

Postpartum Depression

"OVIDIUS" UNIVERSITY OF CONSTANȚA,  
DOCTORAL SCHOOL OF MEDICINE  
MEDICINE

DOCTORAL THESIS

# **POSTPARTUM DEPRESSION**

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## **ABBREVIATIONS USED IN THE TEXT**

PPD = postpartum depression

synOT = synthetic oxytocin

EPDS = Edinburgh Postnatal Depression Scale

## GENERAL PART

### INTRODUCTION

The transition to motherhood can significantly affect a woman's inner balance and self-confidence. Although the myth of the perfect woman and the ideal motherhood is beginning to lose its influence in public discourse, the deep-rooted belief that motherhood automatically brings joy and meaning to life persists. This perspective, accompanied by often unrealistic social norms, fuels stigmatisation and prevents recognition of the legitimacy of maternal mental distress. In a context in which motherhood is considered one of life's most important 'vocations', the idea that this experience can be accompanied by profound emotional distress is rarely accepted, thus favouring the development of emotional vulnerabilities which, without intervention, can evolve into postpartum depression [1].

Postpartum depression is a major affective disorder that can develop in the immediate postpartum period, affecting between 10% and 20% of postpartum women. However, many patients do not express their distress, and health professionals often do not ask the questions needed to identify symptoms early. Authentic expression of emotional fragility remains, even today, constrained by cultural and social prejudices. In this context, it becomes essential that society as a whole learns how to recognise and respond appropriately to the emotional needs of postnatal women [2].

Although mood disorders are relatively common in the postpartum period, the challenge of simultaneously coping with depressive symptoms and the responsibilities associated with caring for a newborn can become overwhelming. Moreover, maternal depression is not always transient - it can foreshadow long-lasting emotional difficulties. This negative affective state can also have a profound impact on the couple's relationship as well as on the psycho-emotional development of the child, regardless of age. Childbirth is a profoundly stressful life event, which should be understood as part of a broader process that begins at conception and extends throughout the fertile period and into the months after childbirth [3].

The main aim of this paper is to identify the risk and protective factors involved in the development of postpartum depression. The originality of the thesis lies in the complex and integrative nature of the scientific approach, since, at international level, there is no study to date that has analysed both risk and protective factors simultaneously in the same population. The paper is based on a prospective observational study, carried out over a relatively short period (20 months), and includes a large sample of patients (n = 904), which gives robustness to the statistical analysis and relevance to the results obtained.

## STATE OF THE ART

Postpartum depression (PPD) is a serious condition with symptoms such as loss of concentration and low mood, occurring in 10% to 20% of all postpartum women. After the onset of symptoms, PPD appears to have long-term negative consequences for both mothers and their newborns and is a major problem including suicidality. In contrast to the temporal 'baby blues', PPD appears to manifest more severely and last for months, with symptoms of sadness, low self-esteem, feelings of guilt, depression, mood, sleep and appetite disturbances, social communication disturbances, self-harm, irritability and anxiety, particularly in relation to caring for the newborn. In addition, everyone in the mother's life is affected [4].

Early recognition of PPD is crucial for the health and well-being of both mothers and their newborns [5]. However, up to 50% of PPD cases still remain undiagnosed due to changes and fears of abandonment by family or relatives [5]. EPDS is most commonly used to diagnose PPD clinically. Thus, the American College of Obstetricians and Gynaecologists, the American Academy of Paediatrics, and the American Academy of Family Physicians recommend screening for PPD using EPDS [6]. Several risk factors associated with PPD have already been studied, such as biological factors (i.e., complications during pregnancy miscarriages and previous medical pathologies) as well as psychosocial factors (e.g., low social support, psychosocial stressors, unwanted pregnancy, child abuse, family problems or low level of education), including culture and traditions in each country [7]. Although the risk factors are now relatively well known, less than half of women with PPD are currently diagnosed [8, 9]. In the last few decades, depression has been seen to be on the rise in all countries, being the fourth leading cause of illness, causing various impairments. Moreover, considering the poor economic situation in some countries, the level of recognition of mothers with PPD is still low in terms of different health related programmes. Therefore, screening should be used to identify and prevent such causes. Different professionals or different therapies could be included in these programmes to address further problems [8, 9].

The fifth edition of the Diagnostic and Statistical Manual of Mental Disorders defines PPD as the onset of a major depressive episode during pregnancy or in the first four weeks after childbirth [10]. The term postpartum depression (PPD) is used generically in the literature to designate depressive symptoms with onset in the postpartum period and are aetiologically related to childbirth or to physiological, psychological, social or environmental factors occurring in close temporal proximity to the birth event. There is an increased variability in research and clinical practice in both the definition of depressive symptomatology and in the temporal delineation of the postpartum period [11].

The aim of this work was to determine both the risk and protective factors for PPD, by which current clinical practice can improve the management of this category of women.

## DEPRESSION SCREENING FOR POSTPARTUM WOMEN

To date, three primary screening instruments applicable for the assessment of PPD have been used: the Edinburgh Postnatal Depression Scale (EPDS), [12] the Postpartum Depression Screening Scale (PDSS), [13] and the Patient Health Questionnaire (PHQ-9) [89]. Although all these screening tools have been shown to be reliable, the EPDS is by far the most commonly used. For the most part, instrument selection may be less important than the subtle factors surrounding its use, such as creating a space that presents support that allows the postpartum woman to respond honestly. The tool used will be presented in a non-judgemental environment so that the woman can explore and document how she is really feeling and therefore accurately reflect her symptoms.

Clinicians should choose a screening tool that they are comfortable using and make sure they understand how it should be used and interpreted. The next step is to discuss what it means, why it is used and what its responses reveal.

### *Edinburgh Postnatal Depression Scale (EPDS)*

Cox et al. [12] have developed this self-report questionnaire for the purpose of screening postpartum women in the first months after childbirth in primary health care. The EPDS has been used in 23 countries and has a significant level of sensitivity (86%) and specificity (78%) in identifying women at risk for or likely to suffer from antenatal or postpartum depression. Early screening has been shown to be the most effective and cost-effective way to detect PPPD early [14].

The questionnaire is easy to fill in and does not seem intrusive, even for women experiencing severe symptoms. When asked how they felt about completing the screening tool first and then reviewing it, women generally responded that it emphasises that they are in the right place.

## PERSONAL CONTRIBUTION

### GENERAL METHODOLOGY

#### *Participants and data collection procedures*

We carried out a prospective observational cohort study on immediate postpartum women who gave birth in our Obstetrics and Gynaecology Department of the County Emergency Hospital "St. Apostle Andrew" Constanta in South-Eastern Romania.

We analysed the importance of demographic characteristics and clinical information in relation to PPD. Between August 2019 and April 2021, we included 904 women from day 2 after delivery. After participant recruitment, EPDS was used as a screening test for women at risk of PPD. According to the EPDS score, in which a score  $\geq 10$  could indicate PPD (i.e. possible depression), we divided mothers into two groups: women with PPD ( $n = 236$ ) and control (i.e. women without PPD,  $n = 668$ ), for better symptom differentiation. All participants were informed about the aims and procedures, and the possibility to withdraw from the study at any time. Completion of the questionnaire was voluntary and confidential and informed consent was obtained from all study participants. The study was conducted in accordance with the Declaration of Helsinki on Human Rights and the informed consent of all study participants as well as the Ethics Committee Agreement.

The prospective observational study was divided into three studies that were also published in international impact factor articles.

**The first study** analysed the risk factors for postnatal depression (PPD) related to the demographic and clinical characteristics of the participating women and the prevalence of depression among them. **The second study** assessed risk factors for PPD associated with the characteristics of these women's newborns. **The third study** investigated the administration of synthetic oxytocin (synOT) during labour and its potentially protective role against PPD.

#### *Demographic characteristics and clinical information*

The demographic and clinical characteristics of the participating women were obtained from the electronic health records and medical records. Information was collected on: women's age, parity, ethnicity, residence (urban or rural), level of education, blood group and Rh factor, presence of chronic diseases, mode of delivery (vaginal delivery or caesarean section), gestational age, number of previous births, number of abortions and duration of postpartum hospitalisation.

#### *Information about newborn characteristics*

Between the months of August 2019 and April 2021, medical information and electronic records on newborns were assessed. Data were collected on: month of delivery, preterm birth (defined as  $<37$  weeks of amenorrhoea), birth weight expressed in grams ( $<2500$  g vs.  $\geq 2500$  g), and sex of newborn (male vs. female).

Mothers whose infants had obvious congenital defects, severe abnormalities, haemoglobin  $<7$  g/dL (normal values are 13.4-19.8 g/dL) or who required special nutritional supplementation as part of a feeding programme were excluded from the study.

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### *Intrapartum synthetic oxytocin*

In the intrapartum period, synthetic oxytocin (synOT) was administered intravenously to selected women at the onset of natural labour. The administration was recorded as 'yes' or 'no' and the exact dose was determined according to individual medical needs. Information on the administration of synOT was extracted from the medical records completed by the specialists involved in the care of the patients.

All participants completed the EPDS questionnaire

### *Inclusion and exclusion criteria*

The inclusion criteria were:

- women aged 18 to 45;
- women who give birth to only one child;
- women without mental abnormalities;
- women without additional treatment, including psychiatric treatment,
- women who volunteered to take part in the study;
- women who speak, understand and write Romanian.

The exclusion criteria were:

- aged under 18 and over 45;
- multi-tasking;
- who had a mental disorder that did or did not require treatment;
- alcohol or drug abuse;
- did not agree to be involved in the study;
- they couldn't read or speak Romanian.

### *Statistical analysis*

Statistical analyses were performed using IBM SPSS for Windows, Version 28.0 (Armonk, NY, USA: IBM Corp), and Microsoft Excel. Data were presented in different formats: mean and standard deviation values for continuous variables. For categorical variables, numbers and percentages were used for representation. As for hypothesis testing, we used various tests, namely the Mann-Whitney U-test for independent samples (for normally non-distributed data), the t-test for independent samples, and the Chi-square test for comparing proportions. The choice of test depended on the nature of the variables analysed. The significance level was predetermined at  $<0.05$ .

## STUDY 1

# RISK FACTORS IN POSTPARTUM DEPRESSION AMONG WOMEN IN SOUTH-EASTERN ROMANIA: THE IMPORTANCE OF EARLY DIAGNOSIS

### 1.1 Working hypothesis

Our working hypothesis was that PPD is more frequent in less educated, younger women and that it could be influenced by residence (urban/rural), mode of delivery, parity, number of abortions, chronic diseases, blood group and Rh.

Based on this hypothesis, the aim of this study was to analyse the role of different risk factors for depression in the immediate postpartum.

Our results could contribute to early detection and appropriate care of PPD.

### 1.2 Outcomes

#### *Scores obtained from the applied scales*

Out of the total number of patients (n=904), the presence of PPD was observed in 26.10% (n=236) (Table 1). Of these, seven mothers (2.96%) answered positively to the last EPDS question: 'The thought of harming myself has passed'. The maximum score obtained was 22. Table 1 shows the scores obtained using the scale.

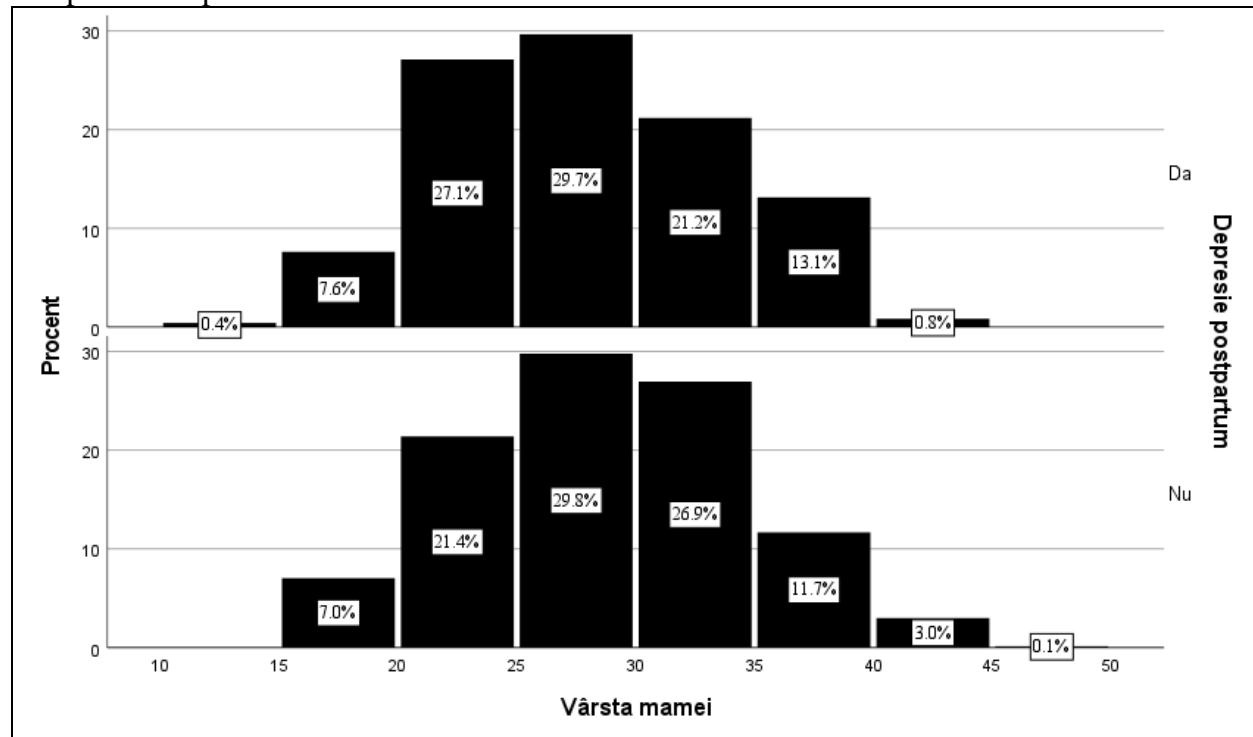
**Table 1.** Scale scores of patients with and without PPD.

EPDS	N	%	Mean±Standard Deviation
≥10 (Women with PPD)	236	26.1	12.73±2.58
≤9 (Females without PPD)	668	73.9	4.61±2.85

#### *. Analysing demographic data*

The mean age of patients with PPD was  $27.34 \pm 5.93$  (mean±SD) years, and that of those without PPD was  $28.23 \pm 95.95$  years. The difference was statistically significant (Figure no. 1), (p=0.050), (p=0.050), a younger age being associated with a higher risk of depression.

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**Figure 1.** Age of patients with and without PPD.

Of the patients with PPD, 51.9% were urban and 48.1% rural. In the control group (without PPD), 55% came from an urban setting and 45% from a rural setting. Patients with PPD came from both areas with almost similar values and there was no statistical significance between the two groups (Table 2).

**Table 2.** Characteristics of patients with and without PPD.

Features	Women with PPD (n=236)		Women without PPD (n=668)		P
	N	%	N	%	
<b>Environment</b>					0,425
Urban	120	51,9	358	55	
Rural	111	48,1	239	45	
<b>Education</b>					0,002
4-year	33	14	55	8,2	
8-year-olds	53	22,5	113	16,9	
Vocational schools	1	0,4	9	1,3	
High School	98	41,5	272	40,7	
University	51	21,6	219	32,8	
<b>Rh-negative factor</b>	36	15,3	74	11,1	0,093
<b>Chronic diseases</b>	26	11	70	10,5	0,818
<b>Type of birth</b>					0,818
Caesarean section	111	47,0	320	47,9	
Vaginal birth	125	53,0	348	52,1	

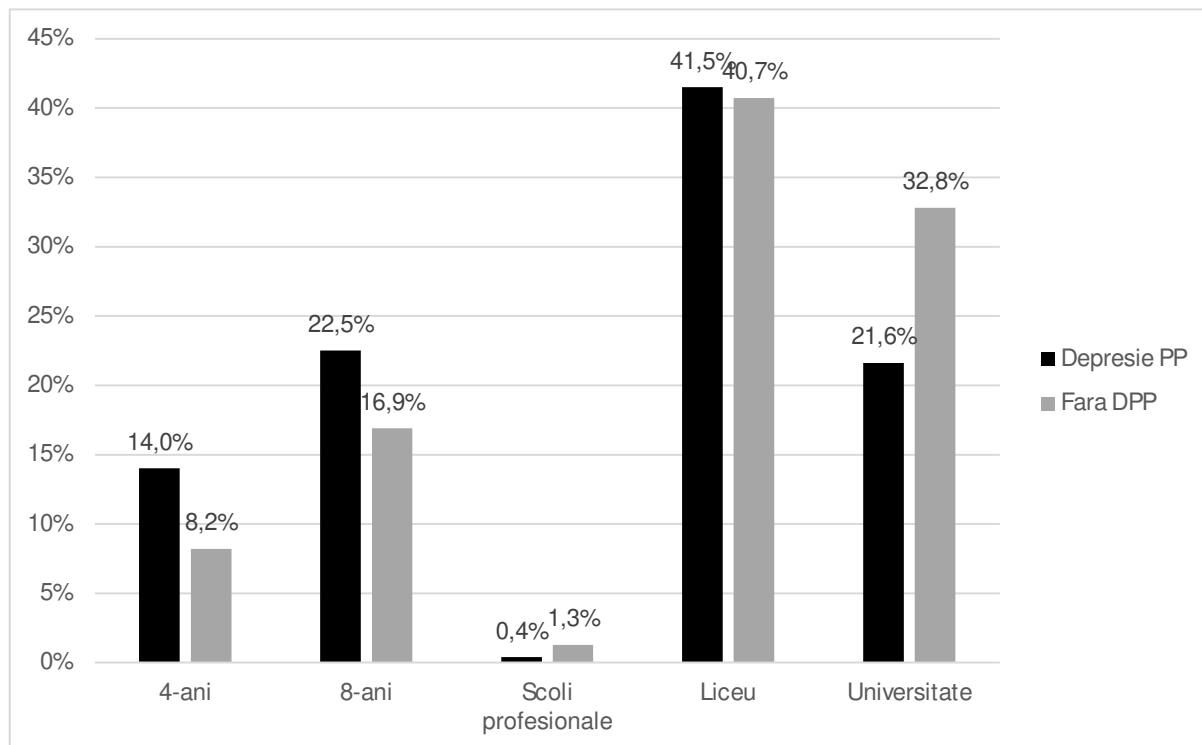
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Parity					0,778
Primiparity	117	49,6	320	47,9	
Separation	69	29,2	236	35,3	
Tertiparity	29	12,3	72	10,8	
Multiparity with > 3 births	21	8,99	40	5,98	
<b>Abortions</b>					0,087
0	138	58,5	426	63,9	
1	48	20,3	134	20,1	
2	27	11,4	63	9,4	
>2	23	9,74	44	6,59	

PPD = postpartum depression.

It can be seen that the prevalence of chronic diseases in women with and without PPD is statistically insignificant ( $p=0.495$ ).

Of the patients with PPD, 36.9% had primary, secondary and vocational (vocational school) education, and 63.1% had high school and higher (university) education compared to the group of patients without PPD: 26.4% and 73.5%, respectively (Table No. 2 and Figure No. 2). The difference was statistically significant ( $p=0.002$ ). Also, patients with PPD had less high school and university education compared to patients without PPD (21.6% vs. 32.8%).



**Figure 2.** Education of patients with and without PPD.

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Blood group and Rh-negative (Table 2 and Table 4), history of chronic diseases, type of delivery (vaginal vs caesarean) and parity were not statistically significantly correlated with the presence or absence of PPD (Table 2). The same was true for the number of abortions (Table 2)

Among patients with PPD, 49.6% were primiparous and 8.89% were multiparous with more than 3 births. Among patients without PPD, 47.9% were primiparous and 5.98% were multiparous with more than 3 births (Table 2 and Figure 4), ( $p=0.778$ ). These results suggested that primiparous women with PPD may be more affected by depression compared to other parity categories, but the difference did not reach statistical significance.

### 1.3 Discussions

Study prevalence of postpartum depression,  
In our study, the percentage of women diagnosed with postpartum depression (PPD) was 26.1%, a significantly higher value compared to that reported in other regions of the world.

It is worth noting that in the literature we identified only one study that applied the EPDS scale in the immediate postpartum (2 days after delivery), on a significantly smaller sample compared to our study - only 145 participants, with a postpartum depression rate of **13%** [15]. This rate is considerably lower than that identified in our study (13% vs. 26.1%).

The mean age of our PPD patients was 27 years, with younger age being associated with a higher risk of depression. This could be a highly relevant explanation. Our country is third in the European Union in terms of young maternal age in 2019 (mean age 26.9 years) [16]. This is in contradiction with the study by Anding et al. [17], in which the mean age of women with PPD was 40.33 years, with no significant variation in the incidence of PPD by age. The studies mentioned above showed no significant age-related association as a risk factor for PPPD [18].

Of the eight elements studied, we also found data in the literature on the influence of urban or rural environment on PPD [19], but we did not identify information on the Rh factor. In our study, 51.9% of PPD patients came from urban and 48.1% from rural areas, with no statistically significant differences.

Educational attainment was statistically significantly related to the occurrence of PPD and could therefore represent a potential risk factor.

We could not observe an influence of chronic diseases on the incidence of PPD, in contrast to some studies reporting that pregnancy-related chronic diseases are in general potential risk factors for PPD [20].

### 1.4 Conclusions

In a population-based study including a large number of patients, by analysing the importance of demographic and clinical characteristics in the early postpartum period, we identified a high incidence of PPD. The results indicated that young age and low education level of women may be associated with the occurrence of PPD and could represent risk factors. Future studies could focus on young, low-educated women who require closer monitoring in the early postpartum period to prevent possible adverse outcomes.

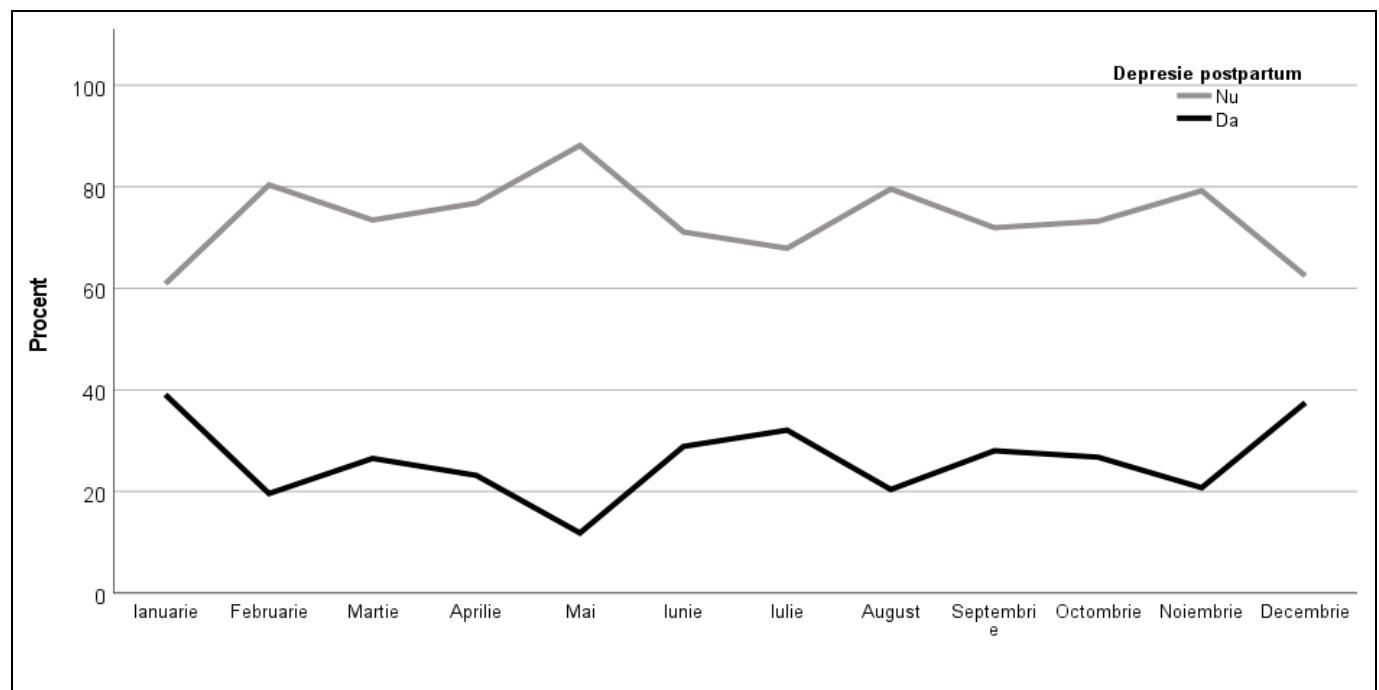
## INFLUENCE OF NEWBORN CHARACTERISTICS AND BIRTH SEASON ON POSTPARTUM DEPRESSION IN A COHORT STUDY

### 2.1 Working hypothesis

The characteristics of the newborn (month of birth, preterm birth, birth weight or sex) influence the PPD.

### 2.2 Outcomes

Comparing the association between month of birth and the presence of PPD, we observed that there were higher values in mothers who gave birth in the winter months - December, 37.5% (n=3) and January, 39.1% (n=34) - than in mothers who gave birth in the summer months - May, 88.2% (n=67) and August, 79.6% (n=78) - all of which were statistically significant ( $p=0.018$ ) (Figure no. 3).



**Figure 3.** Incidence of maternal PPPD according to the month in which they gave birth.

We did not observe a statistically significant correlation between preterm birth and maternal PPD ( $p=0.654$ ). In the group of women with PPD, 6.8% of the mothers delivered preterm, compared to 6.0% of the mothers without PPD. Similarly, the percentage of term births was similar between patients with PPD (93.2%) and without PPD (94.0%) (Table 3)

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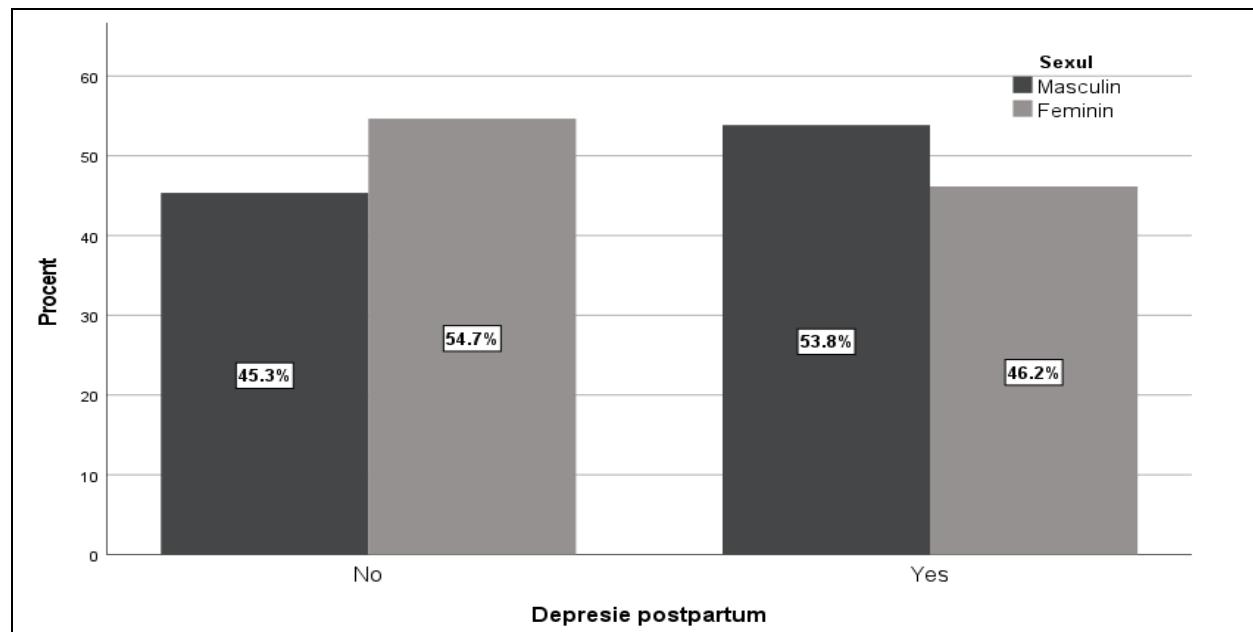
**Table 3.** Characteristics of newborns in women with and without PPD.

Basic features	Newborns born to mothers with DPP* [233, N (%)]	Babies born to mothers without PPD* [668, N (%)]	P
Premature birth (<37 SA)	16 (6,8%)	40 (6%)	0,654
Low birth weight (<2500 g)	6 (2,6%)	23 (3,4%)	0,510
Male	126 (53,8%)	303 (46,2%)	<b>0,025</b>

\*PPD = postpartum depression.

The percentage of low birth weight infants was 2.6% in the PPD group, while for women without PPD, the percentage of low birth weight infants was 3.4%. However, the observed difference was not statistically significant

There were more male newborns compared to female newborns in women with PPD (53.8% vs. 45.3%) in contrast to the values in women without PPD (46.2% vs. 54.7%) with a statistically significant association (Table 3 and Figure 4). These results indicate a possible association between PPD and the male sex of the newborns of the respective mothers. Conversely, we observed an association between the absence of PPD and the female sex of the respective mothers' newborns.



**Figure no. 4.** Distribution of infants born to women with and without PPD by sex of the newborn.

### **2.3 Discussions**

In the present study, among the neonatal characteristics studied (months of birth, preterm birth, birth weight and sex of the newborn), only the association of month of birth (December and January) and sex of the newborn (male) was statistically significantly associated with maternal PPD incidence.

The winter season, and in particular, the months of December and January, could be a potential risk factor for PPD.

At present, there is no strong scientific evidence to indicate a direct link between the month of childbirth and the risk of PPD in the mother. Most studies focus on factors such as mental health history, social support, birth complications and other psychosocial factors.

Our research makes a valuable contribution to the state of knowledge in the field. Thus, we were able to identify, in the literature, only four articles that reported a possible relationship between PPD and seasonality of childbirth [20-24]. In addition, these studies included a significantly smaller number of women (from 185 to 530), which adds relevance to our study.

The same considerations can be made regarding the relationship of PPD with the sex of the newborn. We could identify only three articles in the literature, with a number of patients ranging from 181 to 300 [25, 26].

The association between season of childbirth, male foetal sex and PPD could be explored in more depth, thereby preventing PPD in these groups of women in particular.

### **2.4 Conclusions**

In our study, among the neonatal and obstetric factors analysed (gestational age at delivery, time of delivery, weight and sex of the newborn), we identified a positive correlation between the occurrence of postpartum depression and the season of delivery (winter), as well as the male sex of the newborn. New mothers and their newborns could benefit significantly if health professionals and public health systems integrate prevention and identification of these risk factors for PPD into practice.

## STUDY 3

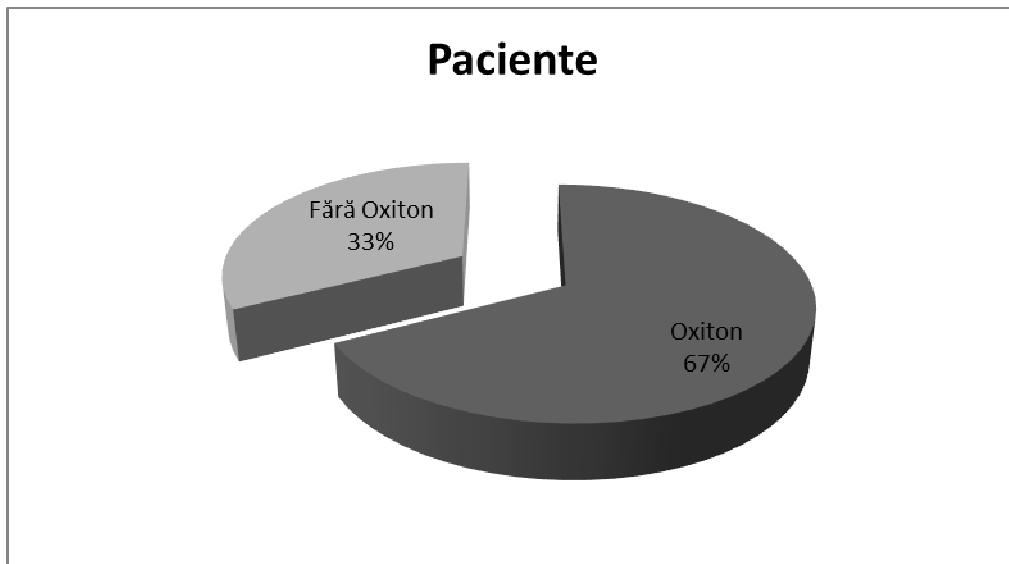
### INTRAPARTUM SYNTHETIC OXYTOCIN AS A POTENTIAL MEDIATOR IN POSTPARTUM DEPRESSION

#### Working hypothesis

Given the growing importance of synthetic oxytocin (synOT) use in modern obstetric practice, it is essential to better understand its impact on women's well-being in the postpartum period. The aim of this study was to investigate the association between intrapartum administration of synOT and the development of postpartum depression (PPD) on the second day after birth.

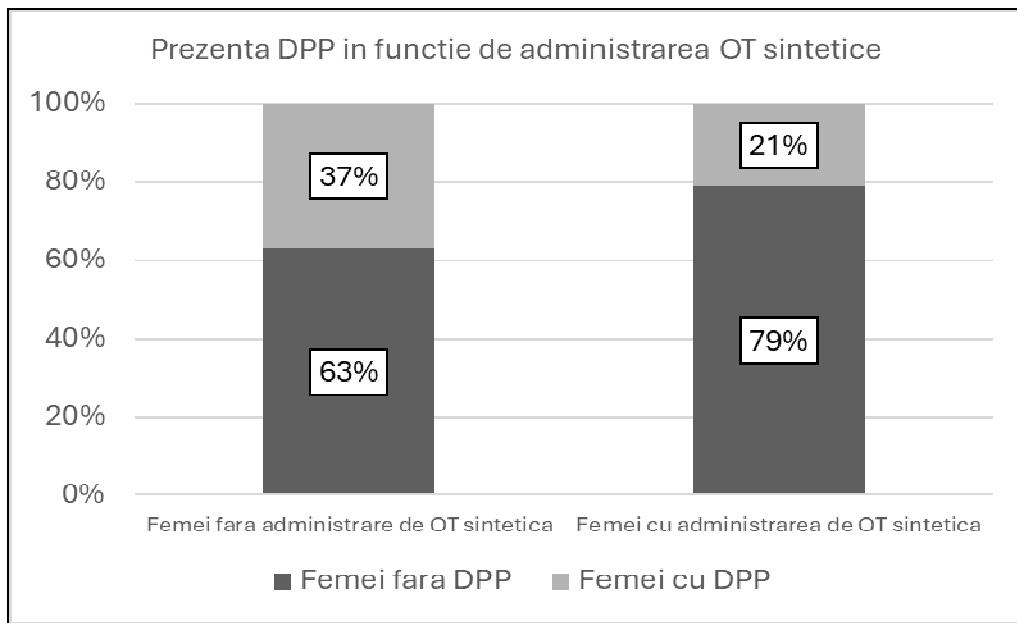
#### Results

A total of 904 patients were included in the study, of whom 609 received synOT in labour and 295 did not receive synOT (Figure 5 and Table 4).



**Figure no. 5.** Rate of women with and without intrapartum administration of synOT

We reported a lower rate of PPD in women on synOT compared to women not on synOT (21% vs. 37%,  $p<0.001$ ) (Figure 6).



**Figure no. 6.** Rate of women with and without intrapartum synOT administration in women with and without PPD.

Demographic characteristics of participants with and without synOT administration intrapartum.

Features	No (N=295)	Yes (N=609)	Total (N=904)	P
<b>Mean age (M± SD)<sup>1</sup></b>	29,2 (9,89)	27,4 (4,49)	28,0 (3, 09)	<0,001
<b>Parity, N (%)<sup>2</sup></b>				
1	109 (36,94)	328 (53,85)	437 (48,34)	<0,001
2	147 (49,83)	158 (25,94)	305 (33,73)	
3	33 (11,18)	68 (11,16)	101 (11,17)	
4+	6 (2,03)	55 (9,03)	61 (6,74)	
<b>Ethnicity, N (%)<sup>3</sup></b>				
Roma	20 (6,77)	81 (13,3)	101 (11,17)	0,019
Românî	255 (86,4)	490 (80,4)	745 (82,41)	
Russian	0 (0)	1 (0,16)	1 (0,16)	

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Syrian	0 (0)	1 (0,16)	1 (0,16)	
Turkish	20 (6,77)	36 (5,9)	56 (6,19)	
<b>Type of birth, N (%)</b>				
Caesarean section	275 (93,22)	156 (25,61)	431 (47,67)	<0,001
Vaginal birth	20 (6,77)	453 (74,38)	473 (52,32)	
<b>Postpartum hospitalisation (days), M±SD</b>	2.77 (0,93)	2.65 (0,43)	2.68 (0,29)	<0,001

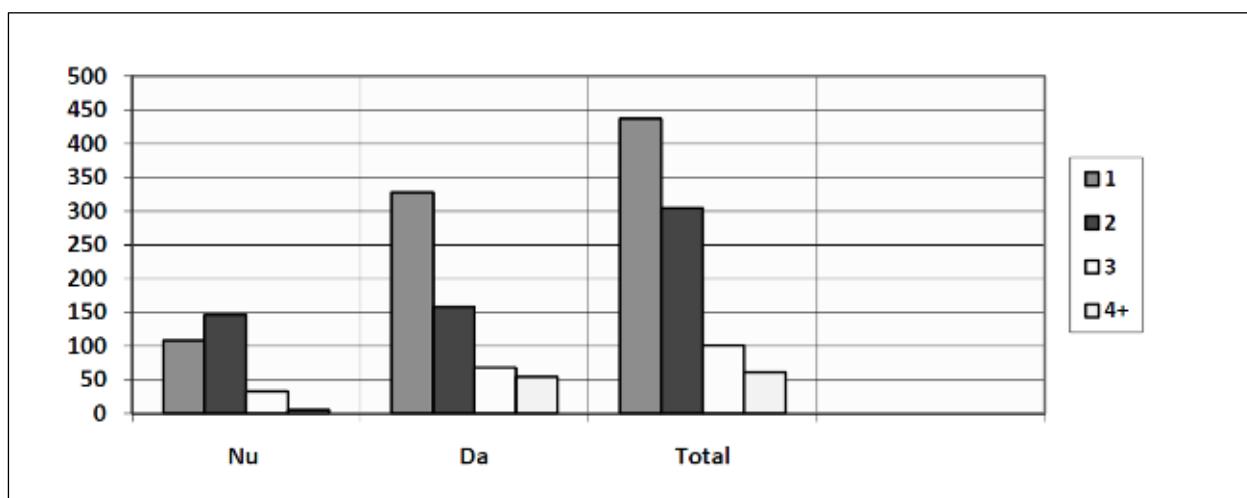
M=mean; SD=standard deviation.<sup>1</sup>Wilcoxon rank sum test; <sup>2</sup>Pearson's Chi-squared test; <sup>3</sup>Fisher's exact test.

The mean age of women with intrapartum synOT was younger compared to women without synOT (29.2 vs. 27.4, p<0.001).

Our results also showed that there were more primiparous patients in the synOT group (53.85%) than in the no synOT group (49.83%), the difference being statistically significant (p<0.001).

Of the women with synOT administration, 25.94% were second-trimesters and about 20.19% were women with 3 or more births. Of women without synOT administration, 36.94% were primiparous and only 13.21% had 3 or more births.

Our results suggest that the rate of depression is lower the higher the parity (53.85% in primiparous vs. 9.03% in 4+ births) (Figure no. 7).



**Figure no. 7.** Rate of women with or without intrapartum synOT administration in women with or without PPD compared to the number of births.

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The percentage of Romanian patients was different in the groups with and without synOT administration (80.4% vs. 86.4%, p=0.01) (Table 6).

The majority of women with synOT administration delivered vaginally compared to women without administration (i.e., 74.38% vs. 6.77%, p<0.001).

The caesarean section rate was 25.91% for women with synOT and 93.22% for women without synOT.

It was observed that women with synOT administration had fewer days of hospitalisation compared to women without synOT administration (i.e., 0.43% vs. 0.93%, p<0.001).

## Discuss

When used, synOT has immediate medical benefits. By mimicking the body's natural OT secretion, it stimulates contractions and prevents postpartum haemorrhage. There are no evidence-based guidelines on dosage or patient response, and the decision to administer synOT is made subjectively [27]. Possible risks associated with synOT include uterine hyperstimulation and fetal distress, including abnormal fetal heart rate and uterine rupture [28].

Our study showed that intrapartum exposure to synOT can attenuate the risk of developing PPD symptoms in new mothers - statistically significant (p<0.001).

Although in our study women given synOT were significantly younger (p < 0.001), most were primiparous (p < 0.001) and had vag vaginal births (p < 0.001) compared to those not given synOT, we believe that these factors do not invalidate the conclusion that synOT appears to exert a protective effect on postpartum depression. In a previous study, we identified a significant effect of age on the risk of postpartum depression. [29].

Our study did not measure endogenous OT in women analysed with or without synOT administration. It would have been useful to compare OT and synOT in the same sample of women, given that OT might have a superior synOT protective effect on PPD. Therefore, larger studies assessing DPP at different time points, also measuring both endogenous secretion and synOT in mothers would be useful. In this way, the results could shed more light on the association between synOT and DPP.

Our research provides important information in this area, in the sense that synOT has been administered to a large number of patients, having a statistically significant protective role against PPD.

## Conclusions

In our study, the intrapartum administration of synthetic oxytocin (synOT) was positively associated with a protective effect on the occurrence of postpartum depression. The clinical relevance of this is emphasised by the significant impact in populations at high risk of PPD, particularly young women.

## GENERAL CONCLUSIONS

Conclusions on postpartum depression (PPD) from three studies:

- The prevalence of PPD among the investigated patients was 26.1%, a significant percentage that emphasises the need for increased attention to this condition in obstetric and postnatal practice.
- Identified risk factors young maternal age, low level of education are significantly correlated with the risk of developing PPD, recommending close monitoring of these vulnerable groups.
- The importance of systematic screening. The implementation of screening programmes for PPD in maternity wards, family practices and paediatric clinics is essential, especially in Romania, which ranks third in Europe in terms of the number of teenage births.
- Other risk factors observed with statistical significance: birth of a male newborn, births in the winter season may increase the incidence of PPD and should be taken into account in risk assessment.
- Intrapartum administration of synOT has been associated with a protective effect against the development of PPD, suggesting its use in clinical practice under carefully selected conditions and with personalised doses.
- The seriousness of cases with intent to self-harm. These situations highlight the need for early diagnosis and treatment of PPD to prevent serious consequences for mother and child.
- Strategic recommendations:
  - Implement a national screening programme for PPD applicable to all age groups.
  - Provide psychological counselling and specialised psychiatric assistance where necessary.
  - Setting up specialised centres for the diagnosis and treatment of post-partum depression, covered by the health insurance system, to support maternal mental health.
- Preventive measures:  
Introduce sex education in schools, especially for at-risk groups, as a strategy to reduce the incidence of teenage pregnancy.
- Future research directions:  
Further investigation of the effects of synOT administration in labour, including the determination of plasma oxytocin levels, may contribute significantly to scientific knowledge and optimisation of personalised treatment in the prevention of PPD.

## ORIGINALITY AND INNOVATIVE CONTRIBUTIONS OF THE THESIS

The present prospective study was conducted in the Obstetrics and Gynaecology Department of the County Emergency Hospital "St. Apostol Apostol Andrei" Constanta, Romania, on a sample of 904 women in the immediate postpartum. The research aimed to identify and analyse both risk and protective factors involved in the development of postpartum depression. The original contribution of this research lies in:

1. To date, no study of this size has been conducted in Romania on postpartum depression, in terms of the number of patients investigated (904). Internationally, there are no data to prove the existence of a study with a comparable large sample size, conducted in such a short time (20 months), which emphasises the uniqueness of the current study,
2. Another element that emphasises the originality of the study is the ethnic and demographic diversity of the investigated sample. The research was carried out on a heterogeneous group of patients, including Romani, Roma, Turkish, Tatar, Russian and other ethnicities, from both urban and rural areas. This variety gives the study a unique character, allowing a more complex and socio-culturally relevant analysis of postpartum depression.
3. The complex and original feature of the study is the wide age range of the participants, from 18 to 45 years. This breadth allows the predisposition to develop PPD to be analysed throughout a woman's fertile period, thus providing an integrative perspective on the psychological vulnerabilities associated with the various stages of reproductive life,
4. Internationally, the literature does not offer a study that addresses in an integrated way both risk and protective factors associated with postpartum depression. This comprehensive approach represents an original element of the present research, contributing to a more nuanced understanding of the psychosocial mechanisms involved in the onset or prevention of this disorder.
5. There are no studies in the literature analysing the Rh factor as a possible determinant of postpartum depression
6. The study of the link between the sex of the newborn and the manifestations of postpartum depression, a topic that does not receive wide coverage in specialised research,
7. In our study, the prevalence of postpartum depression was 26.1%, a significantly higher percentage compared to values reported in other regions of the world, such as Australia (21%), South America (19%), North America (19%), Asia (16%) or Africa (11%). This notable difference suggests the existence of cultural, socio-economic or systemic particularities that may influence the incidence of PPPD in the Romanian context and emphasises the importance of conducting local studies for a proper understanding of the phenomenon.

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