the problem of the symptoms of anxiety and depression in pregnancy.

The purpose of the study was to determine the prevalence of symptoms of anxiety and depression during pregnancy in a population of Polish women and to identify the socio-demographic and psychosocial factors.

MATERIALS AND METHOD

The presented study was conducted in the period from January 2011 – May 2012 in the gynecological and obstetric clinics in Lublin province and Mazowieckie voivodship. The establishments were both State and private clinics in

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the urban districts of Zamosc, Tarnobrzeg, Janow Lubelski, Nowy Dwor Mazowiecki, and Legionowo, as well as in the provincial city of Lublin. The study group consisted of 100% of women aged between 18-45 admitted to the gynecology-obstetrics clinic in the first trimester of pregnancy.

The study project was approved by the Ethics Committee of the Medical University in Lublin (KE-0254/77/2011).

The study was prospective and longitudinal, with each of the women tested three times: in the first, second and third trimester of pregnancy during visits to gynecology and obstetrics offices. The following research tools were used: Hospital Anxiety and Depression Scale (HADS), Rosenberg Self Scale (SES), Marital Communication Questionnaire (KKM), Berlin Social Support Scales (BSSS), and the socio-demographic Questionnaire.

Particularly worthy of note is the Hospital Anxiety and Depression Scale (HADS), consisting of two independent subscales measuring levels of anxiety and depression. Each of them contains seven statements about the current state of the tested person. In the HADS, any question which could prompt any doubts was excluded, such as headaches, dizziness, loss of appetite, sleep disturbances. Therefore, it seems that this scale is suitable for use in pregnant women, and may even have an advantage over other research tools that can inflate the incidence of anxiety and depression, while many somatic symptoms are quite common in pregnancy and are not the result of a psychological crisis. The severity of certain features evaluates the patient with a choice of four-scale assessment. Achievement in each subscale of 0-7 points is considered to be a norm, a mild in case of 8-10, 11-14 points – moderate, and 15-21 – for the severely impaired [7].

To determine the level of self-assessment the Rosenberg Self-Assessment Scale was used [8], a 10-point scale which is one of the most popular tools for the study of this variable. For evaluation of marital communication, the Communication Questionnaire by Kazimierczak and Plopy was applied [9, 10], which consists of three dimensions of support, commitment and depreciation. An important factor that may affect the appearance of symptoms of anxiety and depression during pregnancy was social support, which was assessed using the Berlin Social Support Scales, consisting of five scales: support available, the need for support, seeking support, received support and protection), and additional scale, which examines the relatives of the person tested (e.g. children) [11]. The author demographic-epidemiological questionnaire reflected the following data: age, marital status, education, place of residence, occupation, income per family member and evaluation of financial and housing situation.

A total of 550 women in their first trimester of pregnancy were invited to join the study. The three stages were completed by 336 out of them. Only two women replied affirmatively to the question about the presence of a history of mental disorders and 20 confirmed the presence of chronic diseases. As this was a very small number of tested persons they were excluded from further analysis.

Eventually, the group consisted of 314 adult pregnant women. In order to identify further questionnaires filled out by the woman in subsequent trimesters they were asked to give its initials and date of birth. The results were statistically analyzed. The basic parameters of descriptive statistics: the arithmetic mean, standard deviation, median, minimum and maximum were set. The quality parameters were characterized by using the numbers and distribution

rates. To assess the normal distribution the Shapiro-Wilk test was used [12]. Non-parametric tests: Mann Whitney U test and Kruskal Wallis were used due to the distribution of the variables tested against the intergroup comparisons that deviate from the normal distribution. Statistical analysis was performed using computer programme Statistica 6.

After determining the prevalence of symptoms of anxiety and depression in different trimesters of pregnancy, the study group was divided into two subgroups, the first in which at least in one trimester of pregnancy there had occurred symptoms of anxiety, and the second in which there were no symptoms at any moments of the study. The same applied for depression. A comparison of the subgroups regarding their demographic and psychosocial characteristics (self-esteem, marital communication assessment and evaluation of social support) was then carried out.

Characteristics of the research group. The average age of the 314 pregnant women in the study group was 28.64 (± 4.77). The youngest patient was 19 years old, the oldest 44. The study group was divided into three age ranges: under the age of 25 who accounted for 29.29% of the respondents, aged 26-34 – 58.59% of the respondents, and the least – 12.1% of the women who were aged over 35. The average age of a pregnancy in the first trimester was 11.22 (± 1.8) weeks, in the second trimester 21.05 (± 2.9) weeks, and in the third trimester 32.99 (± 2.8) weeks.

Detailed characteristics of the study group including socio-demographic variables was shown in Table 1. Most of the women were married and represented 81% of the study group; 8% of respondents lived in an informal relationship, 11% were not-married, and one woman was divorced (0.32%). 48% had completed secondary education. The next most common group consisted of women with higher education (39%), while the smallest percentage of respondents were women with vocational education (10%) and primary education (3%). 41% of respondents lived in a village, 32% in the district town, 27% in the province. 52% of the women performed mental work, 23% physical work, 5% of women were still studying, 20% of the respondents were unemployed. For 45% of the women the monthly income per family member ranged from 500-1,000 zloty, for 32% between 1,000-2,000 zloty, respectively. The smallest number of the women indicated the smallest monthly income per family member -less than 500 zloty, and highest – more than 2,000 zloty monthly income. This amounted to 12% and 11%, respectively. 55% of the women rated their financial situation as good,37% as average, and 15.5% as very good. Only 3% identified their financial situation as poor. Most respondents rated their housing situation as good (54%), 23% of rated it as very good, and 21% as average. Only 2% of women identified their housing situation as bad.

RESULTS

In the first trimester of pregnancy, 27.4% of the women received a positive result in the anxiety subscale of the Hospital Anxiety and Depression Scale (HADS), with a prevailing fear of mild (14.0%) and moderate (12.1%) severity. Severe anxiety occurred in only 1.3% of the women. A slightly smaller number of the women (23.9%) in the second trimester received a positive HADS anxiety subscale – anxiety with a mild (16.6%) and moderate (6.4%) severity prevailed. Only

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Table 1. Structure of the study group with regard to socio-demographic variables

Variable	Variable value	No.	%
Marital status	unmarried woman	34	10.83
	married woman	254	80.89
	divorced	1	0.32
	informal relationship	25	7.96
Education	High er	123	39.17
	high school	151	48.09
	vocational	32	10.19
	primary school	8	2.55
Place of residence	provincial city	85	27.07
	district town	99	31.53
	village	130	41.40
Professional activity	mental work	163	51.91
	physical work	73	23.25
	unemployed	62	19.75
	studying	16	5.09
Income	< 500	37	11.78
	500-1,000	142	45.22
	1,000-2,000	99	31.53
	> 2,000	36	11.47
Evaluation of financial situation	very good	15	4.78
	good	172	54.78
	moderate	116	36.94
	poor	11	3.50
Evaluation of housing situation	very good	71	22.61
	good	169	53.82
	moderate	66	21.02
	poor	8	2.55

N– number of respondents

0.9% of the women experienced severe anxiety. In the third trimester of pregnancy, 29.9% of the women attained a positive result in the HADS anxiety subscale. A mild anxiety disorder was the most common – 15.3%); moderate severity – 12.8%. A severe anxiety disorder occurred in only 1.9% of the women. The largest number of respondents experienced symptoms of anxiety in the third trimester of pregnancy, the smallest in the second trimester of pregnancy. Average scores obtained by the HADS anxiety subscale, for the first, second and third trimesters was 6.13 (± 3.44), 5.70 (± 3.09) and 6.30 (±3.55), respectively.

In 15.9% of respondents occurred symptoms of anxiety in all three trimesters of pregnancy. 11.5% of the women experienced symptoms of anxiety in two trimesters, in 10.5% anxiety symptoms occurred in only one research. It is worth noting that anxiety symptoms were experienced at least once by 37.9% of the respondents.

In the HADS depression subscale in the first trimester of pregnancy, a positive result was obtained 15.3% of the women – mainly mild depression (13.7%). Only in 1.3% occurred depression with a moderate severity, and in one studied person (0.3%) with severe intensity. In the second trimester, 12.7% of respondents attained a positive result in the depression subscale of the HADS. Mild depression also prevailed (11.1%), while moderate depression was recognized in only 1.6% of women. Severe depression did not generally occur in any of the tested persons during the first trimester.

In the third trimester of pregnancy, 14% achieved a positive result on the depression subscale of the HADS scale (Tab. 10). Mild depression occurred in 11.1% of the women, in 8 – depression of moderate intensity (2.6%), and in one 0.3%) – with severe intensity. In the largest number of the women, severe anxiety occurred in the first trimester of pregnancy, and at the earliest in the second trimester. Average scores obtained by the HADS anxiety subscale for the first, second and third trimester was 3.96 (± 2.89), 3.81 (± 2.78) and 4.12 (± 2.98), respectively.

In 3.5% of the women depressive symptoms occurred in all three trimesters of pregnancy. 9.6% of the women experienced symptoms of anxiety in two trimesters, in 12.4% anxiety symptoms occurred in only one research. It should be noted that symptoms of depression were experienced at least once by 25.48% of the respondents.

An interesting indicator is the percentage of co-occurrence of symptoms of anxiety and depression in different trimesters. This was found to be 12.7% in the first trimester, 10.8% in the second trimester and 12.4% in the third trimester of pregnancy

In the second stage of the analysis, the the research group was divided into two groups: 1) in which at least once during pregnancy the symptoms of anxiety occurred, and 2) in which at any time during pregnancy there were no symptoms of anxiety. The differential characteristics of the two groups in terms of demographic and psychosocial variables were then performed (Tab. 2).

Table 2 shows that there were significant differences statistically only for marital status, labour force participation and evaluation of housing and financial situation between the groups, according to the occurrence of pregnancy symptoms of anxiety.

The results showed that the most common symptoms of anxiety during pregnancy occurred in women who were unmarried (53.9%), and least in the group of women with a non-marital relationship (20.0%) (p<0.05). The most common symptoms of anxiety occurred during pregnancy in women who were not working (51.9%), and least of all in the group of women who worked mentally (32.7%) (p<0.05). The most common symptoms of anxiety were experienced during pregnancy by women who assessed their situation as average or poor (54.3%). In the group of women who regarded their financial situation as very good in general there was no fear of pregnancy (p<0.05). The most common symptoms of the anxiety in pregnant women were in the group who assessed their housing situation as average or poor (54.1%), and least in the group of women who assessed their housing situation as very good (18.3%) (p<0.05). Other variables, such as age, place of residence, education and income were found to be linked to the occurrence of anxiety and depression during pregnancy.

A similar analysis was performed for depressive symptoms (Tab. 3). Statistically significant differences were obtained only for training and evaluation of housing and financial situations between the groups, according to the occurrence of pregnancy symptoms of anxiety.

The most common symptoms of depression during pregnancy occurred in women with primary education

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Table 2. Percentage distribution of anxiety symptoms during pregnancy, taking into account socio-demographic variables

Demographic characteristics		Symptomps of anxiety				χ^2	p
		Yes		No			
		N	%	N	%		
Age	≤ 25	41	44.6	51	55.4		
	26–35	63	55.4	121	65.8	2.824	0.243
	≥36	15	39.5	23	60.5		
Place of residence	provincial city	29	34.1	56	65.9		
	district town	31	31.3	68	68.7	5.435	0.066
	village	59	45.4	71	54.6		
Education	higher	44	35.8	79	64.2		
	high school	54	35.8	97	62.2	4.152	0.245
	primary school	21	52.5	19	47.5		
Marital status	unmarried woman	18	53.9	16	47.1		
	married woman	96	37.8	158	62.2	6.662	0.035
	informal relation	5	20.0	20	80.0		
Type of professional activity	mental work	53	32.7	109	67.3		
	physical work	25	34.2	48	65.8	8.841	0.012
	unemployed	41	51.9	38	48.1		
Income	< 500	17	45.9	20	54.1		
	500-1,000	57	40.1	85	59.9		
	1,000-2,000	35	35.4	64	64.6	3.160	0.367
	> 2,000	10	27.6	26	72.2		
Financial situation	very good	0	0.0	15	100.0		
	good	50	29.1	122	70.9	29.420	0.000
	moderate/poor	69	54.3	58	45.7		
Housing situation	very good	13	18.3	58	81.7		
	good	66	39.1	103	60.9	19.877	0.000
	moderate/poor	40	54.1	34	45.9		

Table 3. Percentage distribution of depression symptoms during pregnancy, taking into account socio-demographic variables

Demographic characteristics		Symptomps of depression				χ^2	p
		Yes		No			
		N	%	N	%		
Age	≤ 25	22	23.9	70	76.1		
	26–35	47	25.5	137	74.5	0.359	0.835
	≥36	11	28.9	27	71.1		
Place of residence	provincial city	21	24.7	64	75.3		
	district town	26	26.6	73	73.7	0.059	0.970
	village	33	25.4	97	74.6		
Education	higher	25	20.3	98	79.7		
	high school	37	24.5	114	75.5	10.767	0.013
	primary school	18	45.0	22	55.0		
Marital status	unmarried woman	11	32.4	23	67.6		
	married woman	66	26.0	188	74.0	3.264	0.195
	informal relation	3	12.0	22	88.0		
Type of professional activity	mental work	36	22.2	126	77.8		
	physical work	22	30.1	51	69.9	1.972	0.372
	unemployed	22	27.8	57	72.8		
Income	< 500	12	32.4	25	67.3		
	500-1,000	43	30.3	99	30.3		
	1,000-2,000	19	19.2	80	19.2	6.200	0.102
	> 2,000	6	16.7	30	16.7		
Financial situation	very good	0	0.0	15	100.0		
	good	26	15.1	146	84.9	34.280	0.000
	moderate/poor	54	42.5	57.5	57.5		
Housing situation	very good	7	9.9	64	90.1		
	good	48	28.4	121	71.6	12.572	0.001
	moderate/poor	25	33.8	49	66.2		

(45.0%), and least in the group of women with higher education (20.3%) (p<0.05), among women who assessed their situation as average or poor (42.5%) (p<0.05), and in the group who assessed their housing situation as average or poor (33.8%), and least in the group of women who assessed their housing situation as very good (9.9%) (p<0.05). Other variables: age, place of residence, marital status, type of activity, income were not associated with depressive symptoms in the study group.

The final stage of the study was to analyze the role of selected psychosocial variables (self-esteem, communication in marriage, social support) for symptoms of anxiety and depression during pregnancy, with regard to the division of the women into two groups.

The differences in results obtained by the tested women in Rosenberg Self-Assessment Scale, Marital Communication Questionnaire and the Berlin Social Support Scales, depending on the occurrence symptoms of anxiety at least once during pregnancy, were summarized (Tab. 4).

Women who did not experience symptoms of anxiety achieved higher than average results on the Rosenberg Self-Assessment Scale (p<0.05) in all three trimesters, and evaluated their partner as being more supportive (p<0.05), and engaged (p<0.05) and less depreciating (p<0.05). Differences in the results for Dimension Support and Involvement were statistically significant in all three trimesters of pregnancy, and

for Dimension depreciation in the first and second trimester. Women who experienced anxiety during pregnancy had a greater need for support in the first (p<0.05) and in the third trimester (p<0.05), whereas in all trimesters they applied for higher specific protective support (p<0.05), recognized less available support in the environment (p<0.05), and received less support (p<0.05) in comparison to women who had no such symptoms during pregnancy. Seeking support was not associated with symptoms of anxiety in pregnancy in any of the trimesters of pregnancy.

The differences in results obtained by the tested persons on the Rosenberg Self-Assessment Scale, Marital Communication Questionnaire and the Berlin Social Support Scales, depending on the occurrence of symptoms of anxiety at least once during pregnancy, were summarized (Tab. 5).

Women who did not experience symptoms of depression attained higher than average results in Rosenberg Self-Assessment Scale in all three trimesters (p<0.05), and evaluated their partner as being more supportive (p<0.05), engaged (p<0.05) and less depreciating (p<0.05). For Dimension Support and Involvement, the differences in the results were statistically significant in all three trimesters of pregnancy, and for Dimension depreciation in the first and second trimester. Women who experienced depression during pregnancy received less support from the environment in the first and second trimester of pregnancy (p<0.05),

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Table 4. Comparison of average results obtained by measuring scales examining psychosocial variables, depending on symptoms of anxiety during pregnancy

Scales measuring psychosocial variables		Trimesters	Symptomps of anxiety					
			Yes		No			
			M	SD	M	SD	Z	p
Rosenberg Self-Assessment Scale (SES)		I trimester	29.51	3.57	31.78	3.60	5.24	0.000
		II trimester	29.12	5.61	32.11	4.30	5.22	0.000
		III trimester	29.46	3.49	32.01	4.49	5.74	0.000
Marital Communi-cation Question-naire (KKM)	Support	I trimester	5.23	2.22	6.27	1.91	4.22	0.000
		II trimester	5.47	2.21	6.50	1.90	4.00	0.000
		III trimester	5.33	2.29	6.34	2.05	3.80	0.000
	Engagement	I trimester	5.79	2.05	6.91	1.84	4.79	0.000
		II trimester	5.94	2.10	6.99	1.85	4.83	0.000
		III trimester	5.70	2.12	6.84	1.96	4.63	0.000
	Depreciation	I trimester	4.01	2.04	3.57	2.04	2.03	0.041
		II trimester	4.07	2.03	3.56	2.03	2.37	0.017
		III trimester	3.92	1.94	3.70	1.07	1.242	0.213
Berlin Social Support Scale (BSSS)	Support perceived available	I trimester	28.27	2.84	28.96	2.66	2.10	0.035
		II trimester	28.04	2.97	29.02	2.68	3.29	0.000
		III trimester	27.78	2.71	29.22	2.63	4.72	0.000
	The need for support	I trimester	12.80	1.83	12.04	2.03	3.19	0.001
		II trimester	12.39	1.68	12.09	1.95	1.71	0.085
		III trimester	12.73	1.92	11.87	1.92	3.81	0.000
	Seeking support	I trimester	14.78	2.41	14.52	2.27	0.73	0.462
		II trimester	14.83	2.15	14.47	2.08	1.62	0.103
		III trimester	14.72	2.02	14.38	2.44	1.61	0.105
	Currently receiving suport	I trimester	51.96	7.40	54.04	5.89	2.65	0.008
		II trimester	51.66	7.90	53.98	5.63	2.80	0.005
		III trimester	51.08	7.61	53.55	6.13	2.96	0.003
	Protecting support	I trimester	13.47	3.51	11.83	2.80	4.51	0.000
		II trimester	12.75	3.25	11.85	2.72	2.65	0.007
		III trimester	12.89	3.42	11.98	2.85	2.72	0.006

Table 5. Comparison of average results obtained by measuring scales examining psychosocial variables, depending on symptoms of depression during pregnancy

Scales measuring psychosocial variables		Trimesters	Symptomps of depression					
			Yes		No			
			M	SD	M	SD	Z	p
Rosenberg Self-Assessment Scale (SES)		I trimester	28.56	3.12	31.73	3.60	6.33	0.000
		II trimester	28.90	4.87	31.69	4.92	4.85	0.000
		III trimester	28.18	4.88	32.02	3.64	6.45	0.000
Marital Communi-cation Question-naire	Protecting suport	I trimester	5.10	2.30	6.14	1.95	3.51	0.000
		II trimester	5.55	2.39	6.30	1.93	2.30	0.021
		III trimester	5.25	2.42	6.20	2.06	3.07	0.002
	Engagement	I trimester	5.86	2.27	6.70	1.84	2.87	0.004
		II trimester	6.08	2.36	6.76	1.85	2.30	0.021
		III trimester	5.53	2.24	6.70	1.95	4.08	0.000
	Depreciation	I trimester	4.06	2.10	3.63	2.02	1.56	0.117
		II trimester	4.21	2.10	3.60	2.01	2.48	0.013
		III trimester	4.37	2.11	3.58	1.96	3.08	0.002
Berlin Social Support Scale (BSSS)	Perceived available suport	I trimester	27.80	2.87	29.01	2.63	3.33	0.000
		II trimester	27.91	2.67	28.90	2.84	2.91	0.003
		III trimester	27.93	2.70	28.93	2.72	3.02	0.002
	Need for support	I trimester	12.40	1.85	12.30	2.04	0.33	0.735
		II trimester	12.12	1.60	12.23	1.94	0.34	0.727
		III trimester	12.52	1.99	12.08	1.94	1.85	0.063
	Seeking support	I trimester	14.60	2.35	14.63	2.32	0.00	0.999
		II trimester	14.55	2.11	14.62	2.11	0.061	0.950
		III trimester	14.78	2.02	14.42	2.37	1.53	0.124
	Currently receiving support	I trimester	51.28	8.08	53.93	5.84	2.53	0.011
		II trimester	51.57	7.30	53.62	6.37	2.36	0.018
		III trimester	51.22	8.12	53.09	6.27	1.57	0.115
		I trimester	13.71	3.77	12.02	2.84	3.77	0.000
		II trimester	12.65	2.93	12.04	2.96	2.08	0.037
		III trimester	13.12	3.75	12.05	2.81	2.57	0.009

whereas during the whole pregnancy they applied for higher specific protecting support (p<0.05), and recognized less available support in the environment (p<0.05) in comparison to women who had no symptoms of depression during pregnancy. Seeking support was not associated with symptoms of depression in pregnancy in any of the trimesters of pregnancy.

DISCUSSION

Modern epidemiological studies estimate the prevalence of depression during pregnancy at between 4%-20% [13, 14, 15, 16, 17]. These percentages vary greatly, which could result, inter alia, from the methodology used in the study, the method of recruitment, and size of the group, as well as from the moment when the pregnancy test was carried out. It should be noted that sometimes the research tools used can lead to an overestimation of the incidence of depression in cases of depressive symptoms concerning labour, pregnancy, and anxiety about the health of the foetus. On the other hand, depression in pregnancy may remain undetected because of the overlap of somatic symptoms of physiological pregnant

with somatic symptoms of depression. Decreased libido, sleep disturbances, poor appetite, fatigue, and pain symptoms are most problematic in this context.

It is commonly believed that the incidence of depression is higher in the first and third trimester of pregnancy than in the second trimester. A similar trend was observed in the presented study, both with regard to the symptoms of anxiety and depression. Anxiety symptoms in the first trimester of pregnancy were experienced by 27.4% of the respondents, in the second trimester by 23.9%, and 29.9% in the third. Depressive symptoms were far fewer – in the first trimester in 15.3% of respondents, in the second – 12.7%, in the third – 14% of the women. A similar trend was observed by Berle et al. [18]. However, in that study, as in most of the research conducted to date on depression in pregnancy, women who are in different months of pregnancy were evaluated only once, and on that basis the general conclusions were drawn regarding the prevalence of depression in different trimesters. For this reason, the presented study seems to be a more reliable way to provide information on the occurrence of depression during pregnancy.

In one of the few published longitudinal researches on the occurrence of anxiety and depression during pregnancy

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[19], Lee et al. achieved a relatively high percentages for the occurrence of both types of disorders whereby the incidence of anxiety in each trimester exceeded 30%, and depression in the first and third trimesters exceeded 20%. In the second trimester, depression occurred in 18.9% of patients. This gives a much higher rate in comparison with the results of the presented study. It is worth noting that symptoms of anxiety were experienced at least once by 37.9% of respondents, while 25.4% experienced depressive symptoms. In the study conducted by Lee et al. in 2007, as many as 54% of respondents experienced anxiety once during pregnancy, while 37.1% of them experienced depression [19].

The relatively high percentages of symptoms of anxiety and depression in all trimesters of pregnancy indicate the necessity for systematic screening which should be carried out several times during pregnancy. It is difficult to rule out the likelihood of anxiety disorders or depression based on information obtained during only one visit to a doctor office during pregnancy.

The next step in the analysis of the presented study was to compare women who at least once during pregnancy had experienced anxiety and/or depression with women who had never experienced anxiety and/or depression. Comparisons were made with regard to psychosocial variables (self-esteem, communication in marriage, social support), the socio-demographic characteristics of the respondents and their obstetric histories

The most common symptoms of anxiety in this study occurred in the group of young women, and depression in the group of oldest women; the results, however, did not reach statistical significance. Lee et al. came to similar conclusions, but only in relation to anxiety, because in the group they studied depression was more common in the younger women [19]. In turn, Qiao et al [20] indicated a higher incidence of emotional disorders in women who became pregnant at a younger age. Some studies have provided conclusions that differ from the results of the presented study, e.g. the results of Marcus et al. [21] and Webster et al. [22], all of whom showed a higher incidence of depression during pregnancy in the younger age group. Other studies, however support the results of the presented study which indicate a higher incidence of depression in elderly women [23, 24, 25, 26].

The least frequent symptoms of anxiety and depression occurred in women living in bigger cities, but there were no statistically significant differences depending on where they lived. Most symptoms of anxiety and depression occurred among women with primary education, the least among women with higher education. For the symptoms of depression, the difference was statistically significant. The results of the level of education in accordance with the occurrence of anxiety and depression during pregnancy are conflicting. Indeed, there are reports indicating that both women with low education [21, 27] and higher education [28] have an increased risk of perinatal depression. In a more recent Brazilian study [24], depression was associated with lower education, which is similar to the findings of the presented year-long study.

More often, the symptoms of anxiety and depression occurred among women who were unmarried when compared to married women and women who reported living in an informal relationship. The difference was statistically significant for the symptoms of anxiety, but not for depression. In the study by Qiao et al. [20], in turn, there

was no association between marital status and the incidence of symptoms of anxiety and depression during pregnancy.

The most common symptoms of anxiety and depression occurred in women who were employed professionally, the least in the group of women who worked mentally, and similar to the difference depending on marital status it was important for anxiety but not depression. Similar results were obtained in a Brazilian study in 2010 [24] in which a higher incidence of depression was associated with being left without a job.

The most common symptoms of anxiety and depression were experienced by women who evaluated lowest their housing and financial situation. In both cases, the results were statistically significant. Similar results were obtained by Bolton et al. [29] who indicated a low income family as one of the most important causes of emotional disorders in pregnancy. Kitamura et al. [30], however, did not confirm the difference in income in women with depression and without symptoms of depression during pregnancy. Interestingly, in the presented study, evaluation of the impact of financial situation and housing for symptoms of anxiety and depression during pregnancy was not associated clearly with the amount of monthly income per family member, because although symptoms of anxiety and depression occurred slightly more commonly in women with the lowest income (< 500 zloty), for both variables (symptoms of anxiety and depression) there was no statistical significance.

Women who at least once during pregnancy experienced symptoms of anxiety or depression perceived their partner as being less supportive, less committed and more depreciating. Also, they were characterized by lower self-esteem compared to women who did not experience symptoms of anxiety and depression during pregnancy. Elsenbbruch, in a 2007 study [31], showed a significant effect of existing marital conflict and lack of support from a partner on the increase of risk of depression during pregnancy, while Ritter et al. [32] emphasized the role of low self-esteem.

The respondents, in whom not even once during a pregnancy occurred symptoms of anxiety and depression, mentioned the higher support available in their environment, and indicated less need for support. Anxiety symptoms were associated with a greater need for support than symptoms of depression. Women who had no symptoms of anxiety and depression stated higher received support from the environment, compared to women who had at least once experienced symptoms of anxiety and depression during pregnancy. In 1986, O'Hara et al. pointed to insufficient social support as a risk factor for depression, both during pregnancy and the postpartum period [3]. Other studies have also shown that inadequate social support, and in particular the lack of support from the partner, was associated with the occurrence of depressive symptoms during pregnancy [33, 34, 35].

It is worth noting that low self-esteem was one of the most important factors for the occurrence of symptoms of anxiety and depression during pregnancy, and this applied to all three terms. Women with low self-esteem were often not sufficiently prepared to face the many challenges and factors causing the stress so common in pregnancy, which is why they are more likely to experience symptoms of anxiety and depression. Therefore, they should be carefully monitored during pregnancy. The necessity might also be considered of introducing interventions aimed at increasing self-esteem in pregnant women.

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Moreover, based on the obtained results, it can be concluded that psychosocial factors play a more important role in the symptoms of anxiety and depression than demographic factors. It seems that the emphasis should be placed on the evaluation of the psycho-social situation of pregnant women and the creation of ways to improve it. This could ultimately prevent the occurrence of anxiety and depression during pregnancy.

An important role of midwives and nurses should be emphasized, as is confirmed by studies conducted in Western countries [21, 36, 37]. They have facilitated contact with the women concerned during pregnancy visits and even visits at home after giving birth. It should be noted that such professional support should extend to the postnatal period [38, 39, 40, 41].

Based on a comparison group of respondents in whom at least once during pregnancy there had occurred symptoms of anxiety or depression to those who did not experience them at any moment during the research, the characteristics of the study group exposed to the occurrence of anxiety and depression during pregnancy were studied. Thus, the group exposed to the occurrence of anxiety in pregnancy consisted of women who were unemployed, unmarried, and evaluated as worse their financial and housing situations. The group particularly vulnerable to develop depression in pregnancy consisted of women who were less educated, and assessed as worse their financial and housing situations.

The results of the presented support those of Ross et al. who have attempted to create a biopsychosocial model of depression during pregnancy and postpartum depression. They did not indicate a direct effect of such biological factors, such as progesterone, cortisol, family history of depression in the examined women, on depressive symptoms. Biological agents have proved to have more indirect effect on the occurrence of depression and were modeled by psychosocial factors, and above all, by the symptoms of anxiety. However, surely it cannot be said that they have no significance in the emergence of depression during pregnancy and after childbirth, as it is a well known fact that many other studies conducted to date have shown that in group of women diagnosed with depression in pregnancy, depression is more common in the family, compared to women who did not experience symptoms of depression during pregnancy [42, 43, 44].

The results obtained by Ross indicate that the lack of direct effect of biological agents on the signs and symptoms of depression corresponds to the complex nature of the depression. Only in conjunction with environmental stressors, such as lack of social support, the biological variables can cause the emergence of depressive symptoms during pregnancy. The model proposed by Ross strengthens the hypothesis of depression as a complex, multifactorial-conditioned mental health problems [45].

There is no direct relationship between biological risk factors, including the concentration of progesterone and symptoms of depression during pregnancy, which could explain the difficulty researchers have experienced in the past with the identification of a linear relationship between the influence of hormonal changes and depression during pregnancy and after birth. It is therefore possible that these compounds can only be explained in the context of the accompanying psychosocial stressors [40].

Using only a scale to assess self-psychiatric symptoms we may not relate to the actual prevalence of depressive disorders, we can only conclude that a person with a score above the cut-off may have an anxiety disorder or depression. Since in this study the Hospital Anxiety and Depression Scale was used, which has an acceptable sensitivity and specificity, the obtained results have therefore a required credibility.

Recommendations. The objective of further research would be to extend the period of observation to the post-natal period, and attempt to assess the impact of symptoms of anxiety and depression in different trimesters on the emergence of post-natal depression. Despite some limitations, the test may be an important step towards knowledge about the dynamic nature of anxiety and depression at different stages of pregnancy. In addition, it has been shown that the common problem of anxiety experienced during pregnancy requires more attention among clinicians, which to date has been neglected.

Taking into account the prevalence of the occurrence of anxiety and depression during pregnancy, health care professionals should pay more attention to mental health problems during this period.

CONCLUSIONS

1. In a significant percentage of cases, symptoms of anxiety during pregnancy co-occur with depressive symptoms.
2. Symptoms of anxiety were often experienced by unmarried women and women who were not working, and those respondents who evaluated as worse their housing and financial situations. Other tested demographic variables were not associated with the occurrence of symptoms of anxiety.
3. Women with primary education and those who assessed as worse their housing and financial situations were more likely to experience depressive symptoms. Other demographic variables did not affect the incidence of depressive symptoms in the study group.
4. Higher self-esteem, good communication in marriage, and satisfying social support was associated with a lower incidence of anxiety and depressive symptoms during pregnancy.

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