

Recognizing Perinatal Depression During COVID-19 Pandemic: Lessons Learned and Interventions Taken to Prevent Suicide/Infanticide

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ABSTRACT

Objective: COVID-19 pandemics is a global mental health threat with increased rate of anxiety, panic disorders, depression and suicidal behavior in women who are in their perinatal period during COVID-19 pandemic. The aim of the study was to determine the presence of depression in women in perinatal period in Skopje during the COVID-19 pandemic period and possible interventions for early detection, prevention and adequate treatment with special emphasis on perinatal depression during events with highly stressful circumstances and conditions e.g. large catastrophes.

Methods: This was a cross-sectional study, which included 494 pregnant women. The study was realized in a one-month period. Informed consent was obtained from participants of the study. The Edinburgh postnatal depression scale (EPDS) was used as well as socio-demographic questionnaire regarding age, number of pregnancies, course of the pregnancy, education, marital and employment status. EPDS is a self-reported scale consisting of ten questions/items. The cut-off score was 11 and over since it is considered that for this value the sensitivity and specificity of the test is maximized: sensitivity 0.81 (from 0.75 to 0.87) and specificity 0.88 (from 0.85 to 0.91).

Results: No depression was registered in 82.4% of pregnant women and in 17.2% depression was present. The percentage difference regarding presence or absence of depression during pregnancy was statistically significant for $p < 0.05$ (Difference

test, $p = 0.0000$). Of the total number of subjects, almost 3% (15 participants) said that it had crossed their mind to hurt themselves which are (potentially) suicidal thoughts and/or suicidal behavior.

Conclusion: In pandemic conditions particularly vulnerable group of women are those in perinatal period, with a special accent to pregnant women who previously had depressive disorders. They should be continuously monitored and advised either face-to-face or via telemedicine means in attempt to avoid suicide.

Key words: Pregnancy, Perinatal, Depression, Suicidal Thoughts, COVID-19.

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INTRODUCTION

It is assumed that the most significant psychological effect of COVID-19 has been manifested in an increased rate of anxiety, panic disorders, depression, insomnia, posttraumatic stress disorders, and suicidal behavior, especially regarding a special group of women who are in their perinatal period during pandemic and have to cope with this. Certain metabolic, hormonal and physical changes happen during the perinatal period of a woman. These along with the psycho-social and sociological factors make

this period especially vulnerable for the woman, associated with a higher risk of development of symptoms of depression and anxiety.

The most common risk factors for development of antenatal and postnatal depression include history of previous depressive disorders, poor psycho-social factors (lack of family support, single parents, intimate partner violence, and unplanned/unintended pregnancy), and hormonal changes.¹⁻³

A large number of studies have shown that during catastrophes or stress situations with high intensity, the prevalence rate of mental disorders among women in perinatal period have been significantly higher compared to those in the general population.⁴ It is estimated that about 10% of the mothers in "normal" conditions (prior to the pandemic period) will develop perinatal depression. During the pandemic period this percentage is expected to be higher due to problems with availability of healthcare services, family physicians and gynecologists, especially during the quarantine period, and on the other hand, the fear from the infection, insufficient information about transmitting it to the baby, the fear of a possible separation in the postnatal period, inconclusive issues regarding breast-feeding and vaccination. This condition has a negative impact on the mother, her health and normal day-to-day functioning and coping with the problems. It is also associated with increased risk of preterm delivery, reduced mother-infant bonding, which means problems with the quality of attachment relationship and insufficient care for the infant. This relation is particularly essential for further development of the child and is linked with cognitive, emotional and behavioral problems of a child.^{5,6} Therefore, it is very important to recognize early these conditions as well as to undertake steps and measures for alleviating and reducing the negative effects that they can have.

Prevention and early treatment are of crucial importance, but, however, it is estimated that approximately 50% of women with depression remain undiagnosed during pregnancy and after delivery.⁷

AIM OF THE STUDY

To determine the presence of depression in women in perinatal period in Skopje during the COVID-19 pandemic period and possible interventions for early detection, prevention and adequate treatment with special emphasis on perinatal depression with a potential risk of suicide during events with highly stressful circumstances and conditions e.g. large catastrophes.

MATERIALS AND METHODS

The study included participants (pregnant women) who participated on a voluntary and anonymous basis, and who had regular gynecologic visits and check-ups to the University Clinic for Gynecology and Special Hospital for Gynecology and Obstetrics - Chair in Skopje during their pregnancy period. Also, women who had pathological pregnancy or pregnant women who were hospitalized due to an emergency situation were included in the study.

A total of 494 female participants were included. The study was realized in a one-month period (25.01. – 22.02.2021). The participants were informed about the aim of the investigation and confidentiality, about the possibility to withdraw from the study at any time due to any reason, and they all signed a written informed consent for participation in the study. The Edinburgh postnatal depression scale (EPDS) combined with socio demographic questionnaire (regarding age, number of pregnancies, course of the pregnancy, education, marital and employment status), was used. Postpartum depression is the most common complication of childbearing.

The 10-question Edinburgh Postnatal Depression Scale (EPDS) is a valuable and efficient way of identifying patients at risk for

"perinatal" depression. The EPDS is easy to administer and has proven to be an effective screening tool. Mothers who score above 13 are likely to be suffering from a depressive illness of varying severity. The EPDS score should not override clinical judgment. A careful clinical assessment should be carried out to confirm the diagnosis. The scale indicates how the mother has felt during the previous week. In doubtful cases it may be useful to repeat the tool after 2 weeks. The scale will not detect mothers with anxiety neuroses, phobias or personality disorders. EPDS is a self-reported scale. It is initially used in the postnatal period, but it is also used during pregnancy.⁸ In our study the cut-off score was taken to be 11 and over since it is considered that for this value the sensitivity and specificity of the test is maximized: sensitivity 0.81 (from 0.75 to 0.87) and specificity 0.88 (from 0.85 to 0.91).⁹

RESULTS

This was a cross-sectional study, which comprised 494 pregnant women.

Depression was not registered in 82.4% of participants but in 17.2% depression was present. The percentage difference regarding presence or absence of depression during pregnancy was statistically significant for $p < 0.05$ (Difference test, $p = 0.0000$).

Of the total number of participants, 56.1% were at the age between 21 to 30 years, and 32.6% were over 31 years of age. The percentage difference regarding age from 21 to 30 years versus the other age groups was statistically significant for $p < 0.05$ (Difference test, $p = 0.0000$). Of the total number of participants with depression 60.8% of them were between 21 and 30 years of age. No association was registered between age groups and depression according to Edinburgh score for $p > 0.05$ (Pearson Chi-square: 3.746327, $df = 2$, $p = .688553$).

Of the total number of respondents, 91.5% were married, 6.1% were not married, and 2.4% did not give data on their marital status. The registered percentage difference regarding marital status was statistically significant for $p < 0.05$ (Difference test, $p = 0.0000$). No association was registered between the marital status and depression according to Edinburgh scale for $p > 0.05$ (Pearson Chi-square: 1.23654, $df = 1$, $p = .266139$) (Table 1).

Of the total number of respondents, 43.7% had completed high school, followed by 23.5% who graduated from a university, 16.6% had completed higher and 12.7% primary school. The percentage difference was statistically significant between the respondents with completed high school versus other modalities of education ($p < 0.05$) (Difference test, $p = 0.0000$). No association was registered between the level of education and depression according to Edinburgh scale for $p > 0.05$ (Pearson Chi-square: 6.49509, $df = 3$, $p = .089857$) (Table 1).

Of the total number of respondents, 69.4% were employed and 24.3% unemployed. The percentage difference regarding employment was statistically significant for $p < 0.05$ (Difference test, $p = 0.0000$). No association was registered between the employment status and depression according to Edinburgh scale for $p > 0.05$ (Pearson Chi-square: 3.78141, $df = 1$, $p = .051825$) (Table 1).

Regarding the course of pregnancy, 70.0% of respondents had normal/uneventful, and 19.6% pathologic pregnancy. The percentage difference regarding the course of pregnancy was statistically significant for $p < 0.05$ (Difference test, $p = 0.0000$). No

association was registered between the course of pregnancy and depression according to Edinburgh scale for $p > 0.05$ (Pearson Chi-square: 2.34327, $df=1$, $p=0.125825$) (Table 1). The largest percentage of pregnant women were outpatients (86.8 %) and

were mothers to at least one (40.3%) and two children (38.5%). The mean age at gestational week was 26.1 ± 11.2 , minimum 6 and maximum 41; 50% of patients were at 30+ weeks of gestation, Median IQR=30 (13-37).

Table 1: Characteristics of patients included in the study

	No.	%	
Age			
≤ 20 y.	21	4.3	
21-30 y.	277	56.1	
≥ 31 y.	161	32.6	
No data	35	7.1	
Marital status			
Married	452	91.5	
Unmarried /Single	30	6.1	
No data	12	2.4	
Educational level			
Primary	63	12.7	
Secondary	216	42.7	
Higher	82	16.6	
University	116	23.5	
No education	1	0.2	
No data	16	3.2	
Employment status			
Employed	343	69.4	
Unemployed	122	24.7	
No data	29	5.9	
Pregnancy course			
Normal	346	70.0	
Pathological	97	19.6	
No data	51	10.3	
Pregnancy in row			
1	199	40.3	
2	190	38.5	
3	47	9.5	
4	17	3.4	
5	5	1.0	
6	1	0.2	
8	1	0.2	
No data	34	6.9	
Monitored			
Outpatient	429	86.8	
Hospital	51	10.3	
PIN	13	2.6	
No data	1	0.2	
Edinburgh score			
Present depression	87	17.2	
No depression	407	82.4	
No data	2	0.4	
Gestational week			
N	Mean ± Std. Dev.	Minimum	Maximum
227	26.1 ± 11.2	6	41

Table 2: Results of patients included in the study after testing with Edinburgh scale

Question	No,	%
Q1. I have been able to laugh and see the funny side of things		
As much as I always could	436	88.3
Not quite so much now	38	7.7
Definitely not so much now	10	2.0
Not at all	10	2.0
Q2. I have looked forward with enjoyment to things		
As much as I ever did	435	88.1
Rather less than I used to	42	8.5
Definitely less than I used to	10	2.0
Hardly at all	6	1.2
No answer	1	0.2
Q3. I have blamed myself unnecessarily when things went wrong		
Yes, most of the time	32	6.5
Yes, some of the time	91	18.4
Not very often	184	37.2
No, never	187	37.8
Q4. I have been anxious or worried for no good reason		
No, not at all	141	28.5
Hardly ever	113	22.9
Yes, sometimes	215	43.5
Yes, very often	25	5.1
Q5. I have felt scared or in panic for no good reason		
Yes, quite a lot	36	7.3
Yes, sometimes	163	33.0
No, not much	127	25.7
No, not at all	168	34
Q6. I have not been able to cope with things		
Yes, most of the time I haven't been able to cope at all	43	8.7
Yes, sometimes I haven't been coping as well as usual	90	18.2
No, most of the time I coped quite well	193	39.1
No, I have been coping as well as ever	168	34.0
Q7. I have been so unhappy that I have had difficulty sleeping		
Yes, most of the time	34	6.9
Yes, sometimes	100	20.2
Not very often	107	21.7
No, not at all	253	51.2
Q8. I have felt sad or miserable		
Yes, most of the time	10	2.0
Yes, quite often	24	4.9
Not very often	149	30.2
No, not at all	311	63.0
Q9. I have been so unhappy that I have been crying		
Yes, most of the time	4	0.8
Yes, quite often	22	4.4
Only occasionally	164	33.2
No, never	304	61.5
Q10. It has crossed my mind to hurt myself		
Yes, quite often	5	1.0
Yes, sometimes	10	2.0
Hardly ever	10	2.0
Never	469	94.9

Regarding the first question/item (Q1) ***I have been able to laugh and see the funny side of things***, the largest percent (88.3%) of patients thought that they laughed as much as usual, and the percentage difference was statistically significant between this option and all the other modalities for $p < 0.05$ (Difference test, $p = 0.0000$) (Table 2). The calculated total score at the Likert scale was 0.2 ± 0.5 , which corresponded to the answer *I laughed as much as I always could*.

Regarding the second item (Q2) ***I have looked forward with enjoyment to things***, the largest percentage (88.1%) of patients thought that they did that *As much as ever* and the percentage difference was statistically significant between that option and the other modalities for $p < 0.05$ (Difference test, $p = 0.0000$) (Table 2). The calculated total score at the Likert scale was 0.2 ± 0.5 , which corresponded to the answer *As much as I ever did*.

Regarding the third item (Q3) ***I have blamed myself unnecessarily when things went wrong***, approximately similar percent of 37.8% and 36.2% of patients thought that it was *Not very often* and *No, never*, and the percentage difference was statistically significant between these two options and the remaining modalities for $p < 0.05$ (Difference test, $p = 0.0000$) (Table 2). The calculated total score at the Likert scale was 0.9 ± 0.9 , which corresponded to the answer *Not very often*.

Regarding the answer to the fourth item (Q4) ***I have been anxious or worried for no good reason***, the largest percent of patients (43.5%) said *Yes, sometimes*, 28.5% *Hardly ever*, and 22.9% gave a negative answer. The percentage difference was statistically significant between *Yes, sometimes* and the remaining modalities for $p < 0.05$ (Difference test, $p = 0.0000$) (Table 2). The calculated total score at the Likert scale was 1.3 ± 0.9 , which corresponded to the answer *Hardly ever*.

Regarding the fifth item (Q5) ***I have felt scared or in panic for no good reason***, approximately a similar percent of 33.6% and 33.0% of patients gave an answer *No, not at all* and *Yes, sometimes*, and 25.7% said *No, not much*. The percentage difference was statistically significant between *No, not at all* and *Yes, sometimes* compared to the other modalities for $p < 0.05$ (Difference test, $p < 0.01$) (Table 2). The calculated total score at the Likert scale was 1.1 ± 0.9 , which corresponded to the answer *No, not much*.

Regarding the sixth item (Q6) ***I have not been able to cope with the problems***, 39.1% of patients answered that they were able to cope with the problems most of the time, and 34.0% coped with them as usual. The percentage difference was statistically significant between *Most of the time* and as usual for $p < 0.05$ (Difference test, $p = 0.0000$) (Table 2). The calculated total score at the Likert scale was 1.0 ± 1.0 , which corresponded to the answer that patients coped with the problems pretty well most of the time.

Regarding the seventh item (Q7) ***I have been so unhappy that I have had difficulty sleeping***, more than half of the patients (51.2%) said they did not have difficulties, and the percentage difference was statistically significant compared to the other modalities for $p < 0.05$ (Difference test, $p = 0.0000$) (Table 2). The calculated total score at the Likert scale was 0.8 ± 1.0 , which corresponded to the answer *Not very often*.

Regarding the eighth item (Q8) ***I have felt sad and miserable***, 63.0% of the patients did not feel sad or miserable, and the percentage difference was statistically significant compared to other modalities for $p < 0.05$ (Difference test, $p = 0.0000$) (Table 2).

The calculated total score at the Likert scale was 0.5 ± 0.7 , which corresponded to the answer *No, not at all*.

Regarding the ninth item (Q9) ***I have been so unhappy that I have been crying***, 61.5% of the patients answered *No, never*, and the percentage difference was statistically significant compared to the other modalities for $p < 0.05$ (Difference test, $p = 0.0000$) (Table 2). The calculated total score at the Likert scale was 0.4 ± 0.6 , which corresponded to the answer *No, never*.

Regarding the tenth item (Q10) ***It has crossed my mind to hurt myself***, 94.9% of patients answered that such thought had never crossed their mind. The calculated total score at the Likert scale was 0.1 ± 0.4 , which corresponded to the answer *No, never*.

DISCUSSION

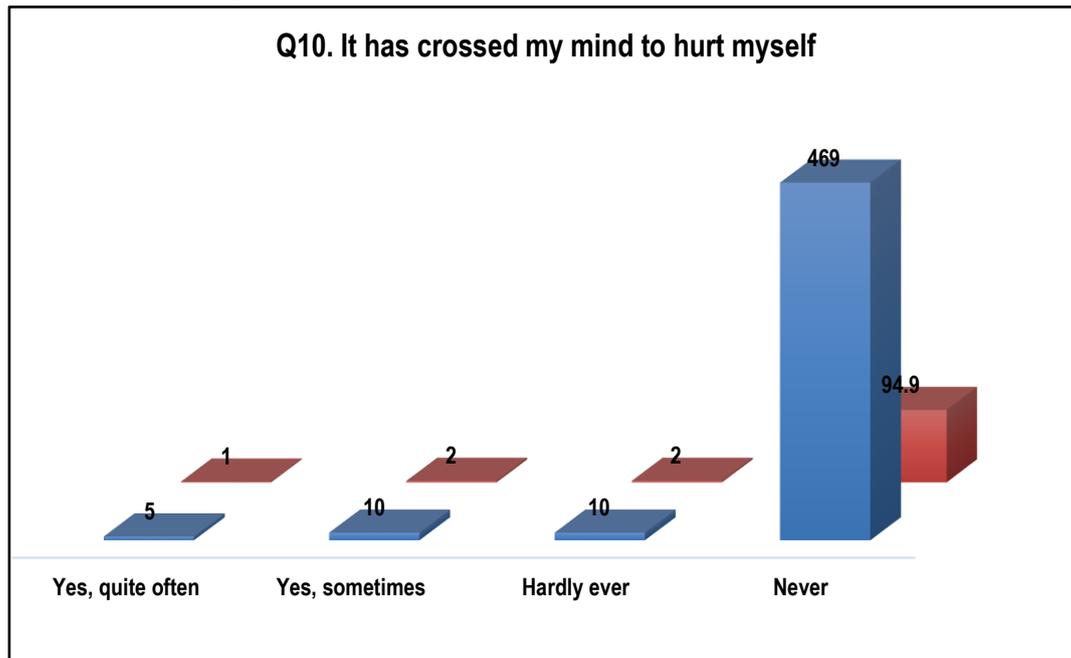
The results obtained in this study have shown an increased percentage of depressive symptoms in pregnant women during COVID-19 pandemic. In "normal conditions", before the pandemic, it was assessed that depression and anxiety affected from 10% to 14% of women in the perinatal period.^{4,10} In our study this percent was 17.2%. Similar studies conducted in other countries presented different results ranging from no increased postnatal depression during COVID-19 pandemic in Greece to increased depression of 37.8% in Spain and 40.7% in Canada.^{6,11,12} The increased percentage of depression is in correlation with the results from previous studies that have pointed out to the importance of the risk factors which, in addition to biological vulnerability, include psycho-social factors such as social support deficit, family violence, and traumatic events. These risks along with the fear from the exposure to the virus, fear of vertical transmission, reduced availability of health care, recommendation for physical distancing, reduced physical activity, and increased rate of family violence contribute to increased depression among pregnant women. Perinatal depression is a result of a dynamic interplay among biological, psychological and social risk factors and each of them might be intensified during a pandemic.^{1,2,6,10,13-16}

It is considered that depression and anxiety have negative acute/current consequences for the mother and for the baby including: preterm delivery, delayed fetal growth, increased need of Cesarean section delivery. The disturbed mother-baby relationship, mothers experiencing negative thoughts regarding motherhood, behavior of avoidance, poor facial expressions, breastfeeding interruption, all these lead to emotional child's disorders manifested as difficulty sleeping, aggressive attacks, hyperactivity, cognitive difficulties and social dysregulation.^{6,16}

The highest possible risk for the mother is suicide, which is considered the second cause of death in women during the reproductive period, most commonly at the end of the pregnancy or during the first year after delivery. The largest number of these women commit violent death by hanging or jumping from height, which is an alarm for recognition and treatment of antenatal and postnatal depression.^{16, 25, 26} In our study, 5% of the total number of surveyed pregnant women expressed suicidal thoughts, of whom 4% said they thought about committing a suicide rarely or never, and 1% had such thoughts very often.

Maybe these percentages seem low but don't forget: we are talking about lives of fifteen women that could be potentially wasted in suicide (and/or infanticide). And, as we all know "Every life matter".

Figure 1: Q10 It has crossed my mind to hurt myself (Every life matter)



Prevention and early treatment are of crucial importance. However, it is estimated that about 50% of depressive women remain undiagnosed during pregnancy and post-partum.⁷ Some studies found a significantly higher percentage of depression in mothers who were not married, did not have an intimate partner or were widows.^{17,18}

Several studies have demonstrated a significantly higher level of depression among mothers with university degree, which resulted in more often seeking a medical help due to the higher level of conscience and insight into the self-somatic and mental health as well as easier access to health care institutions.¹⁹

As for the employment status, no significant difference was obtained between employed and unemployed, although several studies have demonstrated employment to be a protective factor when perinatal depression was in question.¹⁸

Regarding all items/questions at the Edinburgh postnatal depression scale, the highest score was obtained for the questions **Q4 I have been anxious or worried for no good reason** and **Q5 I have felt scared or in panic for no good reason**, which spoke in favor of the higher scores of anxiety and uneasiness due to facing a new, unknown situation. This also refers to the obtained high score regarding the answers to **Q3 I have blamed myself unnecessarily when things went wrong**. All this emphasizes the need of increasing the conscience, early recognition and treatment of perinatal depression in the very first months of pregnancy.

These are the recommendations for recognition and treatment: careful approach to young women who had suffered in the past or who currently suffer from depressive or anxious disorder, discussion about contraception options, counselling about the influence of pregnancy on psychic health of the mother, counselling about the influence of psychic health on both mother and fetus, i.e., baby, eventual treatment, support to the mother, her intimate partner and the whole family, involvement of the mother in the decisions about her pregnancy, information about an eventual pregnancy interruption and further treatment with desirable involvement of the partner, coordinated care by the

family physician, gynecologist, psychiatrist, pediatrician during pregnancy and post-partum, constant monitoring of the psychic and physical health of the mother, attitude to pregnancy, mother-newborn interaction, social isolation, family history, home violence, ability of the mother to take care for her other children. Specific interventions during depressive disorders are necessary such as supportive therapy and counselling with regards to change of the life style (NEST-S program – nutrition, physical activity/exercise, sleep, finding time for yourself, support), psychotherapy (SBT or other), antidepressants from the SSRI first line drugs, with exception of Paroxetine due to the increased risk of cardiologic malformations, optimum drug dosage until the last 8 weeks of pregnancy and eventual reduction or discontinuation of an antidepressant, avoiding anxiolytics in the first trimester, SNRI second line drugs. In COVID-19 pandemic conditions, of great help are online or telephone consultations and if necessary constant monitoring by a psychiatrist or psychologist.^{2,3,20-22}

Studies have demonstrated a lower risk in mothers treated with SSRI during pregnancy than in those who have not been treated, resulting in a decreased risk of preterm delivery, necessity of Cesarean section, and diminished percentage of delivery low-birth weight babies.^{21,23,24}

In pandemic conditions when the entire world encounters with one newly-emerged stressful situation and there is increase in the rate of anxiety and depression in the general public, it is very important to pay attention to this particularly vulnerable group of women during the perinatal period, with a special accent to pregnant women who previously had depressive disorders. They should be continuously monitored and advised either face-to-face or via telemedicine means. Pregnant women, who previously had no symptoms of depression or anxiety, have to be asked some simple questions by their family physicians or gynecologists. This includes: Have you felt sad, insecure, frightened and helpless over the past two weeks? If the given answers are positive, then development of depression disorder may be in question that further initiates examination by a psychiatrist and regular check-ups and treatment.^{5,23}

CONCLUSION

Early recognition of symptoms and risk factors for the development of antenatal depression leads to prevention of perinatal depression. Furthermore, this helps avoiding worst case scenario: suicide. This study has emphasized the need of intervention in all women who are in the perinatal period, which is an extremely stressful period when availability to establish a diagnosis and treatment impose a real challenge.

How can this challenge be answered? With a tremendous help of a group of dedicated professionals and a support of Macedonian Ministry of Health and Insurance Fund, a special Cabinet for women with perinatal mental health issues was established in Psychiatry Clinic in Skopje. The team of mental health specialists, performed regular face-to-face consultations or, if that was not possible (due to COVID19 or other health problems of the patients) a telemedicine consultation was provided. Family doctors (in primary health care) and specialist of psychiatry and gynecology (in secondary health care) can refer their patients directly to our Cabinet, with no extra charge.

Therefore, we were not surprised when one of our patients who suffered from perinatal depression said that: "taking care for mothers' mental health will result in having healthy children and healthy society".

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