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Clinical Evaluation of Depression and Anxiety in Pregnancy and their Impact on Maternal and Fetal Outcome

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Abstract

Background: Anxiety and depression are more likely to occur during pregnancy. Anxiety during pregnancy is associated with negative outcomes in mothers and babies. Unfortunately, because anxiety is frequently used interchangeably with depression, research focused purely on anxiety during pregnancy are not as extensive as those focusing on depression.

Objectives: To evaluate the depression and anxiety during pregnancy and post pregnancy up to 3 months and also to study its impact on maternal health and foetal outcomes.

Methods: All women presenting to antenatal outpatient are included in this study with standard questionnaire method. All those are followed up further for 3 months, post-pregnancy to evaluate the maternal and foetal health. A standard questionnaire of depression and anxiety using Hospital anxiety and depression scale-HADS is given and the women at risk are further evaluated with Edinburg post-natal depression scale-EPDS. Follow up is done to check foetal growth, any pre-term delivery, mode of delivery, birth weight and maternal complications to additionally evaluate maternal and foetal outcomes.

Results: According to HADS Score , Overall Anxiety was reported in 26% of the cases, in 8% it was borderline and in 18% it was severe anxiety. Overall Depression according to HADS was 30%, It was borderline in 8% and in 22% of the cases it was severe depression. The EPDS score in comparision with Gravida, Depression, HADS score for Anxiety and depression, Maternal and neonatal complications was statistically significant. HADS and EPDS reported similar percentage of depression.

Conclusion: Properly identifying the women who are at risk of developing prenatal anxiety and depression would allow us to target those who might benefit from preventative and supportive measures. Furthermore, identifying the women at risk would allow us to monitor them throughout their pregnancy and recognise early signs of depression and anxiety as they develop, allowing us to intervene therapeutically if necessary.

Keywords: Antepartum, Post-partum, Anxiety, Depression, EPDS

Introduction

Depression and anxiety that remain untreated and undiagnosed can have negative consequences for both mother and child. Suicide is the most serious conceivable consequence of untreated depression. Depressed women are also more prone to engage in harmful behaviours during pregnancy, such as smoking and abusing illicit substances.[1] These women have a greater prevalence of poor nutrition, which is caused in part by a lack of appetite, resulting in poor weight gain throughout pregnancy as well as the risk of intrauterine growth retardation.

Antenatal depression increases the chance of low birth weight, preterm delivery, and insecure mother-infant attachment, as well as having a detrimental influence on the physical and mental development of the child.[2] Relapse rates are high in pregnant women with a history of recurrent mood disorders, at around

50%.[3] There is a risk of long-term consequences on the child if depression continues into the postpartum period, such as poor mother-infant bonding, delayed cognitive and language abilities, decreased emotional development, and behavioural difficulties. When a baby is exposed to a depressive and anxious maternal environment during early infancy, the kid's neuroendocrine functioning alters, and the child has greater behaviour issues when they begin school.[4] As these youngsters grow, they are more likely to develop emotional instability and behavioural disorders, attempt suicide, and seek mental health care, either as a result of early exposure or a continuous stressful family situation.

According to research, the presence of stressful life events, such as a family history of substance abuse, a past personal history of sexual, physical, or emotional abuse, current exposure to intimate partner violence, and current social adversity, has a significant impact on the occurrence of psychiatric morbidity in pregnancy. Women who have poor social support, are single or adolescent, have an unexpected or early pregnancy, and are single or adolescent are more likely to experience anxiety and depression during pregnancy.[5]

Because of its influence on the mother, child, and family as a whole, maternal mental health has become a public health priority. The high incidence of depression and anxiety during pregnancy, as well as the numerous problems and consequences connected with it, provide the basis for this study.

Materials and Methods

Study setting: Department of Obstetrics in Muslim maternity Hospital

Study Design: Prospective observational study

Study Duration: October 2020 to September 2021

Inclusion Criteria

- Booked pregnant women attending antenatal outpatient department of obstetrics

Exclusion Criteria

- Pregnant women with medical disorders.

Sample size: 100

Sample size $n = 4pq/ L^2$

Where, n = required sample size, p = prevalence of the disease in the pilot study,

q = (1 – p), L = allowable error in the study.

Substituting p = .025 % from pilot study .

And L = 5 % we get n = 39 .

Hence, we decided to include 100 patients in our study.

All women presenting to antenatal outpatient are included in this study with standard questionnaire method. All those are followed up further for 3 months, post-pregnancy to evaluate the maternal and foetal health. These women are evaluated with detailed obstetric history which includes history of psychiatric illness in previous pregnancy, history of medical disorders in past, routine antenatal laboratory profile and assessment chart at booking is done to rule out medical disorders and high-risk pregnancy.

A standard questionnaire of depression and anxiety using Hospital anxiety and depression scale-HADS is given and the women at risk are further evaluated with Edinburg post-natal depression scale-EPDS. Follow up is done to check foetal growth, any pre-term delivery, mode of delivery, birth weight and maternal complications to additionally evaluate maternal and foetal outcomes.

Statistical Analysis: Data was analysed using SPSS 22 software and the outcomes were presented in the form of graphs and tables. Chi-square was used to correlate the outcome percentages and find p-value and ANOVA with Post Hoc Tukey was calculated for EPDS and HADS. The p-value of <0.05 was considered statistically significant.

Observation And Results

A total of 100 patients were enrolled for the study. Each parameter has been studied separately in women diagnosed with depression and anxiety [Cases (n=30)] and compared with women without depression and anxiety [Controls (n=70)]

Table 1: Distribution based on Age group and BMI

Age group	Cases n=30	Control n=70	Frequency(%)
<20	1	3	4(4%)
21 - 30	28	56	84(84%)
31 - 40	1	11	12(12%)

Conti...Table 1: Distribution based on Age group and BMI

Age group	Cases n=30	Control n=70	Frequency(%)
BMI			
<18.5	6	7	13(13%)
18.5 – 24.9	20	48	68(68%)
25.0 – 29.9	4	15	19(19%)
Pregnancy Outcome			
LSCS	17	49	66(66%)
Vaginal delivery	13	21	44(44%)

Majority of the females around 84% belonged to the age group of 21 to 30 years followed by 12% in 31 to 40 years age group and 4% in <20 years age group. The youngest patient was 18 years old. The overall mean age was 26.09 $\pm$ 3.81 years.

13% of the women were underweight having a BMI <18.5. 19% of the women were Overweight, having a BMI in between 25.0 – 29.9 and 69% of the women had a normal BMI between 18.5-24.9. The lowest BMI recorded was 17.05. The mean BMI was 21.90 $\pm$ 3.20

Vaginal delivery was done in 44% of the patients. LSCS was done in 66% of the patients out of which repeat LSCS was done in 19% of the patients.

Majority of the sample size gestational age was in between 39.1 – 40.0 weeks for 53.33% of the cases, 32% of the cases had gestational age between 38.1 – 39.0, 37 to 38 weeks gestational age was seen in 17% of the cases, 9% of the cases had gestational age between 40.1 – 41.0 and 1% had gestational age of >41.1 weeks. The mean gestational age was 38.92 + 0.96 weeks

Cases: Majority of the sample size gestational age was in of the depression patients was in between 39.1 – 40.0 weeks for 41% of the cases, 38.1 – 39.0, 37 to 38 weeks gestational age was seen in 16.66% of the cases, 13.33% of the cases had gestational age between 40.1 – 41.0. The mean gestational age was 39.07 + 1.01 weeks

Controls: Majority of the sample size gestational age was 38.57% of the cases had gestational age between 38.1 – 39.0, for 39.1 – 40.0 weeks it was 35.71, 37 to 38 weeks gestational age was seen in 17.14% of the cases, 7.14% of the cases had gestational age between 40.1 – 41.0 and 1.42% had gestational age of >41.1 weeks. The mean gestational age was 38.85 + 0.93 weeks

Low birth weight <2.5kgs was seen in 6% of the cases, 2.5 – 3.5 kgs was seen in 79% of the infants, >3.5kgs was seen in 15% of the infants. The mean birth weight was 3.08 $\pm$ 0.38 kgs.

Cases: Low birth weight <2.5kgs was seen in 6.66% of the infants of depressed mothers, 2.5 – 3.5 kgs was seen in 73.33% of the infants, >3.5kgs was seen in 20% of the infants. The mean birth weight was 3.11 $\pm$ 0.41 kgs

Controls: Low birth weight <2.5kgs was seen in 5.71% of the cases, 2.5 – 3.5 kgs was seen in 81.42% of the infants, >3.5kgs was seen in 12.85% of the infants. The mean birth weight was 3.07 $\pm$ 0.36 kgs

The chi-square statistic is 32.7829. The p-value is < .00001. The result is significant at $p < .05$

Anaemia was reported in 5% of the patients and blood transfusion was required for the same. Pregnancy induced hypertension was seen in 3%, Eclampsia in 1%, Post-partum haemorrhage PPH in 1% of the patients.

Cases: Anaemia was reported in 13.33% of the depression patients and blood transfusion was required for the same. Pregnancy induced hypertension was seen in 10% of the depression patients, Eclampsia and Post-partum haemorrhage PPH were seen in 3.33% of the depression patients each.

Controls: Anaemia was reported in 1.42% of the cases.

Table 2 : Distribution based on EPDS score initial vs 3 months

EPDS Score	1 month		3 months(post-partum)	
	Frequency	Percentage	Frequency	Percentage
$\leq$8 (No depression)	70	70%	88	88%
9 – 11 (Depression Possible)	8	8%	6	6%
12 – 13 (High possibility of depression)	6	6%	5	5%
$\geq$14 (Probable depression)	16	16%	1	1%
Total	**100**	**100%**	**100**	**100%**

By using EPDS scale, The Overall prevalence of depression was observed in 30% of the cases.

In 70% of the cases ≤8 score (no depression) was reported. In 16% of the cases ≥14 (probable depression) was reported. In 8% of the cases 9 – 11 (Depression Possible) was reported and in 6% of the cases 12 – 13 (High possibility of depression) was reported. The mean EPDS score was 8.22 ± 4.37

By using EPDS scale at 3 months post-delivery, in 88% of the cases ≤8 score (no depression) was reported. In 1% of the cases ≥14 (probable depression) was reported. In 6% of the cases 9 – 11 (Depression Possible) was reported and in 5% of the cases 12 – 13 (High possibility of depression) was reported. The mean EPDS score was 5.14 ± 3.08.

The chi-square statistic is 15.6626. The p-value is .00133. The result is significant at $p < .05$.

Table 3: Distribution based on HADS score – Anxiety and depression

Anxiety - HADS Score	Total
0 to 7	74(74%)
8 to 10	8(8%)
11 to 21	18(18%)
Depression – HADS Score	
0 to 7	70(70%)
8 to 10	8(8%)
11 to 21	22(22%)

HADS Score – Anxiety: Overall Anxiety was reported in 26% of the cases, in 8% it was borderline and in 18% it was severe anxiety.

HADS score – Depression:

Overall Depression according to HADS was 30%, It was borderline in 8% and in 22% of the cases its severe depression

Table 4: Correlation of HADS Score for Anxiety and Depression

	Depression – HADS Score		
Anxiety - HADS Score	**0 to 7**	**8 to 10**	**11 to 21**
0 to 7	69	1	-
8 to 10	5	3	-
11 to 21	-	4	18

The correlation of Anxiety and Depression based on HADS score was statistically significant.

The mean HADS – Anxiety Score was 5.42 ± 4.62

The mean HADS – Depression Score was 7.46 ± 3.70

The chi-square statistic is 54.8602. The p-value is < 0.00001. The result is significant at $p < .05$.

Table 5: Distribution based on Correlation of EPDS with HADS and other variables

EPDS Variables correlation	≤8	9 – 11	12 – 13	≥14	X^2	p-value
Gravida						
PRIMI	34	5	3	10	34.6912	< 0.0001(S.S)
Multi	36	3	3	6		
BMI						
Underweight	10	-	1	5	16.806	0.010023(S.S)
Normal	48	7	4	9		
Overweight	12	1	1	2		
Delivery outcomes						
LSCS	27	2	1	8	3.3459	0.7643(N.S)
Repeat LSCS	12	2	1	4		
Vaginal delivery	31	4	4	5		
Maternal Complications						
None	70	7	5	7	38.3759	< 0.0001(S.S)
Anaemia	1	-	-	5		
Pregnancy induced hypertension	-	-	-	3		
Eclampsia	-	1	-	-		
Postpartum Haemorrhage PPH	-	-	-	1		
Anxiety – HADS						
0 to 7	70	4	-	-	51.532	< 0.0001(S.S)
8 to 10	-	4	4	-		
11 to 21	-	-	2	16		
Depression – HADS						
0 to 7	68	2	-	-	57.8895	< 0.0001(S.S)
8 to 10	2	5	1	-		
11 to 21	-	1	5	16		
Total	70	8	6	16		

The EPDS score in comparision with Gravida, Depression, BMI, HADS score for Anxiety and depression and Maternal complications was statistically significant. HADS and EPDS reported similar percentage of depression

Discussion

Mental health issues during pregnancy are becoming more common. Due to lack of awareness, this public health issue has not been given importance. Pregnancy is a stressful experience for a female; in addition to the physiological changes, the anxiety of the uncertainty is a major stressor.[6]

The purpose of this study was to look at the impact of comorbid anxiety and depression on delivery outcomes during pregnancy. The sociodemographic and psychiatric correlates of anxiety and depression in nonpregnant women are well documented, but less is known about pregnant women. In our study, women's increasing age, paucity of live births, previous negative pregnancy outcomes and lack of involvement in family decision-making were all associated with anxiety or depression. Unplanned pregnancy and obstetric complication history were also found to be significant predictors of prenatal depression. Stress or depression may be exacerbated by a notion of increased economic burden and a diminished capacity to cope with possible societal stigma. Adverse pregnancy and delivery outcomes are frequently stressful circumstances, and a history of such complications may elevate stress levels in subsequent pregnancy. In this study, the prevalence of Depression and anxiety was 30%.

Low birth weight <2.5kgs was seen in 6.66% of the infants of depressed mothers, 2.5 – 3.5 kgs was seen in 73.33% of the infants, >3.5kgs was seen in 20% of the infants. The mean birth weight was 3.11 $\pm$ 0.41 kgs.

Birthweight	This study	Asaya et al[7]
<2.5Kgs	6.66%	34.88%
>2.5kgs	93.33%	65.11%

Simultaneously, when the influence of maternal prenatal depression and anxiety was taken into account, a substantial independent effect of prenatal maternal anxiety on important indicators of new-born development outcomes was established. The weight of prenatally nervous mother's babies was lower at delivery than the weight of non-anxious mothers' babies. These findings are consistent with previous study that revealed that nervous mother's babies were born with lower weight.[8]

According to HADS Scale, Overall Anxiety was reported in 86.66% of the cases, in 26.66% it was borderline and in 60% it was severe anxiety. Overall Depression according to HADS was 93.33% in depressed mothers, it was borderline in 26.66% and in 73.33% of the cases its severe depression. The internal consistency of the anxiety and depression subscales were found to be good, indicating that the HADS is reliable. There was, however, a substantial correlation between the anxiety and depression subscales. This might be seen as indication that the scale is a broad measure of distress rather than a measure of anxiety or depression. The correlation of anxiety and depression was similar.

The World Health Organization (WHO) considers depression to be one of the most debilitating diseases in the world. By 2030, depression is expected to be the leading cause of morbidity.[9] It's prevalent during pregnancy, with 30 % of females experiencing depressive symptoms out of which 53.33% were experiencing a severe depressive episode in our study.

EPDS	This study	Pinto et al[10]
<10	77%	75.8%
$\geq$10	23%	24.2%

The correlation of anxiety and depression was similar, in 30% of the patients with depression 25% had anxiety. which is similar to Previous study.

Anxiety and depression are prevalent throughout pregnancy, as a corollary, prenatal programmes should include screening for anxiety and depression, as well as practical assistance for women during pregnancy, particularly those with a history of depression and poor family relationships. In order to protect the health of both mother and child, the research recommends incorporating mental health into existing maternity and child health programmes.

Limitations

- Ideally, post-natal follow up should have been done for 12 months. But due to time constraints we were able to follow for only 3 months in the current study.
- No standardized Indian rating scale is available for post-natal setting. EPDS scale has been used widely in western settings, where the cultural context and family dynamics are largely variable.
- This study was not a community-based study hence generalizing to the population cannot be done. Future studies are needed to identify more cases of mental health issues.

Conclusion

There was a significant association between mental health issues between prenatal and postpartum depression. An individual with any of the antepartum mental morbidities, such as anxiety, irritability, sleep problems, somatic symptoms, tiredness, stress about physical health, or worry about the child, was found to have a greater chance of developing anxiety and depression. Pregnant women from low socioeconomic backgrounds, as well as those with strained relationships with parents, siblings, and spouses, were shown to be at a greater risk of depression.

Properly identifying the women who are at risk of developing prenatal anxiety and depression would allow us to target those who might benefit from preventative and supportive measures. Furthermore, identifying the women at risk would allow us to monitor them throughout their pregnancy and recognise early signs of depression and anxiety as they develop, allowing us to intervene therapeutically if necessary.

Conflict of Interest: Nil

Source of funding: Self

Ethical Consideration: Ethical approval was taken from the institutional ethics committee of Muslim Maternity and Children's Hospital prior to the commencement of the study.

References

1. Shashi Rai, Abhishek Pathak, Indira Sharma Postpartum psychiatric disorders: Early diagnosis and management .Indian J Psychiatry. 2015 July; 57: S216–S221.
2. O'Hara MW, Schlechte JA, Lewis DA, Wright EJ. Prospective study of postpartum blues. Biologic and psychosocial factors. Arch Gen Psychiatry. 1991; 48:801–6.
3. Stein G. The maternity blues. In: Brockington IF, Kumar R, editors. Motherhood and Mental Illness. London, UK: Academic Press; 1982. pp. 119–54. 7.
4. Kendell RE, McGuire RJ, Connor Y, Cox JL. Mood changes in the first three weeks after childbirth. J Affect Disord. 1981; 3:317–26. 8.
5. Mills EP, Finchilescu G, Lea SJ. Postnatal depression – an Examination of psychosocial factors. S Afr Med J 1995; 85:99–105. 9.
6. Shahhosseini Z, Pourasghar M, Khalilian A, Salehi F. A Review of the Effects of Anxiety During Pregnancy on Children's Health. Mater Sociomed. 2015 Jun;27(3):200-2. doi: 10.5455/msm.2015.27.200-202. Epub 2015 Jun 8. PMID: 26236168; PMCID: PMC4499279.
7. Asaye, Mengstu & Muche, Haymanot & Zelalem, Eyerusalem. (2020). Prevalence and Predictors of Postpartum Depression: Northwest Ethiopia. Psychiatry Journal. 2020. 1-9. 10.1155/2020/9565678.
8. Matthey S, Barnett B, Howie P, Kavanagh DJ. Diagnosing postpartum depression in mothers and fathers: whatever happened to anxiety? Journal of Affect Disorders. 2003 Apr; 74(2):139-47.
9. World Health Organization (2021) Depression: fact sheet Depression (who.int), Accessed 24th February 2022.
10. Pinto TM, Caldas F, Nogueira-Silva C, Figueiredo B. Maternal depression and anxiety and fetal-neonatal growth. J Pediatr (Rio J). 2017 Sep-Oct;93(5):452-459. doi: 10.1016/j.jped.2016.11.005. Epub 2017 Feb 20. PMID: 28219626.